Database: Embase <1974 to 2023 March 20>, OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Search Strategy:
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1 exp *kidney injury/ (60490)
2 exp *Acute Kidney Injury/ (89525)
3 ((kidney or kidneys or renal) adj2 (trauma* or injur* or lesion* or rupture* or laceration* or avulsion* or contusion* or damage*)).ab. (191298)
4 ((kidney or kidneys or renal) and (trauma* or injur* or lesion* or rupture* or laceration* or avulsion* or contusion* or damage*)).ti. (94607)
5 or/1-4 (265216)
6 exp *ureter injury/ (1349)
7 ((ureter or ureters or ureteral) adj2 (trauma* or injur* or lesion* or rupture* or laceration* or avulsion* or contusion* or damage* or disruption*)).ab. (5626)
8 ((ureter or ureters or ureteral) and (trauma* or injur* or lesion* or rupture* or laceration* or avulsion* or contusion* or damage* or disruption*)).ti. (3088)
9 or/6-8 (7825)
10 exp *bladder injury/ (1070)
11 (bladder adj2 (trauma* or injur* or lesion* or rupture* or laceration* or avulsion* or contusion* or damage*)).ab. (9723)
12 (bladder and (trauma* or injur* or lesion* or rupture* or laceration* or avulsion* or contusion* or damage*)).ti. (7457)
13 or/10-12 (15569)
14 exp *urethra injury/ (1270)
15 ((urethra* or lower urinary tract or LUT) adj2 (trauma* or injur* or lesion* or rupture* or laceration* or avulsion* or contusion* or damage*)).ab. (5420)
16 ((urethra* or lower urinary tract or LUT) and (trauma* or injur* or lesion* or rupture* or laceration* or avulsion* or contusion* or damage*)).ti. (4030)
17 or/14-16 (8184)
18 5 or 9 or 13 or 17 (293307)
19 exp Child/ or exp Infant/ or exp Minors/ or exp Adolescent/ or exp adolescence/ or exp Pediatrics/ (7939638)
20 exp newborn/ or exp Puberty/ or kindergarten/ (1332525)
21 (baby or babies or child or children or pediatric* or paediatric* or peadiatric* or infan* or neonat* or newborn* or new born* or kid or kids or adolescen* or preschool or pre-school or toddler*).tw,kw. (5619599)
22 (minors or prepubescen* or prepuber* or pubescen* or puber*).tw,kw. (146580)
23 (kindergar* or schoolchild* or youth* or juvenil* or underage* or kinders or (under* adj age*) or under 16 or under 18).tw,kw. (509118)
24 or/19-23 (9597321)
25 18 and 24 (37939)
26 (exp animals/ or exp animal/ or exp nonhuman/ or exp animal experiment/ or animal model/ or animal tissue/ or non human/ or (rat or rats or mice or mouse or swine or porcine or murine or sheep or lambs or pigs or piglets or rabbit or rabbits or cat or cats or dog or dogs or cattle or bovine or monkey or monkeys or trout or marmoset$1 or basic research or cell lines or in vitro or animal model or canine).tw.) not (humans/ or human/ or human experiment/ or (men or women or patients or participants).tw.) (12915146)
27 case report/ or case reports/ or case report.ti. (5273331)
28 note/ or editorial/ or letter/ or Comment/ or news/ or (note or editorial or letter or Comment or news).pt. (5378914)
29 conference abstract.pt. or Congresses as Topic/ (4826400)
30 or/26-29 (26777442)
31 25 not 30 (24282)
32 limit 31 to yr="2019 -Current" (5984)
33 limit 32 to english (5729)
34 remove duplicates from 33 (3440)

35 4 or 8 or 12 or 16 (107832)
36 34 and 35 (1369)

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1.

Nutritional management of children with acute kidney injury-clinical practice recommendations from the Pediatric Renal Nutrition Taskforce. [Review]
Vega MRW, Cerminara D, Desloovere A, Paglialonga F, Renken-Terhaerdt J, Walle JV, Shaw V, Stabouli S, Anderson CE, Haffner D, Nelms CL, Polderman N, Qizalbash L, Tuokkola J, Warady BA, Shroff R, Greenbaum LA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 2023 Mar 20.
[Journal Article. Review]
UI: 36939914
The nutritional management of children with acute kidney injury (AKI) is complex. The dynamic nature of AKI necessitates frequent nutritional assessments and adjustments in management. Dietitians providing medical nutrition therapies to this patient population must consider the interaction of medical treatments and AKI status to effectively support both the nutrition status of patients with AKI as well as limit adverse metabolic derangements associated with inappropriately prescribed nutrition support. The Pediatric Renal Nutrition Taskforce (PRNT), an international team of pediatric renal dietitians and pediatric nephrologists, has developed clinical practice recommendations (CPR) for the nutritional management of children with AKI. We address the need for intensive collaboration between dietitians and physicians so that nutritional management is optimized in line with AKI medical treatments. We focus on key challenges faced by dietitians regarding nutrition assessment. Furthermore, we address how nutrition support should be provided to children with AKI while taking into account the effect of various medical treatment modalities of AKI on nutritional needs. Given the poor quality of evidence available, a Delphi survey was conducted to seek consensus from international experts. Statements with a low grade or those that are opinion-based must be carefully considered and adapted to individual patient needs, based on the clinical judgment of the treating physician and dietitian. Research recommendations are provided. CPRs will be regularly audited and updated by the PRNT.

Version ID
1
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Year of Publication
2023

2.

Serum renin and prorenin concentrations predict severe persistent acute kidney injury and mortality in pediatric septic shock.
Stanski NL, Shakked NP, Zhang B, Cvijanovich NZ, Fitzgerald JC, Jain PN, Schwarz AJ, Nowak J, Weiss SL, Allen GL, Thomas NJ, Haileselassie B, Goldstein SL
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 2023 Mar 20.
[Journal Article]
UI: 36939916
BACKGROUND: Studies in critically ill adults demonstrate associations between serum renin concentrations (a proposed surrogate for renin-angiotensin-aldosterone system dysregulation) and poor outcomes, but data in critically ill children are lacking. We assessed serum renin + prorenin concentrations in children with septic shock to determine their predictive ability for acute kidney injury (AKI) and mortality.
METHODS: We conducted a secondary analysis of a multicenter observational study of children aged 1 week to 18 years admitted to 14 pediatric intensive care units (PICUs) with septic shock and residual serum available for renin + prorenin measurement. Primary outcomes were development of severe persistent AKI (>= KDIGO stage 2 for >= 48 h) in the first week and 28-day mortality.
RESULTS: Among 233 patients, day 1 median renin + prorenin concentration was 3436 pg/ml (IQR 1452-6567). Forty-two (18%) developed severe persistent AKI and 32 (14%) died. Day 1 serum renin + prorenin predicted severe persistent AKI with an AUROC of 0.75 (95% CI 0.66-0.84, p < 0.0001; optimal cutoff 6769 pg/ml) and mortality with an AUROC of 0.79 (95% CI 0.69-0.89, p < 0.0001; optimal cutoff 6521 pg/ml). Day 3/day 1 (D3:D1) renin + prorenin ratio had an AUROC of 0.73 (95% CI 0.63-0.84, p < 0.001) for mortality. On multivariable regression, day 1 renin + prorenin > optimal cutoff retained associations with severe persistent AKI (aOR 6.8, 95% CI 3.0-15.8, p < 0.001) and mortality (aOR 6.9, 95% CI 2.2-20.9, p < 0.001). Similarly, D3:D1

renin + prorenin > optimal cutoff was associated with mortality (aOR 7.6, 95% CI 2.5-23.4, p < 0.001).
CONCLUSIONS: Children with septic shock have very elevated serum renin + prorenin concentrations on PICU admission, and these concentrations, as well as their trend over the first 72 h, predict severe persistent AKI and mortality. A higher resolution version of the Graphical abstract is available as Supplementary information.

Version ID
1
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Year of Publication
2023

3.

Fluid Overload Precedes and Masks Cryptic Kidney Injury in Pediatric Acute Respiratory Distress Syndrome.
Dixon CG, Thadani S, Fitzgerald JC, Akcan-Arikan A, Yehya N
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Critical Care Medicine. 2023 Mar 20.
[Journal Article]
UI: 36939256
OBJECTIVES: Given the complex interrelatedness of fluid overload (FO), creatinine, acute kidney injury (AKI), and clinical outcomes, the association of AKI with poor outcomes in critically ill children may be underestimated due to definitions used. We aimed to disentangle these temporal relationships in a large cohort of children with acute respiratory distress syndrome (ARDS).
DESIGN: Retrospective cohort study.
SETTING: Quaternary care PICU.
PATIENTS: Seven hundred twenty intubated children with ARDS between 2011 and 2019.
INTERVENTIONS: None.
MEASUREMENTS AND MAIN RESULTS: Daily fluid balance, urine output (UOP), and creatinine for days 1-7 of ARDS were retrospectively abstracted. A subset of patients had angiopoietin 2 (ANGPT2) quantified on days 1, 3, and 7. Patients were classified as AKI by Kidney Disease Improving Global Outcomes (KDIGO) stage 2/3 then grouped by timing of AKI onset (early if days 1-3 of ARDS, late if days 4-7 of ARDS, persistent if both) for comparison of PICU mortality and ventilator-free days (VFDs). A final category of "Cryptic AKI" was used to identify subjects who met KDIGO stage 2/3 criteria only when creatinine was adjusted for FO. Outcomes were compared between those who had Cryptic AKI identified by FO-adjusted creatinine versus those who had no AKI. Conventionally defined AKI occurred in 26% of patients (early 10%, late 3%, persistent 13%). AKI was associated with higher mortality and fewer VFDs, with no differences according to timing of onset. The Cryptic AKI group (6% of those labeled no AKI) had higher mortality and fewer VFDs than patients who did not meet AKI with FO-adjusted creatinine. FO, FO-adjusted creatinine, and ANGPT2 increased 1 day prior to meeting AKI criteria in the late AKI group.
CONCLUSIONS: AKI was associated with higher mortality and fewer VFDs in pediatric ARDS, irrespective of timing. FO-adjusted creatinine captures a group of patients with Cryptic AKI with outcomes approaching those who meet AKI by traditional criteria. Increases in FO, FO-adjusted creatinine, and ANGPT2 occur prior to meeting conventional AKI criteria.

Version ID
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Year of Publication

2023

4.

Gravity-assisted continuous flow peritoneal dialysis technique use in acute kidney injury in children: a randomized, crossover clinical trial.
Nourse P, McCulloch M, Coetzee A, Bunchman T, Picca S, Rusch J, Brooks A, Heydenrych H, Morrow B
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 2023 Mar 16.
[Journal Article]
UI: 36929384
BACKGROUND: Our previously demonstrated continuous flow peritoneal dialysis (CFPD) technique in children with acute kidney injury (AKI), although effective, was manpower heavy and expensive due to the high-volume pumps required. The aim of this study was to develop and test a novel gravity-driven CFPD technique in children using readily available, inexpensive equipment and to compare this technique to conventional PD.
METHODS: After development and initial in vitro testing, a randomised crossover clinical trial was conducted in 15 children with AKI requiring dialysis. Patients received both conventional PD and CFPD sequentially, in random order. Primary outcomes were measures of feasibility, clearance and ultrafiltration (UF). Secondary outcomes were complications and mass transfer coefficients (MTC). Paired t-tests were used to compare PD and CFPD outcomes.
RESULTS: Median (range) age and weight of participants were 6.0 (0.2-14) months and 5.8 (2.3-14.0) kg, respectively. The CFPD system was easily and rapidly assembled. There were no serious adverse events attributed to CFPD. Mean +/- SD UF was significantly higher on CFPD compared to conventional PD (4.3 +/- 3.15 ml/kg/h vs. 1.04 +/- 1.72 ml/kg/h; $p < 0.001$). Clearances for urea, creatinine and phosphate for children on CFPD were 9.9 +/- 3.10 ml/min/1.73 m2, 7.9 +/- 3.3 ml/min/1.73 m2 and 5.5 +/- 1.5 ml/min/1.73 m2 compared to conventional PD with values of 4.3 +/- 1.68 ml/min/1.73 m2, 3.57 +/- 1.3 ml/min/1.73 m2 and 2.53 +/- 0.85 ml/min/1.73 m2, respectively (all $p < 0.001$).
CONCLUSION: Gravity-assisted CFPD appears to be a feasible and effective way to augment ultrafiltration and clearances in children with AKI. It can be assembled from readily available non-expensive equipment. A higher resolution version of the Graphical abstract is available as Supplementary information.

Version ID
1
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10018583
Year of Publication
2023

5.

Outcomes associated with unrecognized acute kidney injury in postoperative pediatric cardiac patients.
Kimura S, Shimizu K, Iwasaki T, Kanazawa T, Morimatsu T, Hatano T, Morimatsu H
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 2023 Mar 16.
[Journal Article]
UI: 36929386
BACKGROUND: The present retrospective study was carried out to determine the incidence of unrecognized cardiac surgery-associated acute kidney injury (CSA-AKI) due to infrequency of serum creatinine (SCr) measurements in pediatric cardiac patients and to assess the association between unrecognized CSA-AKI and clinical outcomes.
METHODS: This study was a single-center, retrospective study of pediatric patients who underwent cardiac surgery. Patients were diagnosed with CSA-AKI based on SCr measurements, and unrecognized CSA-AKI was defined under the assumptions that there had been only one or two SCr measurements within 48 h after surgery: CSA-AKI unrecognized by one SCr measurement (AKI-URone), CSA-AKI unrecognized by two SCr measurements (AKI-URtwo), and CSA-AKI recognized by one and two SCr measurements (AKI-R). The change of SCr from baseline to postoperative day 30 (delta SCr30d) was assessed as a surrogate of kidney recovery.
RESULTS: In a total of 557 cases, 313 patients (56.2%) were diagnosed with CSA-AKI, 188 (33.8%) of whom had unrecognized CSA-AKI. Delta SCr30d in the AKI-URtwo group and delta SCr30d in the AKI-URone group was not significantly different from delta SCr30d in the non-AKI group ($p = 0.67$ and $p = 0.79$, respectively). There were significant differences in the durations of mechanical ventilation, serum B-type natriuretic peptide levels, and lengths of stay in hospital between the non-AKI group and the AKI-URtwo group and between the non-AKI group and the AKI-URtwo group.
CONCLUSIONS: Unrecognized CSA-AKI due to infrequent SCr measurements is not rare and is associated with prolonged mechanical ventilation, high postoperative BNP level, and prolonged length of stay in hospital. A higher resolution version of the Graphical abstract is available as Supplementary information.

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1
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Year of Publication
2023

6.

Incidence and risk factors of acute kidney injury among childhood nephrotic syndrome: a prospective cohort study.
Ghosh S, Akhtar S, Pradhan SK, Sarkar S, Dasgupta D, Parween R, Menon S, Sinha R
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
European Journal of Pediatrics. 2023 Mar 15.
[Journal Article]
UI: 36920554
Acute kidney injury (AKI) is a known independent risk factor for morbidity/mortality but there is scarcity of robust data on it among childhood nephrotic syndrome (NS). We assessed the incidence of AKI among hospitalized children with NS as well as looked for any significant risk factors. Prospective observational study conducted across two tertiary pediatric hospitals in Eastern India from September 2020 to August 2021. Children aged 1-18 years admitted with NS and without any nephritic features or pre-existing chronic kidney disease (CKD) were included. In 200 admissions (n = 176; 63% female, median age 4 years [IQR: 3-7]), AKI occurred in 36 (18%; 95% CI 13 to 36%). Two children required kidney replacement therapy and one death was recorded. In 27/36 (75%), AKI resolved within 48 h, 4 had persistent AKI, 3 acute kidney disease, and two progressed to CKD. On multivariate regression analysis: fractional excretion of sodium <= 0.2% (OR 12.77; 95% CI 3.5-46.4), male gender (OR 6.38; 95% CI 2.76-14.74), underlying infection (OR 5.44; 95% CI 2.4-11.86), nephrotoxic drugs (OR 4.83; 95% CI 2.21-10.54), and albumin <= 1.4 g/dl (OR 4.35; 95% CI 1.55-12.8) were associated with AKI. A predictive equation using these five variables on admission had high AUC (0.86) in correctly identifying 17 children who subsequently developed AKI. Conclusion: In a low resource setting, AKI is common among hospitalized children with NS. Larger multi-center prospective studies are needed to refine

prediction equations and test its utility in preventing AKI development. What is Known: * Acute Kidney Injury is a known independent risk factor for increased morbidity and mortality. * There are few studies to assess the incidence of Acute kidney injury in hospitalised cases of childhood nephrotic syndrome.. What is New: * This is the largest prospective cohort of children suffering from nephrotic syndrome, in India, proposing a novel algorithm for predicting the risk of AKI among hospitalised cases of childhood nephrotic syndrome.

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1
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Year of Publication
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7.

Management of Acute Kidney Injury in Critically Ill Children. [Review]
Krishnasamy S, Sinha A, Bagga A
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Indian Journal of Pediatrics. 2023 Mar 02.
[Journal Article. Review]
UI: 36859513
Acute kidney injury (AKI) is common in critically ill patients, affecting almost one in four critically ill children and one in three neonates. Higher stages of AKI portend worse outcomes. Identifying AKI timely and instituting appropriate measures to prevent and manage severe AKI is important, since it is independently associated with mortality. Methods to predict severe AKI should be applied to all critically ill patients. Assessment of volume status to prevent the development of fluid overload is useful to prevent adverse outcomes. Patients with metabolic or clinical complications of AKI need prompt kidney replacement therapy (KRT). Various modes of KRT are available, and the choice of modality depends most on the technical competence of the center, patient size, and hemodynamic stability. Given the significant risk of chronic kidney disease, patients with AKI require long-term follow-up. It is important to focus on improving awareness

about AKI, incorporate AKI prevention as a quality initiative, and improve detection, prevention, and management of AKI with the aim of reducing acute and long-term morbidity and mortality.

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9977639
Year of Publication
2023

8.

Urine Complement Factor Ba is associated with acute kidney injury in critically ill children.
Stenson EK, Edelstein CL, You Z, Miyazaki-Anzai S, Thurman JM, Dixon BP, Zappitelli M, Goldstein SL, Arikan AA, Kendrick J
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Kidney360. 2023 Feb 10.
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BACKGROUND: Critically ill children with acute kidney injury (AKI) have high morbidity and mortality rates and lack treatment options. Complement activation is implicated in AKI pathogenesis, which could be treated with complement-targeted therapeutics. We assessed for an association between urine Ba, an activation fragment of the alternative complement pathway, and AKI in a large cohort of critically ill children.
METHODS: A biorepository of children requiring mechanical ventilation was leveraged. AKI was based on pRIFLE criteria: stage 1: 25% decreased eGFR or urine output (UOP) <0.5mlg/kg/h for 8h; stage 2: 50% decreased eGFR or UOP <0.5 ml/kg/h for 16h; stage 3: 75% decreased eGFR or UOP <0.3ml/kg/h for 24h or anuric for 12h. ELISAs were performed to quantitate urine Ba values. Log Ba was used in ANOVA with pairwise comparison by the Tukey method. Logistic regression was performed to test the association between urine Ba and AKI diagnosis.
RESULTS: 73 patients were included of which 56 had AKI: 26 (46%) stage 1, 16 (29%) stage 2, and 14 (25%) stage 3. Ba was significantly higher in patients with stage 3 AKI compared to all other stages. Ba was higher in sepsis-associated AKI compared to non sepsis-associated AKI. Multivariate analysis included urine Ba, urine IL-18, urine NGAL, sepsis, and PRISM-II scores (an estimate of illness severity) and showed a significant association between urine Ba and AKI (OR 1.57, 95% CI 1.13-2.20; p 0.007).
CONCLUSION: Urine Ba is significantly increased in patients with AKI compared to patients without AKI. In patients with similar illness severity, a doubling of urine Ba level was associated

with a 57% increase in AKI diagnosis of any stage. Further studies are needed to study complement inhibition in treatment or prevention of AKI in critically ill children.

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1
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9.

A Retrospective Analysis of Risk Factors and Impact of Acute Kidney Injury in Critically Ill Children. Eine retrospektive Analyse von Risikofaktoren und Auswirkungen einer akuten Nierenschadigung bei schwerkranken Kindern. <Eine retrospektive Analyse von Risikofaktoren und Auswirkungen einer akuten Nierenschadigung bei schwerkranken Kindern.>
Celegen K, Celegen M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Klinische Padiatrie. 2023 Feb 27.
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BACKGROUND: Acute kidney injury (AKI) is a serious clinical condition in critically ill children and is associated with worse outcomes. A few pediatric studies focused on the risk factors of AKI. We aimed to identify the incidence, risk factors, and outcomes of AKI in the pediatric intensive care unit (PICU).

PATIENTS AND METHODS: All the patients admitted to PICU over a period of 20 months were included. We compared both groups the risk factors between AKI and non-AKI.
RESULTS: A total of 63 patients (17.5%) of the 360 patients developed AKI during PICU stay. The presence of comorbidity, diagnosis of sepsis, increased PRISM III score, and positive renal angina index were found to be risk factors for AKI on admission. Thrombocytopenia, multiple organ failure syndrome, the requirement of mechanical ventilation, use of inotropic drugs, intravenous iodinated contrast media, and exposure to an increased number of nephrotoxic drugs were independent risk factors during the hospital stay. The patients with AKI had a lower renal function on discharge and had worse overall survival.
CONCLUSIONS: AKI is prevalent and multifactorial in critically sick children. The risk factors of AKI may be present on admission and during the hospital stay. AKI is related to prolonged mechanical ventilation days, longer PICU stays, and a higher mortality rate. Based on the presented results early prediction of AKI and consequent modification of nephrotoxic medication may generate positive effects on the outcome of critically ill children.

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1
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HINTERGRUND: Die akute Nierenschadigung (AKI) ist ein schwerwiegender klinischer Zustand bei kritisch kranken Kindern und mit schlechteren Ergebnissen verbunden. Einige padiatrische Studien konzentrierten sich auf die Risikofaktoren von AKI. Unser Ziel war es, die Inzidenz, Risikofaktoren und Ergebnisse von AKI auf der padiatrischen Intensivstation (PICU) zu identifizieren.PATIENTEN UND METHODEN: Alle Patienten, die von Mai 2020 bis Dezember 2021 auf der Intensivstation aufgenommen wurden, wurden eingeschlossen. Wir verglichen bei beiden Gruppen die Risikofaktoren zwischen AKI und Nicht-AKI.RESULTAT: Insgesamt 63 Patienten (17,5%) der 360 Patienten entwickelten AKI wahrend des PICU-Aufenthaltes. Das Vorliegen einer Komorbiditat, die Diagnose einer Sepsis, ein erhohter PRISM-III-Score und ein positiver renaler Angina-Index erwiesen sich bei der Aufnahme als Risikofaktoren fur AKI. Thrombozytopenie, multiples Organversagen, die Notwendigkeit einer mechanischen Beatmung, die Verwendung inotroper Medikamente, intravenose jodhaltige Kontrastmittel und die Exposition gegenuber einer erhohten Anzahl nephrotoxischer Medikamente waren unabhangige Risikofaktoren wahrend des Krankenhausaufenthalts. Die Patienten mit AKI hatten bei der Entlassung eine niedrigere Nierenfunktion und ein schlechteres Gesamtuberleben.SCHLUSSFOLGERUNGEN: AKI ist bei kritisch kranken Kindern weit verbreitet und multifaktoriell. Die Risikofaktoren von AKI konnen bei der Aufnahme und wahrend des Krankenhausaufenthalts vorhanden sein. AKI steht im Zusammenhang mit verlangerten Tagen der mechanischen Beatmung, langeren Aufenthalten auf der PICU und einer hoheren Sterblichkeitsrate. Basierend auf den vorgestellten Ergebnissen kann eine fruhzeitige Vorhersage von AKI und eine konsequente Modifikation der nephrotoxischen Medikation positive Auswirkungen auf das Outcome kritisch kranker Kinder haben.
Language: German
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10.

Association of hyperchloremia and acute kidney injury in pediatric patients with moderate and severe traumatic brain injury.
Almuqamam M, Novi B, Rossini CJ, Mammen A, DeSanti RL
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Childs Nervous System. 2023 Jan 03.
[Journal Article]
UI: 36595084
PURPOSE: Acute kidney injury (AKI) is an established complication of adult traumatic brain injury (TBI) and known risk factor for mortality. Evidence demonstrates an association between hyperchloremia and AKI in critically ill adults but studies in children are scarce. Given frequent use of hypertonic saline in the management of pediatric TBI, we believe the incidence of hyperchloremia will be high and hypothesize that it will be associated with development of AKI.
METHODS: Single-center retrospective cohort study was completed at an urban, level 1 pediatric trauma center. Children > 40 weeks corrected gestational age and < 21 years of age with moderate or severe TBI (presenting GCS < 13) admitted between January 2016 and December 2021 were included. Primary study outcome was presence of AKI (defined by pediatric Kidney Disease: Improving Global Outcomes criteria) within 7 days of hospitalization and compared between patients with and without hyperchloremia (serum chloride >= 110 mEq/L).
RESULTS: Fifty-two children were included. Mean age was 5.75 (S.D. 5.4) years; 60% were male (31/52); and mean presenting GCS was 6 (S.D. 2.9). Thirty-seven patients (71%) developed hyperchloremia with a mean peak chloride of 125 (S.D. 12.0) mEq/L and mean difference between peak and presenting chloride of 16 (S.D. 12.7) mEq/L. Twenty-three patients (44%) developed AKI; of those with hyperchloremia, 62% (23/37) developed AKI, while among those without hyperchloremia, 0% (0/15) developed AKI (difference 62%, 95% CI 42-82%, p < 0.001). Attributable risk of hyperchloremia leading to AKI was 62.2 (95% CI 46.5-77.8, p = 0.0015).
CONCLUSION: Hyperchloremia is common in the management of pediatric TBI and is associated with development of AKI. Risk appears to be associated with both the height of serum chloride and duration of hyperchloremia.

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11.

Neutrophil Gelatinase-Associated Lipocalin as a Predictor of Acute Kidney Injury in Children With Shock: A Prospective Study.
Abbas Q, Laghari P, Jurair H, Nafis J, Saeed B, Qazi MF, Saleem A, Khan AHH, Haque A
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cureus. 15(1):e34407, 2023 Jan.
[Journal Article]
UI: 36874735
BACKGROUND: The current definition of acute kidney injury (AKI) is based on serum creatinine (SrCr) and urine output, limited by delayed identification of such patients. Plasma neutrophil gelatinase-associated lipocalin (NGAL) is considered an early diagnostic and highly predictive biomarker of AKI.
OBJECTIVE: To determine the diagnostic accuracy of NGAL for AKI compared with creatinine clearance for early detection of AKI in children with shock receiving inotropic support.
METHODS: Critically ill children requiring inotropic support in the pediatric intensive care unit were enrolled prospectively. SrCr and NGAL values were obtained three times at six, 12, and 48 hours after vasopressor initiation. Patients with AKI were defined as having loss of >25% renal function based on creatinine clearance within 48 hours. NGAL level of more than 150 ng/dl was suggestive of the diagnosis of AKI. Receiver operator characteristic curves were generated for NGAL and SrCr to compare the predictive ability of both at 0, 12, and 48 hours of starting vasopressor support... Results: A total of 94 patients were enrolled. The mean age was 43..50.95 months. Most common primary diagnoses were related to the cardiovascular system (46%). Twenty-nine patients (31%) died during the hospital stay. Thirty-four patients (36%) developed AKI within 48..hours following shock. The area under the curve (AUC) for NGAL at a cutoff of 150 ng/ml was 0.70, 0.74, and 0.73 at six-hour, 12-hour, and 48-hour follow-up, respectively. NGAL had a sensitivity of 85.3% and specificity of 50% at 0 hours of follow-up for diagnosis of AKI.
CONCLUSION: Serum NGAL has better sensitivity and AUC compared to SrCr for early diagnosis of AKI in children admitted with shock.

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1
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12.

Acute Kidney Injury in Very Low Birth Weight Infants: A Major Morbidity and Mortality Risk Factor.
Lazarovits G, Ofek Shlomai N, Kheir R, Bdolah Abram T, Eventov Friedman S, Volovelsky O
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Children. 10(2), 2023 Jan 29.
[Journal Article]
UI: 36832371
BACKGROUND AND OBJECTIVES: Very low birth weight (VLBW) infants are at high risk of developing acute kidney injury (AKI), presumably secondary to low kidney reserves, stressful postnatal events, and drug exposures. Our study aimed to identify the prevalence, risk factors, and outcomes associated with AKI in VLBW infants.
STUDY DESIGN: Records of all VLBW infants admitted to two medical campuses between January 2019 and June 2020 were retrospectively reviewed. AKI was classified using the modified KDIGO definition to include only serum creatinine. Risk factors and composite outcomes were compared between infants with and without AKI. We evaluated the main predictors of AKI and death with forward stepwise regression analysis.
RESULTS: 152 VLBW infants were enrolled. 21% of them developed AKI. Based on the multivariable analysis, the most significant predictors of AKI were the use of vasopressors, patent ductus arteriosus, and bloodstream infection. AKI had a strong and independent association with neonatal mortality.
CONCLUSIONS: AKI is common in VLBW infants and is a significant risk factor for mortality. Efforts to prevent AKI are necessary to prevent its harmful effects.
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1
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13.

A Novel and Noninvasive Risk Assessment Score and Its Child-to-Adult Trajectories to Screen Subclinical Renal Damage in Middle Age.
Chen C, Liu G, Chu C, Zheng W, Ma Q, Liao Y, Yan Y, Sun Y, Wang D, Mu J
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Bioengineering. 10(2), 2023 Feb 15.
[Journal Article]
UI: 36829751
This study aimed to develop a noninvasive, economical and effective subclinical renal damage (SRD) risk assessment tool to identify high-risk asymptomatic people from a large-scale population and improve current clinical SRD screening strategies. Based on the Hanzhong Adolescent Hypertension Cohort, SRD-associated variables were identified and the SRD risk assessment score model was established and further validated with machine learning algorithms. Longitudinal follow-up data were used to identify child-to-adult SRD risk score trajectories and to investigate the relationship between different trajectory groups and the incidence of SRD in middle age. Systolic blood pressure, diastolic blood pressure and body mass index were identified as SRD-associated variables. Based on these three variables, an SRD risk assessment score was developed, with excellent classification ability (AUC value of ROC curve: 0.778 for SRD estimation, 0.729 for 4-year SRD risk prediction), calibration (Hosmer-Lemeshow goodness-of-fit test p = 0.62 for SRD estimation, p = 0.34 for 4-year SRD risk prediction) and more potential clinical benefits. In addition, three child-to-adult SRD risk assessment score trajectories were identified: increasing, increasing-stable and stable. Further difference analysis and logistic regression analysis showed that these SRD risk assessment score trajectories were highly associated with the incidence of SRD in middle age. In brief, we constructed a novel and noninvasive SRD risk assessment tool with excellent performance to help identify high-risk asymptomatic people from a large-scale population and assist in SRD screening.
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1
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14.

Renal arcuate vein thrombosis-induced acute kidney injury: a rare multiple-Hit-mediated disease.
Pardinhas C, Filipe R, Vergnaud P, Grapin M, Ferriere E, Jamet A, Fourgeaud J, Da Rocha N, Perot P, Boyer O, Rabant M, Van Huyen JD, Isnard P
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Clinical Kidney Journal. 16(2):367-373, 2023 Feb.
[Journal Article]
UI: 36755840
Background: Renal arcuate vein thrombosis (RAVT) is a rare and recently recognized cause of acute kidney injury (AKI) in young adults. However, the precise incidence and underlying pathophysiologic mechanisms leading to AKI in these patients remain elusive.

Methods: This study included all patients who underwent a kidney biopsy over a 40-month period sent to the pathology department of Necker-Enfants Malades Hospital, with evidence of RAVT. We performed coagulation tests, genetic testing for thrombophilia, complete urine toxicologic screening and kidney metagenomic sequencing to identify an underlying cause of thrombosis.
Results: We report five pediatric cases of RAVT discovered on kidney biopsy performed in the setting of unexplained AKI. Investigations did not reveal an underlying cause of thrombosis but only a significant nonsteroidal anti-inflammatory drugs (NSAIDs) use was reported in 4/5 patients, supporting a potential link between NSAIDs use and RAVT. By performing metagenomic sequencing on kidney biopsy samples, we detected severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) RNA in the kidney of one patient. These results suggest that systemic SARS-CoV-2 infection may also be a key contributing factor of renal thrombosis, particularly by inducing potential endothelial disruption.
Conclusions: In conclusion, RAVT-induced AKI appears to be a multiple hit-mediated disease in which NSAIDs consumption and viral infection such as SARS-CoV-2 may be crucial contributing factors. These findings may have significant public health implications given the prevalence of NSAIDs use in the general population. Increased awareness and additional study of future cases may lead to a better understanding of this rare cause of AKI in children and young adults.

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1
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15.

Concurrent acute kidney injury and pancreatitis in a female patient: Questions.
Patel DB, Farris AC, Hanna C, Hashim F
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Pediatric Nephrology. 38(4):1045-1046, 2023 04.
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16.

Severe acute kidney injury and difficult catheterization in a 6-month-old female infant: Answers.
Selvam A, Deepthi B, Krishnasamy S, Dhandapany G, Kumar Naredi B, Krishnamurthy S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 38(3):681-685, 2023 03.
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Year of Publication
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17.

Severe acute kidney injury and difficult catheterization in a 6-month-old female infant: Questions.
Selvam A, Deepthi B, Krishnasamy S, Dhandapany G, Kumar Naredi B, Krishnamurthy S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 38(3):679-680, 2023 03.
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Year of Publication

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18.

Proper wiring of newborn neurons to control bladder function after complete spinal cord injury.
Hao F, Jia F, Hao P, Duan H, Wang Z, Fan Y, Zhao W, Gao Y, Fan OR, Xu F, Yang Z, Sun YE, Li X
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Biomaterials. 292:121919, 2023 01.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 36455486
Activation of endogenous neurogenesis by bioactive materials enables restoration of sensory/motor function after complete spinal cord injury (SCI) via formation of new relay neural circuits. The underlying wiring logic of newborn neurons in adult central nervous system (CNS) is unknown. Here, we report neurotrophin3-loaded chitosan biomaterial substantially recovered bladder function after SCI. Multiple neuro-circuitry tracing technologies using pseudorabies virus (PRV), rabies virus (RV), and anterograde adeno-associated virus (AAV), demonstrated that newborn neurons were integrated into the micturition neural circuits and reconnected higher brain centers and lower spinal cord centers to control voiding, and participated in the restoration of the lower urinary tract function, even in the absence of long-distance axonal regeneration. Opto- and chemo-genetic studies further supported the notion that the supraspinal control of the lower urinary tract function was partially recovered. Our data demonstrated that regenerated relay neurons could be properly integrated into disrupted long-range neural circuits to restore function of adult CNS.

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19.

Association of multiple retinal nodular hamartomas and "confetti" skin lesions with end-stage renal disease in patients with tuberous sclerosis.
Prelevic V, Juric I, Bevc S, Marcun-Varda N, Aleckovic-Halilovic M, Mesic E, Bilic H, Grujicic M, Zabic I, Josipovic J, Vujicic B, Marinaki S, Simic-Ogrizovic S, Milinkovic M, Azasevac T, Idrizi A, Arnol M, Radunovic D, Antunovic T, Jukic NB
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International Urology & Nephrology. 55(2):477-482, 2023 Feb.
[Multicenter Study. Journal Article]
UI: 36030358
PURPOSE: The main purpose of this study is to explore characteristics of patients with chronic kidney disease in tuberous sclerosis (TSC) and to underline differences in clinical characteristics between end-stage renal disease (ESRD) patients and patients in earlier stages of chronic kidney disease.
METHODS: This multicentric, retrospective study included data for 48 patients from seven South-Eastern European countries (Albania, Bosnia and Herzegovina, Croatia, Greece, Montenegro, Serbia, Slovenia) in the period from February to August 2020. Researchers collected data from local and national nephrological and neurological registries and offered clinical and laboratory results from medical histories in follow-up periods.
RESULTS: This study enrolled 48 patients with a median age of 32.3 years (range, 18-46 years), and predominant female gender (60.45%). The percentage of patients with chronic kidney

disease (CKD) diagnosis of the total number of patients was 66.90%, with end-stage renal disease development in 39.6%. The most prevalent renal lesions leading to chronic kidney disease were angiomyolipomas (AMLs) in 76.6%, while multiple renal cysts were present in 42.6% of patients. Nephrectomy was performed in 43% of patients, while the mTOR inhibitors were used in 18 patients (37.5%). The majority of patients had cutaneous manifestations of tuberous sclerosis-83.30% had hypomelanotic cutaneous lesions, and 68.80% had angiofibromas. Multiple retinal nodular hamartomas and "confetti" skin lesions were more frequent in end-stage renal disease (ESRD) than in patients with earlier stages of chronic kidney disease (p-0.033 and 0.03, respectively).
CONCLUSION: Our study has also shown that retinal hamartomas and "confetti" skin lesions are more frequent in end-stage renal diseases (ESRD) patients than in other chronic kidney disease (CKD) patients. Usage of mTOR inhibitors can also reduce the number of complications and associated with tuberous sclerosis, such as dermatological manifestations and retinal hamartoma, which are more common in the terminal stage of chronic kidney disease.

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Year of Publication
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20.

Urinary Biomarkers for the Assessment of Acute Kidney Injury of Pediatric Sickle Cell Anemia Patients Admitted for Severe Vaso-occlusive Crises.
Farris N., Benoit S.W., McNinch N.L., Bodas P.
Embase
Journal of pediatric hematology/oncology. (no pagination), 2023. Date of Publication: 20 Feb 2023.
[Article]
AN: 640551248
Sickle cell nephropathy is a progressive morbidity, beginning in childhood, which is incompletely understood partially due to insensitive measures. We performed a prospective pilot study of pediatric and young adult patients with sickle cell anemia (SCA) to assess urinary biomarkers during acute pain crises. Four biomarkers were analyzed with elevations potentially suggesting acute kidney injury: (1) neutrophil gelatinase-associated lipocalin (NGAL), (2) kidney injury molecule-1, (3) albumin, and (4) nephrin. Fourteen unique patients were admitted for severe pain crises and were found to be representative of a larger SCA population. Urine samples were collected at the time of admission, during admission, and at follow-up after discharge. Exploratory analyses compared cohort values to the best available population values; individuals were also compared against themselves at various time points. Albumin was found to be moderately elevated for an individual during admission compared with follow-up (P = 0.006, Hedge g: 0.67). Albumin was not found to be elevated compared with population values. Neutrophil gelatinase-associated lipocalin, kidney injury molecule-1, and nephrin were not found to be significantly elevated compared with population values or comparing admission to follow-up. Though albumin was found to be minimally elevated, further research should focus on alternative markers in efforts to further understand kidney disease in patients with SCA.

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Publisher
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21.

Biomarkers for prediction of acute kidney injury in pediatric patients: a systematic review and meta-analysis of diagnostic test accuracy studies.
Meena J., Thomas C.C., Kumar J., Mathew G., Bagga A.
Embase
Pediatric Nephrology. (no pagination), 2023. Date of Publication: 2023.
[Review]
AN: 2021922360
Background: Severity of acute kidney injury (AKI) confers higher odds of mortality. Timely recognition and early initiation of preventive measures may help mitigate the injury further. Novel biomarkers may aid in the early detection of AKI. The utility of these biomarkers across various clinical settings in children has not been evaluated systematically.
Objective(s): To synthesize the currently available evidence on different novel biomarkers for the early diagnosis of AKI in pediatric patients. Data sources: We searched four electronic databases (PubMed, Web of Science, Embase, and Cochrane Library) for studies published between 2004 and May 2022. Study eligibility criteria: Cohort and cross-sectional studies evaluating the diagnostic performance of biomarkers in predicting AKI in children were included. Participants and interventions: Participants in the study included children (aged less than 18 years) at risk of AKI. Study appraisal and synthesis methods: We used the QUADAS-2 tool for the quality assessment of the included studies. The area under the receiver operating characteristics (AUROC) was meta-analyzed using the random-effect inverse-variance method. Pooled sensitivity and specificity were generated using the hierarchical summary receiver operating characteristic (HSROC) model.
Result(s): We included 92 studies evaluating 13,097 participants. Urinary NGAL and serum cystatin C were the two most studied biomarkers, with summary AUROC of 0.82 (0.77-0.86) and 0.80 (0.76-0.85), respectively. Among others, urine TIMP-2*IGFBP7, L-FABP, and IL-18 showed fair to good predicting ability for AKI. We observed good diagnostic performance for predicting severe AKI by urine L-FABP, NGAL, and serum cystatin C.
Limitation(s): Limitations were significant heterogeneity and lack of well-defined cutoff value for various biomarkers. Conclusions and implications of key findings: Urine NGAL, L-FABP, TIMP-2*IGFBP7, and cystatin C showed satisfactory diagnostic accuracy in the early prediction of AKI. To further improve the performance of biomarkers, they need to be integrated with other risk stratification models. Systematic review registration: PROSPERO (CRD42021222698). Graphical Abstract: [Figure not available: see fulltext.].

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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
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22.

Interleukin-33 Mediates Cardiomyopathy after Acute Kidney Injury by Signaling to Cardiomyocytes.
Florens N., Kasam R.K., Rudman-Melnick V., Lin S.-C., Prasad V., Molkentin J.D.
Embase
Circulation. 147(9) (pp 746-758), 2023. Date of Publication: 28 Feb 2023.
[Article]
AN: 2023138417
Background: Acute kidney injury (AKI) is a short-term life-threatening condition that, if survived, can lead to renal insufficiency and development of chronic kidney disease. The pathogenesis of AKI and chronic kidney disease involves direct effects on the heart and the development of hypertrophy and cardiomyopathy.
Method(s): We used mouse models of ischemia/reperfusion AKI and unilateral ureteral obstruction to investigate the role of IL-33 (interleukin-33) and its receptor-encoding gene Il1rl1 (also called ST2L [suppression of tumorigenicity 2]) in cardiac remodeling after AKI. Mice with cell type-specific genetic disruption of the IL-33/ST2L axis were used, and IL-33 monoclonal antibody, adeno-associated virus encoding IL-33 or ST2L, and recombinant IL-33, as well.
Result(s): Mice deficient in Il33 were refractory to cardiomyopathy associated with 2 models of kidney injury. Treatment of mice with monoclonal IL-33 antibody also protected the heart after AKI. Moreover, overexpression of IL-33 or injection of recombinant IL-33 induced cardiac hypertrophy or cardiomyopathy, but not in mice lacking Il1rl1. AKI-induced cardiomyopathy was also reduced in mice with cardiac myocyte-specific deletion of Il1rl1 but not in endothelial cell- or fibroblast-specific deletion of Il1rl1. Last, overexpression of the ST2L receptor in cardiac myocytes recapitulated induction of cardiac hypertrophy.
Conclusion(s): These results indicate that IL-33 released from the kidney during AKI underlies cardiorenal syndrome by directly signaling to cardiac myocytes, suggesting that antagonism of IL-33/ST2 axis would be cardioprotective in patients with kidney disease.

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Publisher
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23.

Optimal Management of Neurogenic Bladder due to Spinal Cord Injury in Pediatric Patients.
Suria Cordero N.F., Johnston A.W., Dangle P.P.
Embase
Current Bladder Dysfunction Reports. 18(1) (pp 71-77), 2023. Date of Publication: March 2023.
[Review]
AN: 2020391392
Purpose of Review: Spinal cord injuries are a well-known cause of neurogenic bladder in children. The aim of this review is to bring the reader up to date on the management of neurogenic bladder in patients with spinal cord injuries. Recent Findings: After spinal shock resolution, the most common treatments are anticholinergic medications and intermittent catheterization. Alpha-adrenergic blockers and beta-agonists are the other available medical therapies. Nonetheless, surgery is an alternative when medical treatment alone fails. Slings and urinary sphincters aim to increase bladder outlet resistance, while bladder augmentations increase continence and promote safe storage pressures.
Summary: Initially, spinal cord injuries cause spinal shock and bladder atony. For this reason, acute management involves adequate bladder emptying with catheterization. Catheterization is essential to protect renal function during the spinal shock phase. Similarly, long-term management also focuses on protecting renal function. However, long-term management should also aim to optimize bladder capacity and pressure, achieve continence, and prevent complications. Several medical and surgical management options are safe and effective for treating neurogenic bladder. Improving the quality of life and considering patient preferences are essential components to treating neurogenic bladder in children.

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Publisher
Springer
Year of Publication
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24.

Urinary trehalase activitiy in contrast-associated acute kidney injury.
Kovanci B., Dogan H., Olgun A., Kural A., Yigit Y., Neijman S.T.
Embase
European review for medical and pharmacological sciences. 27(4) (pp 1298-1304), 2023. Date of Publication: 01 Feb 2023.
[Article]
AN: 640509792

OBJECTIVE: Contrast-associated acute kidney injury (CA-AKI) is the third most common cause of hospital-acquired AKI. Sensitive biomarkers can detect kidney injury early on because kidney damage begins immediately after the administration of a contrast medium. Due to its proximal tubule specificity, urinary trehalase can be a useful and early marker for detecting tubular damage. This study aimed to reveal the power of urinary trehalase activity in diagnosing CA-AKI.
PATIENTS AND METHODS: This is a prospective, observational, and diagnostic validity study. The study was performed in an academic research hospital's emergency department. Patients aged 18 years and over who underwent contrast-enhanced computed tomography in the emergency department were included in the study. Urinary trehalase activities were measured before and 12, 24, and 48 hours after the administration of a contrast medium. The primary outcome was the occurrence of CA-AKI, while the secondary outcomes were risk factors for CA-AKI, duration of hospital stay after contrast use, and the mortality rate in the hospital.
RESULT(S): A statistically significant difference between the CA-AKI group and the non-AKI group was found in the activities measured 12 hours after the administration of the contrast medium. Notably, the mean age of the patient group with CA-AKI was considerably higher than that of the non-AKI group. The risk of mortality was found to be remarkably more elevated in patients with CA-AKI. Further, there was a positive correlation between trehalase activity and HbA1c. In addition, a crucial correlation was found between trehalase activity and poor glycemic control.
CONCLUSION(S): Urinary trehalase activity can be useful as a marker of acute kidney injuries due to proximal tubule damage. In the diagnosis of CA-AKI, especially the activity of trehalase in the 12th hour might be useful.
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36876669 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36876669]
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Publisher
NLM (Medline)
Year of Publication
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25.

Acute Kidney Injury Among Children Likely Associated with Diethylene Glycol-Contaminated Medications - The Gambia, June-September 2022.
Bastani P., Jammeh A., Lamar F., Malenfant J.H., Adewuyi P., Cavanaugh A.M., Calloway K., Crisp C., Fofana N., Hallett T.C., Jallow A., Muoneke U., Nyassi M., Thomas J., Troeschel A., Yard E., Yeh M., Bittaye M.
Embase
MMWR. Morbidity and mortality weekly report. 72(9) (pp 217-222), 2023. Date of Publication: 03 Mar 2023.
[Article]
AN: 640485319
On July 26, 2022, a pediatric nephrologist alerted The Gambia's Ministry of Health (MoH) to a cluster of cases of acute kidney injury (AKI) among young children at the country's sole teaching hospital, and on August 23, 2022, MoH requested assistance from CDC. CDC epidemiologists arrived in The Gambia, a West African country, on September 16 to assist MoH in characterizing the illness, describing the epidemiology, and identifying potential causal factors and their sources. Investigators reviewed medical records and interviewed caregivers to characterize patients' symptoms and identify exposures. The preliminary investigation suggested that various contaminated syrup-based children's medications contributed to the AKI outbreak. During the

investigation, MoH recalled implicated medications from a single international manufacturer. Continued efforts to strengthen pharmaceutical quality control and event-based public health surveillance are needed to help prevent future medication-related outbreaks.
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26.

Outcomes of acute kidney injury in critically ill children who need renal replacement therapy.
Pokrajac D., Hadzimuratovic A., Kalkan I., Hadzimuratovic E., Misanovic V., Anic D., Mustajbegovic-Pripoljac A.
Embase
Medicinski Glasnik. 20(1) (pp 63-70), 2023. Date of Publication: February 2023.
[Article]
AN: 2020634934
Aim To determine an outcome of acute kidney injury (AKI) in critically ill children (CIC) who needed renal replacement therapy (RRT) and were admitted to the Paediatric and Neonatal Intensive Care Unit (PICU and NICU) at the Paediatric Clinic, University Clinical Centre Sarajevo (UCCS). Methods The research included 81 children with AKI. The Kidney Disease: Improving Global Outcomes (KDIGO) criteria to define AKI was used. Other laboratory findings and imaging tests were made depending on children's primary disease that led to the AKI. Results Among 81 children with AKI, 38 were girls and 43 boys. A total of 39 (48.1%) patients died; the death was due to the nature of the primary disease and multiple organ failure syndromes. Out of the total of 81 patients the highest mortality rate was found in children in the first year of life, 22 (56.4%), while 17 (43.6%) patients died after the first year of life. Conclusion Without an accurate diagnosis at the right time, due to the lack of adequate biomarkers for AKI screening, the heterogeneity of AKI, comorbidities often lead to unfavourable outcomes of the disease, among CIC, especially in infants with low birth weight and extreme immaturity. Some causes of AKI are preventable and can be reduced by a better organization of primary and secondary health care.

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27.

Sustained Low Efficiency Dialysis in Critically Ill Children With Acute Kidney Injury: Single-Center Observational Cohort in a Resource-Limited Setting.
Shiri S., Naik N.M., Av L., Vasudevan A.
Embase
Pediatric Critical Care Medicine. 24(3) (pp E121-E127), 2023. Date of Publication: 01 Mar 2023.
[Article]
AN: 2023161574
OBJECTIVES: To evaluate use of sustained low efficiency dialysis (SLED) in critically ill children with acute kidney injury in a resource-limited setting. DESIGN: Observational database cohort study (December 2016 to January 2020). SETTING: PICU of a tertiary hospital in India. PATIENTS: Critically ill children undergoing SLED were included in the study. INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: Demographic and clinical data, prescription variables, hemodynamic status, complications, kidney, and patient outcomes of all children undergoing SLED in the PICU were analyzed. A total of 33 children received 103 sessions of SLED. The median (interquartile range, IQR) age and weight of children who received SLED were 9 years (4.5-12.8 yr) and 26 kg (15.2-34 kg), respectively. The most common diagnosis was sepsis with septic shock in 17 patients, and the mean (+/-sd) Pediatric Risk of Mortality III score at admission was 11.8 (+/-6.4). The median (IQR) number and mean (+/-sd) duration of inotropes per session were 3 hours (2-4 hr) and 96 (+/-82) hours, respectively. Of 103 sessions, the most common indication for SLED was oligoanuria with fluid overload and the need for creating space for fluid and nutritional support in 45 sessions (44%). The mean (+/-sd) duration of SLED was 6.4 (+/-1.3) hours with 72 of 103 sessions requiring priming. The mean (+/-sd) ultrafiltration rate per session achieved was 4.6 (+/-3) mL/kg/hr. There was significant decrease in urea and creatinine by end of SLED compared with the start, with mean change in urea and serum creatinine being 32.36 mg/dL (95% CI, 18.53-46.18 mg/dL) ($p < 0.001$) and 0.70 mg/dL (95% CI, 0.35-1.06 mg/dL) ($p < 0.001$), respectively. Complications were observed in 44 of 103 sessions, most common being intradialytic hypotension (21/103) and bleeding at the catheter site (21/103). Despite complications in one third of the sessions, only nine sessions were prematurely stopped, and 23 of 33 patients receiving SLED survived.
Conclusion(s): In critically ill children, our experience with SLED is that it is feasible and provides a viable form of kidney replacement therapy in a resource-limited setting.

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36508240 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36508240]
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28.

Approach to acute kidney injury following paediatric kidney transplant.
Atlas-Lazar A., Levy-Erez D.
Embase

Current Opinion in Pediatrics. 35(2) (pp 268-274), 2023. Date of Publication: 01 Apr 2023.
[Review]
AN: 2023138678
Purpose of review In a child with evidence of acute kidney injury (AKI) following renal transplantation, it is important to quickly and accurately diagnose the cause to enable timely initiation of therapeutic interventions. The following article will discuss the differential diagnosis of acute graft dysfunction in paediatric kidney transplant recipients. This review will systematically guide the clinician through the common and less common causes and provide updates on current treatments.Recent findingsIn patients with signs of graft dysfunction, rejection is an important cause to consider. Diagnosis of rejection relies on biopsy findings, an invasive and costly technique. Over the past 5 years, there has been a focus on noninvasive methods of diagnosing rejection, including serum and urinary biomarkers.SummaryThis review discusses the differential diagnosis of acute graft dysfunction following transplant, with a focus on acute rejection, urinary tract infections and common viral causes, prerenal and postrenal causes, nephrotoxic medications, specifically calcineurin inhibitor toxicity, thrombotic microangiopathy and recurrence of the underlying disease. Each condition is discussed in detail, with a focus on clinical clues to the cause, incidence in the paediatric population, workup and treatment.

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36591982 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36591982]
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Publisher
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29.

Long-term outcomes of acute kidney injury in children.
Schuermans A., Van Den Eynde J., Mekahli D., Vlasselaers D.
Embase
Current Opinion in Pediatrics. 35(2) (pp 259-267), 2023. Date of Publication: 01 Apr 2023.
[Review]
AN: 2023138677
Purpose of review Acute kidney injury (AKI) affects up to 35% of all critically ill children and is associated with substantial short-term morbidity and mortality. However, the link between paediatric AKI and long-term adverse outcomes remains incompletely understood. This review highlights the most recent clinical data supporting the role of paediatric AKI as a risk factor for long-term kidney and cardiovascular consequences. In addition, it stresses the need for long-term surveillance of paediatric AKI survivors.Recent findingsRecent large-scale studies have led to an increasing understanding that paediatric AKI is a significant risk factor for adverse outcomes such as hypertension, cardiovascular disease and chronic kidney disease (CKD) over time. These long-term sequelae of paediatric AKI are most often observed in vulnerable populations, such as critically ill children, paediatric cardiac surgery patients, children who suffer from severe infections and paediatric cancer patients.SummaryA growing body of research has shown that paediatric AKI is associated with long-term adverse outcomes such as CKD, hypertension and cardiovascular disease. Although therapeutic pathways tailored to individual paediatric AKI

patients are yet to be validated, we provide a framework to guide monitoring and prevention in children at the highest risk for developing long-term kidney dysfunction.

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36377251 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36377251]
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Publisher
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30.

Biomarkers for acute kidney injury in children - where are we now?.
Sandokji I., Greenberg J.H.
Embase
Current Opinion in Pediatrics. 35(2) (pp 245-250), 2023. Date of Publication: 01 Apr 2023.
[Review]
AN: 2023138675
Purpose of review Review the literature over the last 2 years on commonly evaluated biomarkers of acute kidney injury (AKI) and highlight the findings of these biomarkers.Recent findingsAmong several studied AKI biomarkers, urine neutrophil gelatinase-associated lipocalin (NGAL) and the combination of urine tissue inhibitor of metalloproteinases-2 (TIMP-2) and insulin-like growth factor binding protein 7 (IGFBP7) have been recently studied most frequently as diagnostic biomarkers of AKI and for AKI risk stratification. Urine NGAL has continued to show good discriminative value to predict and diagnose AKI in childhood. Urine TIMP-2*IGFBP7 can provide modest improvement to clinical models of AKI.SummaryPrior research supports that AKI biomarkers may identify AKI at an earlier time point and indicate clinically meaningful tubular injury. More effort should be made to understand if AKI biomarkers can guide treatments and improve outcomes.

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36601976 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36601976]
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Publisher
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Year of Publication
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31.

Acute kidney injury after arterial switch operation: incidence, risk factors, clinical impact-a retrospective single-center study.
Puzanov A., Tkachuk V., Maksymenko A.
Embase
Renal Failure. 45(1) (no pagination), 2023. Article Number: 2167661. Date of Publication: 2023.
[Article]
AN: 2021235115
Background: This retrospective study aimed to determine the incidence, risk factors, and outcomes of acute kidney injury (AKI) in neonates following the arterial switch operation (ASO) for transposition of great arteries (TGA).
Method(s): Retrospective review of medical data of children who underwent ASO in 2019-2020 in the Ukrainian Children's Cardiac Center.
Result(s): 76 consecutive neonatal patients were included, 48 developed AKI after ASO (51.7%), and 24-had severe AKI (25.8%). Severe AKI development was associated with longer cross-clamp time: 82 (61-127) versus 73.5 (53-136) in the non-severe AKI group (p = 0.02). 76 min of cross-clamp time were defined as a threshold value for increased severe AKI risk, OR 4.4 (95% CI: 1.5-13, p = 0.01). Higher lactate levels during cardiopulmonary bypass (CPB) increased severe AKI development risk, OR 1.5 (95% CI: 1.0 - 2.0, p = 0.03). Children with severe AKI had prolonged mechanical ventilation, longer time to negative fluid balance, and higher postoperative day 3 (POD3) Inotropic Score (IS). Only one patient required peritoneal dialysis.
Conclusion(s): In our study, 51.7% of patients developed AKI after ASO, 25.8%-severe AKI. Prolonged cross-clamp time and higher lactate levels during cardiopulmonary bypass increased the risk for severe AKI development. The development of AKI was associated with prolonged mechanical ventilation, longer time to negative fluid balance, higher POD 3 Inotropic Score.

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Publisher
Taylor and Francis Ltd.
Year of Publication
2023

32.

Effect of a standardized fluid management algorithm on acute kidney injury and mortality in pediatric patients on extracorporeal support.
SooHoo M.M., Shah A., Mayen A., Williams M.H., Hyslop R., Buckvold S., Basu R.K., Kim J.S., Brinton J.T., Gist K.M.
Embase
European Journal of Pediatrics. 182(2) (pp 581-590), 2023. Date of Publication: February 2023.

[Article]
AN: 2020133108
Acute kidney injury (AKI), fluid overload (FO), and mortality are common in pediatric patients supported by extracorporeal membrane oxygenation (ECMO). The aim of this study is to evaluate if using a fluid management algorithm reduced AKI and mortality in children supported by ECMO. We performed a retrospective study of pediatric patients aged birth to 25 years requiring ECMO at a quaternary level children's hospital from 2007 to 2019 In October 2017, a fluid management algorithm was implemented for protocolized fluid removal after deriving a daily fluid goal using a combination of diuretics and ultrafiltration. Daily algorithm compliance was defined as >= 12 h on the algorithm each day. The primary and secondary outcomes were AKI and mortality, respectively, and were assessed in the entire cohort and the sub-analysis of children from the era in which the algorithm was implemented. Two hundred and ninety-nine (median age 5.3 months; IQR: 0.2, 62.3; 45% male) children required ECMO (venoarterial in 85%). The fluid algorithm was applied in 74 patients. The overall AKI rate during ECMO was 38% (26% severe-stage 2/3). Both AKI incidence and mortality were significantly lower in patients managed on the algorithm (p = 0.02 and p = 0.05). After adjusting for confounders, utilization of the algorithm was associated with lower odds of AKI (aOR: 0.40, 95%CI: 0.21, 0.76; p = 0.005) but was not associated with a reduction in mortality. In the sub-analysis, algorithm compliance of 80-100% was associated with a 54% reduction in mortality (ref: < 60% compliant; aOR:0.46, 95%CI:0.22-1.00; p = 0.05). Conclusion(s): Among the entire cohort, the use of a fluid management algorithm reduced the odds of AKI. Better compliance on the algorithm was associated with lower mortality. Multicenter studies that implement systematic fluid removal may represent an opportunity for improving ECMO-related outcomes.What is Known:* Acute kidney injury and fluid overload are associated with morbidity and mortality in children supported by extracorporeal membrane oxygenation.What is New:* A systematic and protocolized approach to fluid removal in children supported by extracorporeal membrane oxygenation reduces acute kidney injury incidence.* Greater adherence to a protocolized fluid removal algorithm is associated with a reduction in mortality.

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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
2023

33.

Traumatic blunt urethral injuries in females: A retrospective study of the National Trauma Data Bank.
Song E., Shah A., Culhane J., Siddiqui S.
Embase
Canadian Urological Association Journal. 17(5) (no pagination), 2023. Date of Publication: May 2023.
[Article]
AN: 2023038031
Introduction: Female blunt urethral injury (FBUI) is much less common than in males. Due to this rarity, studies of FBUI are largely confined to smaller case series. This study analyzes circumstances associated with FBUI and its contribution to mortality in greater detail.
Method(s): Using the National Trauma Data Bank, we analyzed predictors of FBUI, and tested FBUI as a predictor of mortality. Univariate analysis used Chi-squared for categorical data and T-test for continuous data. Multivariate analysis used multiple logistic regression.
Result(s): A total of 245 (0.021%) of 1 185 904 female blunt trauma patients sustained FBUI, vs. 2242 (0.145%) for males (p<0.001). Eighty-seven FBUIs (0.097%) occurred under age 16 vs. 153 (0.016%) in older patients (p<0.001). FBUI was more common with motorcycle (n=14, 0.203%), bicycle (n=11, 0.110%), and automobile vs. pedestrian accidents (n=47, 0.146%) than falls (n=72, 0.011%) or automobile accidents (n=61, 0.029%) (p<0.001). FBUI occurred in 114 (0.011%) patients with Injury Severity Score (ISS) <15 vs. 131 (0.091%) with ISS >15 (p<0.001). Slightly more than half (56.7%) of FBUI occurred with pelvic fractures. Age (odds ratio [OR] 0.95, p<0.001), injury severity (OR 1.05, p<0.001), auto vs. pedestrian (OR 4.1, p<0.001), motorcycle crashes (OR 6.9, p<0.001), and bicycle crashes (OR 3.9, p<0.001) independently predicted FBUI. A total of 9.4% of FBUI patients died vs. 2.5% without FBUI (p<0.001). The association of FBUI with death was not significant on multivariate analysis.
Conclusion(s): FBUI is more prevalent in young patients with high-force direct trauma. FBUI is not an independent predictor of mortality, suggesting that it is a marker of severe injury rather than a direct cause of death.

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Publisher
Canadian Urological Association
Year of Publication
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34.

Pregnancy-Related Acute Kidney Injury: Do We Know What to Do?.
Shah S., Verma P.
Embase
Nephron. 147(1) (pp 35-38), 2023. Date of Publication: 01 Feb 2023.
[Review]
AN: 2019514991
Pregnancy-related AKI is a global health problem and is associated with a higher risk of both maternal and fetal morbidity and mortality. Risk factors for developing AKI during pregnancy include older age, history of preeclampsia, and comorbidities like diabetes. Hyperemesis

gravidarum is a common cause of AKI during the first trimester, and conditions such as preeclampsia, acute fatty liver disease of pregnancy, thrombotic thrombocytopenic purpura, hemolytic uremic syndrome, and placental abruption are important causes of AKI later in the pregnancy. Diagnosis of pregnancy-related AKI is challenging due to the lack of standard criteria and overlap of clinical manifestations among different etiologies. Timely diagnosis of pregnancy-related AKI is instrumental. Specific treatment includes steroids and immunosuppressive therapy for glomerulonephritis, prompt delivery for severe preeclampsia and acute fatty liver of pregnancy, plasmapheresis for thrombotic thrombocytopenic purpura, and eculizumab for the atypical hemolytic uremic syndrome. Due to the high complexity, management of pregnancy-related AKI should be performed by a multidisciplinary team consisting of a nephrologist, obstetrician, and neonatologist.

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Publisher
S. Karger AG
Year of Publication
2023

35.

Arterial spin labeling and diffusion-weighted MR imaging: quantitative assessment of renal pathological injury in chronic kidney disease.
Pi S., Li Y., Lin C., Li G., Wen H., Peng H., Wang J.
Embase
Abdominal Radiology. 48(3) (pp 999-1010), 2023. Date of Publication: March 2023.
[Article]
AN: 2020948266
Purpose: The aim of the study was to investigate the performance of arterial spin labeling (ASL), diffusion-weighted imaging (DWI), and clinical biomarkers in assessing renal pathological injury in CKD.
Material(s) and Method(s): Forty-five biopsy-proven CKD patients and 17 healthy volunteers underwent DWI and ASL examinations. Renal cortical blood flow (RBF) and apparent diffusion coefficient (ADC) values were acquired. Correlations between RBF, ADC, serum creatinine (SCr), estimated glomerular filtration rate (eGFR), and pathological scores were assessed. The diagnostic efficacy of SCr, eGFR, RBF, and ADC in assessing renal pathological injury was assessed by ROC curve analysis.
Result(s): The cortical RBF, ADC, SCr, and eGFR were significantly correlated with the renal histology score (all $p < 0.01$). The AUC values of SCr, eGFR, RBF, and ADC were 0.705 (95% confidence interval (CI): 0.536-0.827), 0.718 (0.552-0.839), 0.823 (0.658-0.916), and 0.624 (0.451-0.786), respectively, in discriminating the minimal-mild renal pathological injury group (N = 30) from the control group (N = 17). The diagnostic ability of ASL was significantly higher than that of DWI ($p = 0.049$) and slightly but not significantly higher than that of eGFR and SCr ($p = 0.151$ and $p = 0.129$, respectively). When compared with that of eGFR, the sensitivity of ASL in

detecting early renal injury increased from 50 to 70% (p = 0.014). However, in differentiating between the minimal-mild and moderate-severe renal injury groups (N = 15), there was no significant difference in diagnostic ability among the four parameters (all p > 0.05).
Conclusion(s): ASL is practicable for noninvasive evaluation of renal pathology, especially for predicting early renal pathological injury in CKD patients. Graphical abstract: [Figure not available: see fulltext.]

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36598569 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36598569]
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Publisher
Springer
Year of Publication
2023

36.

Clinical characteristics and prognosis of pregnancy-related acute kidney injury: a case series study.
Lu W., Hu M.-J., Zhu D.-D., Lin F.-J., Huang H.-D.
Embase
International Urology and Nephrology. (no pagination), 2023. Date of Publication: 2023.
[Article]
AN: 2021894448
Objective: Acute kidney injury (AKI) seriously affects the health of both pregnant women and fetuses. This study aimed to investigate the clinical characteristics and prognosis of pregnancy-related AKI (PR-AKI).
Method(s): This case series study enrolled pregnant women with PR-AKI admitted to the surgical intensive care unit of Xinhua Hospital affiliated to Shanghai Jiaotong University School of Medicine between January 2010 and December 2020.
Result(s): Thirty-one PR-AKI patients were enrolled with a mean age of 29.16 +/- 4.97 years. Seventeen pregnant women (54.84%) had complete recovery of renal function, 5 (16.13%) had partial recovery of renal function, 2 (6.45%) patients had no renal function improvement, and 7 (22.58%) died. Among the 31 patients with 35 fetuses, 25 (80.6%) pregnant women had poor fetal outcomes, including 5 cases of stillbirths, 5 neonatal asphyxia, 18 premature births, 10 low birth weight, and 8 deficient birth weight infants. Compared to cases with good fetal outcomes, cases with poor fetal outcomes had significantly shorter gestational weeks (39.26 +/- 1.53 vs. 31.62 +/- 5.50, P = 0.002), lower platelet count (217.13 +/- 122.87 vs. 90.24 +/- 84.88, P = 0.005), lower hemoglobin (94.19 +/- 13.21 vs. 74.48 +/- 20.78, P = 0.036), higher blood urea nitrogen (11.87 +/- 4.28 vs. 19.47 +/- 10.98, P = 0.013), and higher uric acid (262.41 +/- 167.00 vs. 586.87 +/- 144.52, P < 0.001).
Conclusion(s): The maternal renal function of women with PR-AKI might improve after treatment, but occurrence rates of adverse fetal outcomes were still high.

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36853447 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36853447]
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Springer Science and Business Media B.V.
Year of Publication
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37.

Eine retrospektive Analyse von Risikofaktoren und Auswirkungen einer akuten Nierenschadigung bei schwerkranken Kindern, A Retrospective Analysis of Risk Factors and Impact of Acute Kidney Injury in Critically Ill Children.
Celegen K., Celegen M.
Embase
Klinische Padiatrie. (no pagination), 2023. Date of Publication: 27 Feb 2023.
[Article]
AN: 640433344
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36848938 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36848938]
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Publisher
NLM (Medline)
Year of Publication
2023

38.

Intravenous Fluid Bolus Volume and Resolution of Acute Kidney Injury in Children With Diabetic Ketoacidosis.
Bergmann K.R., Boes M., Velden H.V., Abuzzahab M.J., Watson D.
Embase
Pediatric Emergency Care. 39(2) (pp 67-73), 2023. Date of Publication: 01 Feb 2023.
[Article]
AN: 2022499805

Objectives To describe trends in creatinine and acute kidney injury (AKI) in children who present with diabetic ketoacidosis (DKA) and receive low versus high intravenous (IV) fluid bolus volumes. Further, to determine whether resolution of AKI is hastened by low versus high bolus volumes. Methods We conducted an observational retrospective cohort study between January 2012 and March 2020 among children <=21 years presenting with DKA. Acute kidney injury was defined by the Kidney Disease/Improving Global Outcomes creatinine criteria, using the Schwartz estimating equation to calculate an expected baseline creatinine. Bolus volume was categorized as low (<15 mL/kg) or high (>=15 mL/kg). Generalized additive mixed models were used to model trends of creatinine ratios. Estimated mean creatinine ratios and differences by bolus volumes were assessed at the time of bolus, and 12, 24, 36, 48 hours. Cox proportional hazard models were used to estimate the association between resolution of AKI and bolus volume after adjustment for confounders. Results We identified 708 eligible encounters with DKA, of which 169 (23.9%) had AKI at presentation and 10 (1.4%) developed AKI after hospitalization. Comparing patients who received low versus high bolus volumes, the proportion of encounters with AKI on presentation was similar (P = 0.364) as was the mean difference in creatinine ratios over time. In adjusted analysis, treatment with high IV fluid bolus volume was only associated with a 6.2% faster resolution of AKI (hazard ratio, 1.062; 95% confidence interval, 0.61-1.87). Conclusions Intravenous fluid bolus volume was not associated with resolution of AKI in our cohort of children with DKA.

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36719386 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36719386]
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Publisher
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Year of Publication
2023

39.

Machine Learning-Based Prediction of Acute Kidney Injury following Pediatric Cardiac Surgery: Model Development and Validation Study.

Luo X.-Q., Kang Y.-X., Duan S.-B., Yan P., Song G.-B., Zhang N.-Y., Yang S.-K., Li J.-X., Zhang H.

Embase
Journal of Medical Internet Research. 25 (no pagination), 2023. Article Number: e41142. Date of Publication: 2023.
[Article]
AN: 2022723920

Background: Cardiac surgery-associated acute kidney injury (CSA-AKI) is a major complication following pediatric cardiac surgery, which is associated with increased morbidity and mortality. The early prediction of CSA-AKI before and immediately after surgery could significantly improve the implementation of preventive and therapeutic strategies during the perioperative periods.

However, there is limited clinical information on how to identify pediatric patients at high risk of CSA-AKI.
Objective(s): The study aims to develop and validate machine learning models to predict the development of CSA-AKI in the pediatric population.
Method(s): This retrospective cohort study enrolled patients aged 1 month to 18 years who underwent cardiac surgery with cardiopulmonary bypass at 3 medical centers of Central South University in China. CSA-AKI was defined according to the 2012 Kidney Disease: Improving Global Outcomes criteria. Feature selection was applied separately to 2 data sets: the preoperative data set and the combined preoperative and intraoperative data set. Multiple machine learning algorithms were tested, including K-nearest neighbor, naive Bayes, support vector machines, random forest, extreme gradient boosting (XGBoost), and neural networks. The best performing model was identified in cross-validation by using the area under the receiver operating characteristic curve (AUROC). Model interpretations were generated using the Shapley additive explanations (SHAP) method.
Result(s): A total of 3278 patients from one of the centers were used for model derivation, while 585 patients from another 2 centers served as the external validation cohort. CSA-AKI occurred in 564 (17.2%) patients in the derivation cohort and 51 (8.7%) patients in the external validation cohort. Among the considered machine learning models, the XGBoost models achieved the best predictive performance in cross-validation. The AUROC of the XGBoost model using only the preoperative variables was 0.890 (95% CI 0.876-0.906) in the derivation cohort and 0.857 (95% CI 0.800-0.903) in the external validation cohort. When the intraoperative variables were included, the AUROC increased to 0.912 (95% CI 0.899-0.924) and 0.889 (95% CI 0.844-0.920) in the 2 cohorts, respectively. The SHAP method revealed that baseline serum creatinine level, perfusion time, body length, operation time, and intraoperative blood loss were the top 5 predictors of CSA-AKI.
Conclusion(s): The interpretable XGBoost models provide practical tools for the early prediction of CSA-AKI, which are valuable for risk stratification and perioperative management of pediatric patients undergoing cardiac surgery.

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40.

Impact of the Magnitude and Timing of Fluid Overload on Outcomes in Critically Ill Children: A Report From the Multicenter International Assessment of Worldwide Acute Kidney Injury, Renal Angina, and Epidemiology (AWARE) Study.
Selewski D.T., Gist K.M., Basu R.K., Goldstein S.L., Zappitelli M., Soranno D.E., Mammen C., Sutherland S.M., Askenazi D.J., Ricci Z., Akcan-Arikan A., Gorga S.M., Gillespie S.E., Woroniecki R.
Embase
Critical care medicine. (no pagination), 2023. Date of Publication: 17 Feb 2023.
[Article]
AN: 640400163
OBJECTIVES: With the recognition that fluid overload (FO) has a detrimental impact on critically ill children, the critical care nephrology community has focused on identifying clinically meaningful targets for intervention. The current study aims to evaluate the epidemiology and outcomes associated with FO in an international multicenter cohort of critically ill children. The current study also aims to evaluate the association of FO at predetermined clinically relevant thresholds and time points (FO >= 5% and FO >= 10% at the end of ICU days 1 and 2) with outcomes. DESIGN: Prospective cohort study. SETTING: Multicenter, international collaborative of 32 pediatric ICUs. PATIENTS: A total of 5,079 children and young adults admitted consecutively to pediatric ICUs as part of the Assessment of the Worldwide Acute Kidney Injury, Renal Angina and Epidemiology Study.None. MEASUREMENTS AND MAIN RESULTS: The FO thresholds at the time points of interest occurred commonly in the cohort (FO >= 5%Day1 in 38.1% [n = 1753], FO >= 10%Day1 in 11.7% [n = 537], FO >= 5%Day2 in 53.3% [n = 1,539], FO >= 10%Day2 in 25.1% [n = 724]). On Day1, multivariable modeling demonstrated that FO >= 5% was associated with fewer ICU-free days, and FO >= 10% was associated with higher mortality and fewer ICU and ventilator-free days. On multivariable modeling, FO-peak, Day2 FO >= 5%, and Day2 FO >= 10% were associated with higher mortality and fewer ICU and ventilator-free days.
CONCLUSION(S): This study found that mild-to-moderate FO as early as at the end of ICU Day1 is associated with adverse outcomes. The current study fills an important void in the literature by identifying critical combinations of FO timing and quantity associated with adverse outcomes (FO >= 5%Day1, FO >=10%Day1, FO >= 5%Day2, and FO >= 10%Day2). Those novel findings will help guide the development of interventional strategies and trials targeting the treatment and prevention of clinically relevant FO.

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41.

Usefulness of urinary calprotectin as a novel marker differentiating functional from structural acute kidney injury in the critical care setting.
John J.S., Deepthi R.V., Rebekah G., Prabhu S.B., Ajitkumar P., Mathew G., Agarwal I.
Embase
Journal of Nephrology. (no pagination), 2023. Date of Publication: 2023.
[Article]
AN: 2021700152
Background: Biomarkers are fundamental tools for differentiating between types of acute kidney injury (AKI) and may thus be crucial in management and prognosis. We report on a recently described biomarker, calprotectin, that appears to be a promising candidate in differentiating hypovolemic/functional AKI from intrinsic/structural AKI, whose acknowledgement may play a role in improving outcomes. We aimed to study the efficacy of urinary calprotectin in differentiating these two forms of AKI. The effect of fluid administration on the subsequent clinical course of AKI, its severity and the outcomes were also studied. Methodology: Children who presented with conditions predisposing to AKI or with diagnosis of AKI were included. Urine samples for calprotectin analysis were collected and stored at - 20 C for analysis at the end of the study. Fluids were administered as per clinical conditions, followed by intravenous furosemide 1 mg/kg, and patients were observed closely for at least 72 h. Children with serum creatinine normalization and clinical improvement were classified as with functional AKI, while those with no response were classified as with structural AKI. Urine calprotectin levels between these two groups were compared. Statistical analysis was performed with SPSS 21.0 software.
Result(s): Of the 56 children enrolled, 26 were classified as with functional AKI and 30 as with structural AKI. Stage 3 AKI was observed in 48.2% of patients and stage 2 AKI in 33.8%. Mean urine output, creatinine and stage of AKI improved with fluid and furosemide or furosemide alone (OR 6.08, 95% CI 1.65-27.23) ($p < 0.01$). A positive response to fluid challenge was in favor of functional AKI (OR 6.08, 95% CI 1.65-27.23) ($p = 0.008$). Presence of edema, sepsis and need for dialysis were hallmarks of structural AKI ($p < 0.05$). Urine calprotectin/creatinine values were 6 times higher in structural AKI compared to functional AKI. Urine calprotectin/creatinine ratio showed the best sensitivity (63.3%) and specificity (80.7%) at a cut-off value of 1 mcg/mL in differentiating the two types of AKI.
Conclusion(s): Urinary calprotectin is a promising biomarker that may help differentiating structural from functional AKI in children. Graphical Abstract: [Figure not available: see fulltext.]

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Publisher
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42.

Acute Kidney Injury in Pediatric Patients with COVID-19; Clinical Features and Outcome.
Mirzaee M., Jamee M., Mohkam M., Gorji F.A., Khalili M., Tabatabaei S.R., Karimi A., Armin S., Ghanaie R.M., Fahimzad S.A., Pournasiri Z., Tabatabaei S.M.T.H., Dalirani R., Esfandiar N., Alibeik M.
Embase
Iranian Journal of Kidney Diseases. 17(1) (pp 20-27), 2023. Date of Publication: January 2023.
[Article]
AN: 2022627555
Introduction. Renal disorders have been reported as the underlying cause as well as complications of critical COVID-19 in pediatric patients. The purpose of this study was to investigate the pattern of kidney involvement, particularly acute kidney injury (AKI), among pediatric patients with COVID-19. Methods. In this prospective study, hospitalized pediatric patients with a clinical diagnosis of COVID-19 were enrolled. Demographic, clinical, and laboratory findings were collected and analyzed using a mixed method of qualitative and quantitative approaches and descriptive statistics. Results. One hundred and eighty-seven patients, including 120 (64.2%) males and 67 (35.8%) females with COVID-19 with a median age (interquartile range) of 60 (24 to 114) months were enrolled in this study. Most patients (n = 108, 58.1%) had one or two underlying comorbidities, mainly malnutrition (77.4%), neurologic/learning disorders (21.4%), and malignancy (10.2%). According to the Kidney Disease Improving Global Outcomes (KDIGO) classification, AKI was detected in 38.5% of patients (stage 1: 55.6%, stage 2: 36.1%, and stage 3: 8.3%) at presentation or during hospitalization. Nine patients (4.8%) required hemodialysis and 16 (8.6%) eventually died. There was no significant association between AKI and admission to the pediatric intensive care unit (PICU) (P >.05), a multisystem inflammatory syndrome in children (MIS-C) (P >.05), comorbidities (P >.05), and mortality rate (P >.05). Conclusion. Kidneys are among the major organs affected by COVID-19. Although kidney abnormalities resolve in the majority of pediatric COVID-19 infections, particular attention should be paid to serum creatinine and electrolyte levels in patients affected by COVID-19, particularly children with a history of malnutrition and kidney disorders.

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43.

Corrigendum to "A novel 3-phenylglutaric acid derivative (84-B10) alleviates cisplatin-induced acute kidney injury by inhibiting mitochondrial oxidative stress-mediated ferroptosis" [Free Radic. Biol. Med. 194 (2023) 84-98, (S0891584922009923), (10.1016/j.freeradbiomed.2022.11.029)].
Fan J., Xu X., Li Y., Zhang L., Miao M., Niu Y., Zhang Y., Zhang A., Jia Z., Wu M.
Embase
Free Radical Biology and Medicine. 199 (pp 1), 2023. Date of Publication: April 2023.
[Erratum]
AN: 2022827864
The authors regret to ask the change of the primary affiliated institution of Aihua Zhang. The authors had mistakenly listed Nanjing Key Laboratory of Pediatrics, Children's Hospital of Nanjing Medical University, 72 Guangzhou Road, Nanjing 210008, China as the primary affiliated institution of corresponding author Aihua Zhang. In fact, the primary affiliated institution of Aihua Zhang is School of Medicine, Southeast University, No. 87 Ding Jia Qiao Road, Nanjing 210009, China. The authors would like to apologise for any inconvenience caused.

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44.

Urine acute kidney injury biomarkers in extremely low gestational age neonates: a nested case control study of 21 candidate urine biomarkers.
Askenazi D.J., Halloran B.A., Heagerty P.J., Schmicker R.H., Juul S.E., Hingorani S., Goldstein S.L.
Embase
Pediatric Nephrology. 38(4) (pp 1329-1342), 2023. Date of Publication: April 2023.
[Article]
AN: 2018385649
Background: Acute kidney injury (AKI) is common and is associated with poor clinical outcomes in premature neonates. Urine biomarkers hold the promise to improve our understanding and care of patients with kidney disease. Because kidney maturation and gender can impact urine biomarker values in extremely low gestational age neonates (ELGANs), careful control of gestational age (GA) and time is critical to any urine biomarker studies in neonates.
Method(s): To improve our understanding of the potential use of urine biomarkers to detect AKI during the first postnatal weeks, we performed a nested case-control study to evaluate 21 candidate urine AKI biomarkers. Cases include 20 ELGANs with severe AKI. Each case was matched with 2 controls for the same GA week (rounded down to the nearest week), gender, and birth weight (BW) (+/- 50 g).
Result(s): Urine cystatin C, creatinine, ghrelin, fibroblast growth factor-23 (FGF23), tissue metalloproteinase 2 (TIMP2) and vascular endothelial growth factor A (VEGFa) concentrations were higher in ELGANs with early severe AKI compared to matched control subjects without AKI. Urine epidermal growth factor (EGF) and uromodulin (UMOD) concentrations are lower in cases than controls. Interleukin (IL)-15 was lower on day 1, but higher on day 8 in cases than controls; while VEGFa was lower on day 1, but higher on day 5 in cases than controls.
Conclusion(s): Urine biomarkers hold the promise to improve our ability to reliably detect kidney injury. Interventional studies are needed to determine the biomarkers' ability to predict outcomes, enhance AKI phenotypes, and improve timely interventions which can prevent the sequalae of AKI in ELGANs. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information [Figure not available: see fulltext.].

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45.

Urinary levels of kidney injury molecule-1 (KIM-1) and interleukin-18 (IL-18) in children and adolescents with hyperuricemia.
Kamianowska M., Kamianowska A., Wasilewska A.
Embase
Advances in Medical Sciences. 68(1) (pp 79-85), 2023. Date of Publication: March 2023.
[Article]
AN: 2022650842
Purpose: Hyperuricemia may lead to silent tissue damage and increase the risk of some diseases, including kidney diseases. Increased serum uric acid concentration induces inflammatory pathways and promotes kidney damage. This study aimed to determine whether hyperuricemia influences the levels of urinary kidney injury markers in children and adolescents with hyperuricemia, assessed by the urinary concentrations of interleukin-18, a biomarker of inflammation, and kidney injury molecule-1 (KIM-1), a biomarker of kidney injury.
Material(s) and Method(s): The study included 73 children and adolescents (32 males and 41 females) aged 2-18 years. They were divided into two groups: hyperuricemia (HU) group (n = 48) and normouricemia - reference group (R) (n = 25). The concentrations of urinary interleukin-18 and KIM-1 were measured using an ELISA kit and were normalized for urinary creatinine (cr.) concentration.
Result(s): The median interleukin-18/cr. Levels in the HU group were significantly higher than in the R group (median, Q1-Q3) 21.83 (11.32-35.96) and 12.68 (7.11-24.04), respectively, ($p < 0.05$). The KIM-1/cr. in the HU group and the R group were (median, Q1-Q3) 0.79 (0.45-1.03) and 0.81 (0.59-1.01), respectively, and the difference was not significant. KIM-1/cr. did not differ between the groups. Interleukin-18/cr. ratio correlated positively with serum uric acid concentration ($r = 0.24$, $p < 0.05$).
Conclusion(s): Interleukin-18/cr., but not KIM-1/cr. was higher in children with hyperuricemia. Hyperuricemia results in increased IL-18 in urine, in absence of other markers of kidney injury, suggesting inflammation in the kidney. Additional studies on the adults should be done, to confirm this hypothesis.

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46.

Cardiac surgery-associated acute kidney injury in newborns: A meta-analysis.
Suieubekov B., Sepbayeva A., Yeshmanova A., Kusainov A.
Embase
Electronic Journal of General Medicine. 20(2) (no pagination), 2023. Article Number: em448.
Date of Publication: April 2023.
[Review]

AN: 2020633875
Introduction: Acute kidney injury is a common complication following pediatric heart surgery, and it has been linked to an increased risk of morbidity and fatality.
Method(s): The PubMed and Medline databases were combed for relevant research until May 2022. The terms [Cardiac surgery] AND [acute renal injury] AND [newborns OR children OR neonates] AND [randomized control studies OR randomized control trials] were used as search criteria. The studies that met the inclusion criteria were considered qualified using the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines.
Result(s): A total of 2,941 newborns or children were enrolled in 14 studies, with 931 developing acute renal damage. 2,095 of the enrolled infants and children received steroid, aminophylline, dexmedetomidine, and acetaminophen therapies. In seven studies, the odds ratio for steroids was not significantly different from control. In contrast, two studies comparing aminophylline to a control group found no statistically significant change. Two studies found no significant difference in dexmedetomidine therapy compared to control. Three trials, however, found a significant difference between the acetaminophen treatment and control groups.
Conclusion(s): Acetaminophen was linked to a decreased risk of postoperative acute renal injury, while steroids had no benefit and aminophylline treatment could be justified.

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47.

Renal oximetry for early acute kidney injury detection in neonates with hypoxic ischemic encephalopathy receiving therapeutic hypothermia.
Rumpel J.A., Spray B.J., Frymoyer A., Rogers S., Cho S.-H., Ranabothu S., Blaszak R., Courtney S.E., Chock V.Y.
Embase
Pediatric Nephrology. (no pagination), 2023. Date of Publication: 2023.
[Article]
AN: 2021622112
Background: Neonates with hypoxic ischemic encephalopathy (HIE) receiving therapeutic hypothermia are at high risk of acute kidney injury (AKI).
Method(s): We performed a two-site prospective observational study from 2018 to 2019 to evaluate the utility of renal near-infrared spectroscopy (NIRS) in detecting AKI in 38 neonates with HIE receiving therapeutic hypothermia. AKI was defined by a delayed rate of serum creatinine decline (< 33% on day 3 of life, < 40% on day 5, and < 46% on day 7). Renal saturation (Rsat) and systemic oxygen saturation (SpO2) were continuously measured for the first 96 h of life (HOL). Renal fractional tissue oxygen extraction (RFTOE) was calculated as (SpO2 -

Rsat)/(SpO2). Using renal NIRS, urine biomarkers, and perinatal factors, logistic regression was performed to develop a model that predicted AKI.
Result(s): AKI occurred in 20 of 38 neonates (53%). During the first 96 HOL, Rsat was higher, and RFTOE was lower in the AKI group vs. the no AKI group (P < 0.001). Rsat > 70% had a fair predictive performance for AKI at 48-84 HOL (AUC 0.71-0.79). RFTOE <= 25 had a good predictive performance for AKI at 42-66 HOL (AUC 0.8-0.83). The final statistical model with the best fit to predict AKI (AUC = 0.88) included RFTOE at 48 HOL (P = 0.012) and pH of the infants' first postnatal blood gas (P = 0.025).
Conclusion(s): Lower RFTOE on renal NIRS and pH on infant first blood gas may be early predictors for AKI in neonates with HIE receiving therapeutic hypothermia. Graphical abstract: [Figure not available: see fulltext.].

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48.

Identification of resident progenitors labeled with Top2a responsible for proximal tubular regeneration in ischemia reperfusion-induced acute kidney injury.
Xie Y., Lu W., Xu S., Wang X., Zhou W., Zhang Y., Ding X., Zhao S.
Embase
Cellular Signalling. 101 (no pagination), 2023. Article Number: 110506. Date of Publication: January 2023.
[Article]
AN: 2020943332
Background: Acute kidney injury is a common fatal disease with complex etiology and limited treatment methods. Proximal tubules (PTs) are the most vulnerable segment. Not only in injured kidneys but also in normal kidneys, shedding of PTs often happens. However, the source cells and mechanism of their regeneration remain unclear.
Method(s): ScRNA and snRNA sequencing data of acute injured or normal kidney were downloaded from GEO database to identify the candidate biomarker of progenitor of proximal tubules. SLICE algorithm and CytoTRACE analyses were employed to evaluate the stemness of progenitors. Then the repairing trajectory was constructed through pseudotime analyses. SCENIC algorithm was used to detect cell-type-specific regulon. With spatial transcriptome data,

the location of progenitors was simulated. Neonatal/ adult/ aged mice and preconditioning AKI mice model and deconvolution of 2 RNA-seq data were employed for validation.
Result(s): Through cluster identification, PT cluster expressed Top2a specifically was identified to increase significantly during AKI. With relatively strong stemness, the Top2a-labeled PT cluster tended to be the origin of the repairing trajectory. Moreover, the cluster was regulated by Pbx3-based regulon and possessed great segmental heterogeneity. Changes of Top2a between neonatal and aged mice and among AKI models validated the progenitor role of Top2a-labeled cluster.
Conclusion(s): Our study provided transcriptomic evidence that resident proximal tubular progenitors labeled with Top2a participated in regeneration. Considering the segmental heterogeneity, we find that there is a group of reserve progenitor cells in each tubular segment. When AKI occurs, the reserve progenitors of each tubular segment proliferate and replenish first, and PT-progenitors, a cluster with no obvious PT markers replenish each subpopulation of the reserve cells.

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49.

Premature infants born <28 weeks with acute kidney injury have increased bronchopulmonary dysplasia rates.
Starr M.C., Schmicker R.H., Halloran B.A., Heagerty P., Brophy P., Goldstein S.L., Juul S.E., Hingorani S., Askenazi D.J.
Embase
Pediatric Research. (no pagination), 2023. Date of Publication: 2023.
[Article]
AN: 2021400451
Background: Despite a growing understanding of bronchopulmonary dysplasia (BPD) and advances in management, BPD rates remain stable. There is mounting evidence that BPD may be due to a systemic insult, such as acute kidney injury (AKI). Our hypothesis was that severe AKI would be associated with BPD.
Method(s): We conducted a secondary analysis of premature infants [24-27 weeks gestation] in the Recombinant Erythropoietin for Protection of Infant Renal Disease cohort (N = 885). We evaluated the composite outcome of Grade 2/3 BPD or death using generalized estimating equations. In an exploratory analysis, urinary biomarkers of angiogenesis (ANG1, ANG2, EPO, PIGF, TIE2, FGF, and VEGFA/D) were analyzed.
Result(s): 594 (67.1%) of infants had the primary composite outcome of Grade 2/3 BPD or death. Infants with AKI (aOR: 1.69, 95% CI: 1.16-2.46) and severe AKI (aOR: 2.05, 95% CI: 1.19-3.54). had increased risk of the composite outcome after multivariable adjustment Among 106 infants

with urinary biomarkers assessed, three biomarkers (VEGFA, VEGFD, and TIE2) had AUC > 0.60 to predict BPD.
Conclusion(s): Infants with AKI had a higher likelihood of developing BPD/death, with the strongest relationship seen in those with more severe AKI. Three urinary biomarkers of angiogenesis may have potential to predict BPD development. Impact: AKI is associated with lung disease in extremely premature infants, and urinary biomarkers may predict this relationship.Infants with AKI and severe AKI have higher odds of BPD or death. Three urinary angiogenesis biomarkers are altered in infants that develop BPD.These findings have the potential to drive future work to better understand the mechanistic pathways of BPD, setting the framework for future interventions to decrease BPD rates.A better understanding of the mechanisms of BPD development and the role of AKI would have clinical care, cost, and quality of life implications given the long-term effects of BPD.

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50.

Risk factors for severe acute kidney injury after pediatric hematopoietic cell transplantation.
Bauer A., Carlin K., Schwartz S.M., Srikanthan M., Thakar M., Burroughs L.M., Smith J., Hingorani S., Menon S.
Embase
Pediatric Nephrology. 38(4) (pp 1365-1372), 2023. Date of Publication: April 2023.
[Article]
AN: 2019167474
Background: Acute kidney injury (AKI) is common after hematopoietic cell transplantation (HCT) and is associated with poorer outcomes. Risk factors for AKI after pediatric HCT are not fully understood. The study objective was to assess unique risk factors for AKI in the HCT population and evaluate post-HCT AKI patterns.
Method(s): We conducted a retrospective cohort study of patients < 21 years of age who underwent HCT at Seattle Children's Hospital/Fred Hutchinson Cancer Center from September

2008 to July 2017 (n = 484). We defined AKI using KDIGO criteria. We collected demographics, baseline HCT characteristics, post-HCT complications, and mortality. Multinomial logistic regression was used to estimate association between AKI and potential risk factors. We used adjusted Cox proportional hazard ratios to evaluate differences in mortality.
Result(s): One hundred and eighty-six patients (38%) developed AKI. Seventy-nine (42%) had severe AKI and 27 (15%) required kidney replacement therapy. Fluid overload was common in all groups and 67% of those with severe AKI had > 10% fluid overload. Nephrology was consulted in less than 50% of those with severe AKI. In multivariable analysis, risk of severe AKI was lower in those taking a calcineurin inhibitor (CNI). Risk of death was higher in severe AKI compared to no AKI (RR 4.6, 95% CI 2.6-8.1).
Conclusion(s): AKI and fluid overload are common in pediatric patients after HCT. Severe AKI occurred less often with CNI use and was associated with higher mortality. Future interventions to reduce AKI and its associated complications such as fluid overload are approaches to reducing morbidity and mortality after HCT. Graphical abstract: [Figure not available: see fulltext.].

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51.

Synergistic association of fluid overload and acute kidney injury on outcomes in pediatric cardiac ECMO: a retrospective analysis of the KIDMO database.
Pettit K.A., Selewski D.T., Askenazi D.J., Basu R.K., Bridges B.C., Cooper D.S., Fleming G.M., Gien J., Gorga S.M., Jetton J.G., King E.C., Steflik H.J., Paden M.L., Sahay R.D., Zappitelli M., Gist K.M.
Embase
Pediatric Nephrology. 38(4) (pp 1343-1353), 2023. Date of Publication: April 2023.
[Article]
AN: 2018480847

Background: Acute kidney injury (AKI) and fluid overload (FO) are associated with poor outcomes in children receiving extracorporeal membrane oxygenation (ECMO). Our objective is to evaluate the impact of AKI and FO on pediatric patients receiving ECMO for cardiac pathology.
Method(s): We performed a secondary analysis of the six-center Kidney Interventions During Extracorporeal Membrane Oxygenation (KIDMO) database, including only children who underwent ECMO for cardiac pathology. AKI was defined using Kidney Disease: Improving Global Outcomes (KDIGO) creatinine criteria. FO was defined as < 10% (FO-) vs. >= 10% (FO +) and was evaluated at ECMO initiation, peak during ECMO, and ECMO discontinuation. Primary outcomes were mortality and length of stay (LOS).
Result(s): Data from 191 patients were included. Non-survivors (56%) were more likely to be FO + than survivors at peak ECMO fluid status and ECMO discontinuation. There was a significant interaction between AKI and FO. In the presence of AKI, the adjusted odds of mortality for FO + was 4.79 times greater than FO- (95% CI: 1.52-15.12, p = 0.01). In the presence of FO + , the adjusted odds of mortality for AKI + was 2.7 times higher than AKI- [95%CI: 1.10-6.60; p = 0.03]. Peak FO + was associated with a 55% adjusted relative increase in LOS [95%CI: 1.07-2.26, p = 0.02].
Conclusion(s): The association of peak FO + with mortality is present only in the presence of AKI +. Similarly, AKI + is associated with mortality only in the presence of peak FO +. FO + was associated with LOS. Studies targeting fluid management have the potential to improve LOS and mortality outcomes. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information. [Figure not available: see fulltext.].

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52.

Concurrent acute kidney injury and pancreatitis in a female patient: Answers.
Patel D.B., Farris A.C., Hanna C., Hashim F.
Embase
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53.

Nephrotoxin Exposure and Acute Kidney Injury in Adults.
Griffin B.R., Wendt L., Vaughan-Sarrazin M., Hounkponou H., Reisinger H.S., Goldstein S.L., Jalal D., Misurac J.
Embase
Clinical journal of the American Society of Nephrology : CJASN. 18(2) (pp 163-172), 2023. Date of Publication: 01 Feb 2023.
[Article]
AN: 640285261
BACKGROUND: Rates of nephrotoxic AKI are not well described in adults due to lack of a clear definition, debate over which drugs should be considered nephrotoxins, and illness-related confounding. Nephrotoxic Injury Negated by Just-in Time Action (NINJA), a program that reduces rates of nephrotoxic AKI in pediatric populations, may be able to address these concerns, but whether NINJA can be effectively applied to adults remains unclear.
METHOD(S): In this retrospective cohort study conducted at the University of Iowa Hospital, we included adult patients admitted to a general hospital floor for >=48 hours during 2019. The NINJA algorithm screened charts for high nephrotoxin exposure and AKI. After propensity score matching, Cox proportional hazard modeling was used to evaluate the relationship between

nephrotoxic exposure and all-stage AKI, stage 2-3 AKI, or death. Additional analyses evaluated the most frequent nephrotoxins used in this population.
RESULT(S): Of 11,311 patients, 1527 (16%) had >=1 day of high nephrotoxin exposure. Patients with nephrotoxic exposures subsequently developed AKI in 29% of cases, and 22% of all inpatient AKI events met nephrotoxic AKI criteria. Common nephrotoxins were vancomycin, iodinated contrast dye, piperacillin-tazobactam, acyclovir, and lisinopril. After propensity score matching, Cox proportional hazard models for high nephrotoxin exposure were significantly associated with all AKI (hazard ratio [HR] 1.43, 1.19-1.72, P<0.001), stage 2-3 AKI (HR 1.78, 1.18-2.67, P=0.006), and mortality (HR 2.12, 1.09-4.11, P=0.03).
CONCLUSION(S): Nephrotoxin exposure in adults is common and is significantly associated with AKI development, including stage 2-3 AKI.

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54.

Acute kidney injury following multisystem inflammatory syndrome associated with SARS-CoV-2 infection in children: a systematic review and meta-analysis.
Tripathi A.K., Pilania R.K., Bhatt G.C., Atlani M., Kumar A., Malik S.
Embase
Pediatric Nephrology. 38(2) (pp 357-370), 2023. Date of Publication: February 2023.
[Review]
AN: 2018480844
Introduction: Multisystem inflammatory syndrome (MIS-C) is a rare paediatric hyper-inflammatory disorder that occurs following SARS-CoV-2 infection. Acute kidney injury (AKI) occurs in approximately one-quarter to one-third of the patients with MIS-C and is associated with poor prognosis in critically ill children. This systematic review is aimed to evaluate the incidence of AKI, mortality, and the need for kidney replacement therapy (KRT) in patients with MIS-C.
Method(s): We searched databases from Medline, EMBASE, Cochrane Register, and Google Scholar from December 2019 to December 2021 with our search strategy. Studies meeting the following criteria were included in this systematic review: (1) articles on AKI in MIS-C; (2) studies providing AKI in MIS-C and COVID-19 infection separately; (3) studies reporting outcomes such as mortality, KRT, serum creatinine; length of hospital/ICU stay. Quality assessment: The quality of the included studies was independently assessed by using the National Heart Lung and Blood Institute (NHLBI) quality assessment tool for cohort studies and case series. Statistical analysis:

Outcomes and their 95% confidence intervals (CI) were reported if a meta-analysis of these outcomes was conducted. Heterogeneity was reported using I2 statistics, and heterogeneity >= 50% was considered high. We used Baujat's plot for the contribution of each study toward overall heterogeneity. In sensitivity analysis, the summary estimates were assessed by repeating meta-analysis after omitting one study at a time. Forest plots were used for reporting outcomes in each study and with their 95% CI. All statistical tests were performed using R software version 4.0.3.
Result(s): A total of 24 studies were included in this systematic review and of these, 11 were included in the meta-analysis. The pooled proportion of patients with MIS-C developing AKI was 20% (95% CI: 14-28%, I2 = 80%). Pooled proportion of death in children with MIS-C was 4% (95% CI: 1-14%; I2 = 93%). The odds of death in patients with AKI were 4.68 times higher than in patients without AKI (95% CI: 1.06-20.7%; I2 = 17%). The overall pooled proportion of MIS-C-induced AKI patients requiring KRT was 15% (95% CI: 4-42%; I2 = 91%).
Conclusion(s): Approximately one-fifth of children with MIS-C develop AKI which is associated with higher odds of death. PROSPERO registration: CRD42022306170 Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information[Figure not available: see fulltext.].

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55.

Incidence of Acute Kidney Injury in Hospitalized Children: A Meta-analysis.
Meena J., Mathew G., Kumar J., Chanchlani R.
Embase
Pediatrics. 151(2) (no pagination), 2023. Date of Publication: 01 Feb 2023.
[Article]
AN: 640038792
BACKGROUND AND OBJECTIVES: There is limited literature on the incidence of acute kidney injury (AKI) and associated mortality in hospitalized children. To systematically assess the worldwide incidence of AKI in hospitalized children to inform policymakers regarding appropriate health resource allocation.
METHOD(S): Three different databases were searched (PubMed, Embase, Web of Sciences) from March 2012 to January 2022 without language or geographical restrictions. We included cohort and cross-sectional studies that reported AKI incidence in hospitalized children. Eligible studies had at least 100 participants and used the standard Kidney Disease Improving Global

Outcomes criteria to define AKI. Two authors extracted data on the study and patients' characteristics and outcomes (incidence and AKI-associated mortality) and performed the risk of bias assessment. We used a random-effects meta-analysis to generate pooled estimates. RESULT(S): We included 94 studies (202694 participants) from 26 countries. The incidence of any AKI was 26% (95% confidence interval: 22-29), and that of moderate-severe AKI was 14% (11-16). The incidence of AKI was similar in high-income 27% (23-32), low-middle-income 25% (13-38), and low-income 24% (12-39) countries. Overall, AKI-associated mortality was observed in 11% (9-13) of the pediatric population. AKI-associated mortality rate was highest at 18% (11-25) and 22% (9-38) in low-income and low-middle-income countries, respectively. CONCLUSION(S): AKI was observed in one-quarter of the hospitalized children and is associated with increased mortality risk. Low-income and low-middle-income countries had observed higher mortality rates compared with high-income countries despite a similar AKI burden.

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56.

Relationship between piperacillin concentrations, clinical factors and piperacillin/tazobactam-associated acute kidney injury.
Tang Girdwood S., Hasson D., Caldwell J.T., Slagle C., Dong S., Fei L., Tang P., Vinks A.A., Kaplan J., Goldstein S.L.
Embase
The Journal of antimicrobial chemotherapy. 78(2) (pp 478-487), 2023. Date of Publication: 01 Feb 2023.
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AN: 639841739
BACKGROUND: Piperacillin/tazobactam, a commonly used antibiotic, is associated with acute kidney injury (AKI). The relationship between piperacillin concentrations and AKI remains unknown.
OBJECTIVE(S): Estimate piperacillin exposures in critically ill children and young adults administered piperacillin/tazobactam to identify concentrations and clinical factors associated with piperacillin-associated AKI.
PATIENTS AND METHODS: We assessed piperacillin pharmacokinetics in 107 patients admitted to the paediatric ICU who received at least one dose of piperacillin/tazobactam. Piperacillin AUC, highest peak (Cmax) and highest trough (Cmin) in the first 24 hours of therapy were estimated. Piperacillin-associated AKI was defined as Kidney Disease: Improving Global Outcomes (KDIGO) Stage 2/3 AKI present >24 hours after initial piperacillin/tazobactam dose. Likelihood of piperacillin-associated AKI was rated using the Naranjo Adverse Drug Reaction Probability Scale.

Multivariable logistic regression was performed to identify patient and clinical predictors of piperacillin-associated AKI.
RESULT(S): Out of 107 patients, 16 (15%) were rated as possibly or probably having piperacillin-associated AKI. Estimated AUC and highest Cmin in the first 24 hours were higher in patients with piperacillin-associated AKI (2042 versus 1445 mg*h/L, P = 0.03; 50.1 versus 10.7 mg/L, P < 0.001). Logistic regression showed predictors of piperacillin-associated AKI included higher Cmin (OR: 5.4, 95% CI: 1.7-23) and age (OR: 1.13, 95% CI: 1.05-1.25).
CONCLUSION(S): We show a relationship between estimated piperacillin AUC and highest Cmin in the first 24 hours of piperacillin/tazobactam therapy and piperacillin-associated AKI, suggesting total piperacillin exposure early in the course is associated with AKI development. These data could serve as the foundation for implementation of model-informed precision dosing to reduce AKI incidence in patients given piperacillin/tazobactam.

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57.

Delayed renal injury in survivors of hematologic acute radiation syndrome.
Gasperetti T., Frei A., Prasad Sharma G., Pierce L., Veley D., Szalewski N., Munjal Mehta S., Fish B.L., Pleimes D., Himburg H.A.
Embase
International Journal of Radiation Biology. (no pagination), 2023. Date of Publication: 2023.

[Article]
AN: 2021255459
Purpose: A mass casualty disaster involving radiological or nuclear agents continues to be a public health concern which requires consideration of both acute and late tissue toxicities in exposed victims. With the advent of advanced treatment options for the mitigation of hematological injuries, there are likely to be survivors of total body irradiation (TBI) exposures as high as 8-10 Gy. These survivors are at risk for a range of delayed multi-organ morbidities including progressive renal failure.
Material(s) and Method(s): Here, we established the WAG/RijCmcr rat as an effective model for the evaluation of medical countermeasures (MCM) for acute hematologic radiation syndrome (H-ARS). The LD50/30 dose for adult and pediatric WAG/RijCmcr rats was determined for both sexes. We then confirmed the FDA-approved MCM pegfilgrastim (peg-GCSF, Neulasta) mitigates H-ARS in adult male and female rats. Finally, we evaluated survival and renal dysfunction up to 300 d post-TBI in male and female adult rats.
Result(s): In the WAG/RijCmcr rat model, 87.5% and 100% of adult rats succumb to lethal hematopoietic acute radiation syndrome (H-ARS) at TBI doses of 8 and 8.5 Gy, respectively. A single dose of the hematopoietic growth factor peg-GCSF administered at 24 h post-TBI improved survival during H-ARS. Peg-GCSF treatment improved 30 d survival from 12.5% to 83% at 8 Gy and from 0% to 63% at 8.5 Gy. We then followed survivors of H-ARS through day 300. Rats exposed to TBI doses greater than 8 Gy had a 26% reduction in survival over days 30-300 compared to rats exposed to 7.75 Gy TBI. Concurrent with the reduction in long-term survival, a dose-dependent impairment of renal function as assessed by blood urea nitrogen (BUN) and urine protein to urine creatinine ratio (UP:UC) was observed.
Conclusion(s): Together, these data show survivors of H-ARS are at risk for the development of delayed renal toxicity and emphasize the need for the development of medical countermeasures for delayed renal injury.

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58.

Incidence, predictors, and short-term outcomes of acute kidney injury in children with diabetic ketoacidosis: a systematic review.
Meena J., Yadav J., Kumar J., Dawman L., Tiewosh K., Mittal A., Kumar R., Dayal D.
Embase
Pediatric Nephrology. (no pagination), 2023. Date of Publication: 2023.
[Review]
AN: 2021278035
Background: One-third of children with type 1 diabetes mellitus manifest with diabetic ketoacidosis (DKA). Most children presenting with DKA are in a volume-depleted state, leading to

acute kidney injury (AKI). Besides volume depletion, hyperglycemia can induce tubular injury and kidney inflammation. Therefore, a thorough knowledge of incidence of AKI, risk factors, and outcomes in pediatric DKA is desirable to improve its management and outcomes.
Objective(s): To synthesize currently available evidence on the incidence, risk factors, and outcomes of AKI in children with DKA. Data sources: We searched three electronic databases (EMBASE, PubMed, and Web of Science) from inception to September 2022 for original studies reporting AKI in children with DKA. Search strategies for the individual databases were drafted using free text words and MeSH incorporating "acute kidney injury" and "diabetic ketoacidosis." Study eligibility criteria: Cohort and cross-sectional studies reporting AKI in children with type 1 DM and DKA were included. Participants and interventions: Children (aged less than 18 years) with type 1 DM and DKA. Study appraisal and synthesis methods: The critical appraisal tool of NHLBI for cohort studies was used to assess the quality of the studies. We estimated the pooled incidence of AKI with 95% CI in children with DKA using a random effects model. The primary outcome was the pooled incidence of AKI during the DKA episodes.
Result(s): Twenty-one studies assessing 4087 children (4500 DKA episodes) reported AKI during DKA episodes. The pooled incidence of any stage of AKI during the DKA episode was 47% (95% CI: 40 to 55). Severe AKI was observed in 28% (21 to 35) of DKA episodes; however, only 4% (1 to 11%) of children with AKI received dialysis. Low serum bicarbonate, low corrected sodium, higher blood sugar, and high blood urea nitrogen at presentation have been reported to be associated with the development of AKI.
Conclusion(s): AKI developed in almost half of the DKA episodes, and every fourth DKA episode was associated with severe AKI. The recovery rate from DKA-associated AKI appears to be high; however, further studies are needed to assess the exact impact of AKI on long-term outcomes.
Registration: PROSPERO (CRD42022303200). Graphical abstract: [Figure not available: see fulltext.].

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59.

Clinical predictors of acute kidney injury in children with acute post-streptococcal glomerulonephritis: a tertiary centre experience.
Wan Yusof W.A., Yaacob N.M., Nasir A., Yusoff S., Ilias M.I.
Embase
Singapore medical journal. (no pagination), 2023. Date of Publication: 06 Jan 2023.
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60.

RNA sequencing and bioinformatics analysis of circular RNAs in asphyxial newborns with acute kidney injury.
Pan J.-J., Yang Y., Chen X.-Q., Shi J., Wang M.-Z., Tong M.-L., Zhou X.-G.
Embase
Kaohsiung Journal of Medical Sciences. (no pagination), 2023. Date of Publication: 2023.
[Article]
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As one kind of novel noncoding RNA, circular RNAs (circRNAs) are involved in different biological processes. Although growing evidences have supported the important role of circRNAs in renal diseases, the mechanism remains unclear in neonatal acute kidney injury (AKI). High-throughput sequencing analysis was used to investigate the expression of circRNAs between hypoxia-induced AKI neonates and controls. Bioinformatics analysis was conducted to predict the function of differentially expressed circRNAs. Finally, the differentially expressed circRNAs were screened and determined by quantitative real-time PCR (qPCR). (1) A total of 296 differentially expressed circRNAs were identified (Fold change >2 and $p < 0.05$). Of them, 184 circRNAs were markedly upregulated, and 112 were significantly downregulated in the AKI group. (2) The pathway analysis showed that ubiquitin-mediated proteolysis, renal cell carcinoma, Jak-STAT, and HIF-1 signaling pathways participated in AKI. (3) Top five upregulated and five downregulated circRNAs with higher fold changes were selected for qPCR validation. Hsa_circ_0008898 (Fold Change = 5.48, $p = 0.0376$) and hsa_circ_0005519 (Fold Change = 4.65, $p = 0.0071$) were significantly upregulated, while hsa_circ_0132279 (Fold Change = -4.47, $p = 0.0008$), hsa_circ_0112327 (Fold Change = -4.26, $p = 0.0048$), and hsa_circ_0017647 (Fold Change = -4.15, $p = 0.0313$) were significantly downregulated in asphyxia-induced AKI group compared with the control group. This study could contribute to future research on neonatal AKI and facilitate the identification of novel therapeutic targets.

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61.

Success of the acute renal angina index in the early prediction of acute kidney injury in the emergency department.
Yaradilmis R.M., Ozturk B., Gungor A., Bodur I., Guneylioglu M.M., Goktug A., Tekeli A., Karacan C.D., Tuygun N.
Embase
Acta Clinica Belgica: International Journal of Clinical and Laboratory Medicine. 78(1) (pp 51-57), 2023. Date of Publication: 2023.
[Article]
AN: 2014833759
Introduction: It is mentioned that the acute renal angina index (aRAI), a new concept, can be used in emergency departments to calculate and accurately predict the risk of developing acute kidney injury (AKI). The aims of the study included: to evaluate the predictive performance of the aRAI (AKI risk classification tool) in predicting AKI in the pediatric emergency department.
Method(s): Patients who met the criteria for systemic inflammatory response syndrome were examined. AKI was defined with creatinine N1.5x baseline 24-72 hours after hospitalization. aRAI and original RAI scores were calculated for patients and were shown as renal angina positive (RA+) above a population-derived threshold. The performance of aRAI in predicting AKI compared to changes in creatinine and original RAI was evaluated.
Result(s): In total, 241 eligible subjects were enrolled. The median age of the patients was 17 months (min-max 1-192). AKI developed in 60 (24.8%) of the patients. According to the aRAI, 76 (31.5%) of 241 patients were RA(+). The aRAI had an NPV of 1.00 and an AUC of 0.948 (0.914-0.983) for the prediction of AKI. Sensitivity was 95% for the aRAI as compared to 48% for an elevation in SCr noted to be at least two times greater than the baseline while in the PED and 61% for original RAI.
Conclusion(s): The aRAI is easily computable, does not depend on complex computational or derivation methods, and is universally accessible. We confirm and extend the findings of previous study reporting the performance of RAI for early prediction of AKI.

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62.

Application of logistic regression, support vector machine and random forest on the effects of titanium dioxide nanoparticles using macroalgae in treatment of certain risk factors associated with kidney injuries.
Tu J., Hu L., Mohammed K.J., Le B.N., Chen P., Ali E., Ali H.E., Sun L.
Embase
Environmental Research. 220 (no pagination), 2023. Article Number: 115167. Date of Publication: 01 Mar 2023.
[Article]
AN: 2022192680
The use of titanium dioxide (TiO2) nanoparticles in many biological and technical domains is on the rise. There hasn't been much research on the toxicity of titanium dioxide nanoparticles in biological systems, despite their ubiquitous usage. In the current investigation, samples were exposed to various dosages of TiO2 nanoparticles for 4 days, 1 month, and 2 months following treatment. ICP-AES was used to dose TiO2 into the tissues, and the results showed that the kidney had a significant TiO2 buildup. On the other hand, apoptosis of renal tubular cells is one of the most frequent cellular processes contributing to kidney disease (KD). Nevertheless, the impact of macroalgal seaweed extract on KD remains undetermined. In this work, machine learning (ML) approaches have been applied to develop prediction algorithms for acute kidney injury (AKI) by use of titanium dioxide and macroalgae in hospitalized patients. Fifty patients with (AKI) and 50 patients (non-AKI group) have been admitted and considered. Regarding demographic data, and laboratory test data as input parameters, support vector machine (SVM), and random forest (RF) are utilized to build models of AKI prediction and compared to the predictive performance of logistic regression (LR). Due to its strong antioxidant and anti-inflammatory powers, the current research ruled out the potential of using G. oblongata red macro algae as a source for a variety of products for medicinal uses. Despite a high and fast processing of algorithms, logistic regression showed lower overfitting in comparison to SVM, and Random Forest. The dataset is subjected to algorithms, and the categorization of potential risk variables yields the best results. AKI samples showed significant organ defects than non-AKI ones. Multivariate LR indicated that lymphocyte, and myoglobin (MB) >= 1000 ng/ml were independent risk parameters for AKI samples. Also, GCS score (95% CI 1.4-8.3 P = 0.014) were the risk parameters for 60-day mortality in samples with AKI. Also, 90-day mortality in AKI patients was significantly high (P < 0.0001). In compared to the control group, there were no appreciable changes in the kidney/body weight ratio or body weight increases. Total thiol levels in kidney homogenate significantly decreased, and histopathological analysis confirmed these biochemical alterations. According to the results, oral TiO2 NP treatment may cause kidney damage in experimental samples.

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Publisher
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63.

Long-Term Consequences of Acute Kidney Injury After Pediatric Cardiac Surgery: A Systematic Review.
Van den Eynde J., Rotbi H., Schuermans A., Hassanabad A.F., Gewillig M., Budts W., Kutty S., Mekahli D.
Embase
Journal of Pediatrics. 252 (pp 83-92.e5), 2023. Date of Publication: January 2023.
[Article]
AN: 2020808294
Objective: The objective of this study was to evaluate the available data on long-term kidney dysfunction, hypertension, and mortality after cardiac surgery-associated acute kidney injury (AKI) in the pediatric population. Study design: PubMed/MEDLINE, Embase, Scopus, and reference lists of relevant articles were searched for eligible studies published from inception through March 2022. Long-term outcomes after pediatric cardiac surgery complicated by AKI and those without were investigated.
Result(s): We identified 14 studies published between 2013 and 2022 that included a total of 6701 patients (AKI: 1376 patients; no AKI: 5325 patients). These studies used different well-established classifications to define AKI. All the studies suggested that AKI after heart surgery is common in the pediatric patient population and reported a potential link between cardiac surgery-associated AKI and important clinical outcomes. However, only 4 out of 11 studies found a strong association between (absence of recovery from) cardiac surgery-associated AKI and risk of developing chronic kidney disease, and 3 out of 5 studies found a significant increase in mortality rates for pediatric patients who developed AKI after cardiac surgery. Only 1 out of 4 studies found an association between AKI and hypertension at 12 months postoperatively, but found no association at later follow-up times.
Conclusion(s): Although there is a trend, evidence on the long-term consequences of cardiac surgery-associated AKI in the pediatric population is mixed. Genetic syndromes, preexisting kidney disease, univentricular or cyanotic heart conditions, and/or high-complexity surgery may

be more important for the development of kidney dysfunction by adolescence and early adulthood. Regardless, these children may benefit from a long-term kidney follow-up.

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64.

Impact of pharmacist intervention in reducing vancomycin-associated acute kidney injury: A systematic review and meta-analysis.
Kunming P., Xiaotian J., Qing X., Chenqi X., Xiaoqiang D., Qian Zhou L.
Embase
British Journal of Clinical Pharmacology. 89(2) (pp 526-535), 2023. Date of Publication: February 2023.
[Review]
AN: 2015478659
Aims: The aim was to quantify the relationship between pharmacist intervention and vancomycin-associated acute kidney injury (AKI).
Method(s): Electronic databases were searched up to August 2020 for meta-analyses of cohort studies and/or randomized controlled trials. Studies that compared the incidence of AKI in patients between post- and prepharmacist intervention were investigated. The primary outcome was incidence of AKI. We also evaluated the influence of pharmacist intervention in risk factors of vancomycin-associated AKI.
Result(s): The search strategy retrieved 1744 studies and 34 studies with 19 298 participants were included (22 published articles and 12 abstracts from conference proceedings). Compared with the preintervention group, the postintervention group patients had a significantly lower incidence of vancomycin-associated AKI: 7.3% for post- and 9.6% for preintervention (odds ratio [OR] 0.52, 95% confidence interval [CI]; 0.41, 0.67], P <.00001). The rate of attaining target concentration was significantly higher in the post- than preintervention group (OR 2.86, 95% CI [2.23, 3.67], P <.00001). The postintervention group significantly improved the percentage of

serum creatinine laboratory tests than preintervention group (OR = 3.24, 95% CI 2.02, 5.19], P <.00001). Patients postintervention had markedly lower risk of mortality than preintervention patients (OR 0.47, 95% CI [0.31, 0.72], P =.0004).
Conclusion(s): Pharmacist intervention in vancomycin treatment significantly decreased the rate of vancomycin-associated AKI, while improving efficacy and reducing mortality. We speculate that this is because the pharmacist interventions optimized the rationality of vancomycin therapy, monitoring of vancomycin trough concentration and the monitoring of patients' renal function.

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65.

New potential for an old kid on the block: Impact of premorbid metformin use on lactate kinetics, kidney injury and mortality in sepsis and septic shock, an observational study.
Van Moorter N., Tackaert T., De Decker K., Van Vlem B., De Neve N.
Embase
Endocrinology, Diabetes and Metabolism. 6(1) (no pagination), 2023. Article Number: e382. Date of Publication: January 2023.
[Article]
AN: 2020465523
Introduction: Sepsis and septic shock cause significant mortality worldwide, with no targeted molecular therapies available. Metformin has pleomorphic effects that may be beneficial in sepsis, but at present, the impact of metformin exposure on sepsis remains controversial. Metformin might alter lactate metabolism, but little is known about its influence on lactate kinetics. We therefore investigated the impact of preadmission metformin use on lactate kinetics, acute kidney injury (AKI) and mortality in sepsis.
Material(s) and Method(s): We retrospectively analysed all ICU admissions with sepsis and septic shock between January 2013 and September 2020, identifying 77 users and 390 nonusers (subdivided in diabetics, n = 48 and nondiabetics, n = 342).
Result(s): (Sub)groups did not differ in illness severity or sepsis aetiology. Admission lactate levels were similar, but evolution in lactate over the first 24 h showed a larger decrease in users vs nonusers (median - 53% vs. -36%, p =.010). No difference in AKI or renal replacement therapy was found. Mortality was lower in users vs nonusers in case of septic shock (21.9% (n = 7) vs. 42.7% (n = 61) for 90d mortality, p =.029, OR 0.38 [95% CI: 0.15-0.93]), but showed no significant differences in the combined sepsis and septic shock population.
Conclusion(s): In our data, preadmission metformin use is associated with a significantly larger decrease in lactate after admission with sepsis or septic shock and with reduced mortality in septic shock. This underscores the need for further studies investigating the interplay between

metformin, lactate and sepsis, thereby exploring the potential use of metformin or its pathways in sepsis.

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Publisher
John Wiley and Sons Inc
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66.

The significance of central blood pressure for cardiovascular target organ damage in children and adolescents after kidney transplantation.
Greiner A.-S., von der Born J., Kohlmeier L., Grabitz C., Bauer E., Memaran N., Sugianto R.I., Kanzelmeyer N., Frode K., Schmidt B., Melk A.
Embase
Pediatric Nephrology. (no pagination), 2023. Date of Publication: 2023.
[Article]
AN: 2021034982
Background: Cardiovascular (CV) complications are important causes of morbidity and mortality in children after kidney transplantation (KTx). In adults, central blood pressure (cBP) is an accepted predictor of CV sequelae. We aimed to assess the prognostic value of cBP over peripheral blood pressure (pBP) for existing CV damage.
Method(s): We measured cBP and pBP in 48 pediatric KTx recipients (mean age: 13.5 +/- 4.2 years). Assessment of left ventricular mass index (LVMI) and aortic pulse wave velocity (PWV) allowed detection of CV target organ damage. LVMI and PWV were used as endpoints in multivariable linear regression models, in which cBP and pBP were compared for their predictive value.
Result(s): Using cBP z-scores, we identified a larger number of patients with uncontrolled or untreated hypertension compared to pBP (36% vs. 7%). Central systolic blood pressure (cSBP) was a significant independent predictor of LVMI, while peripheral systolic blood pressure (pSBP) was not. Comparing central (cDBP) and peripheral (pDBP) diastolic blood pressure for their predictive value on PWV revealed a greater estimate for cDBP (0.035 vs. 0.026 for pDBP) along with a slightly better model fit for cDBP.
Conclusion(s): Our data in a small group of patients provide first evidence that cBP measurements in pediatric KTx recipients might be helpful in identifying patients at risk for the development of CV sequelae. Investigating a larger patient number, ideally repeatedly, is needed to create further evidence supporting our findings. In light of available devices measuring cBP noninvasively, the implementation of such clinical studies post-KTx care should be feasible.
Graphical abstract: [Figure not available: see fulltext.]

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67.

The compound heterozygous mutations of c.607G>a and c.657delC in the FAH gene are associated with renal damage with hereditary tyrosinemia type 1 (HT1).
Chi H., Gan C., Jiang Y., Chen D., Qiu J., Yang Q., Chen Y., Wang M., Yang H., Jiang W., Li Q.
Embase
Molecular genetics & genomic medicine. 11(1) (pp e2090), 2023. Date of Publication: 01 Jan 2023.
[Article]
AN: 639510243
BACKGROUND: Hereditary tyrosinemia type 1 (HT1) is a rare inherited metabolic disease characterized by severe liver and renal dysfunction. Early identification in affected children is critical for improved treatment options and prognosis.
METHOD(S): In this study, we identified novel compound heterozygous mutations (NM_000137: c.657delC (p.K220Rfs*12) and c.607G>A (p.A203T)) in the fumarylacetoacetate hydrolase (FAH) gene in a family. We also characterized the clinical phenotype of the proband and verified the pathogenic effects of the mutations. Furthermore, we explored the pathogenic mechanism of renal injury through renal biopsy pathology and cell-based in vitro assays. Our study aims to verify the association between novel fumarylacetoacetate hydrolase (FAH) variants and HT1, confirm the pathogenic effects of the mutations and explore the pathogenic mechanism of renal injury.
RESULT(S): We showed these FAH mutations were inherited in an autosomal recessive manner and resulted in abnormal FAH protein expression and dysfunction, leading to fumarylacetoacetate (FAA) accumulation. The proband also showed apparent renal injury, including glomerular filtration barrier dysfunction and abnormal tubular protein reabsorption.
CONCLUSION(S): These observations may provide deeper insights on disease pathogenesis and identify potential therapeutic approaches for HT1 from a genetic perspective. Similarly, we hope to provide valuable information for genetic counseling and prenatal diagnostics.

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Publisher
NLM (Medline)
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68.

Endemic rise in cases of acute kidney injury in children in Indonesia and Gambia: what is the likely culprit and why?.
Umar T.P., Jain N., Azis H.
Embase
Kidney international. (no pagination), 2023. Date of Publication: 04 Jan 2023.
[Article]
AN: 640028460
A sudden rise in the cases of acute kidney injury (AKI) has been reported in Indonesia and Gambia that has been linked to the consumption of tainted syrup medications for cough, colds, pain, and fever. Preliminary investigations revealed multiple lapses in quality control during manufacturing including substitution of diethylene glycol (DEG) and ethylene glycol (EG) for the more expensive but non-toxic solvent glycerol. In this editorial report, we shed light upon the current situation and urge the investigating authorities to make those responsible accountable to regain public trust.

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Article-in-Press
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Publisher
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69.

Using Serum Cystatin C to Predict Acute Kidney Injury Following Infant Cardiac Surgery.

Abadeer M., Swartz M.F., Martin S.D., Groves A.M., Kent A.L., Schwartz G.J., Brophy P., Alfieris G.M., Cholette J.M.
Embase
Pediatric Cardiology. (no pagination), 2023. Date of Publication: 2023.
[Article]
AN: 2021042645
Acute kidney injury (AKI) following cardiopulmonary bypass (CPB) is associated with increased morbidity and mortality. Serum Cystatin C (CysC) is a novel biomarker synthesized by all nucleated cells that may act as an early indicator of AKI following infant CPB. Prospective observational study of infants (< 1 year) requiring CPB during cardiac surgery. CysC was measured at baseline and 12, 24, 48, and 72 h following CPB initiation. Each post-op percent difference in CysC (e.g. %CysC12h) from baseline was calculated. Clinical variables along with urine output (UOP) and serum creatinine (SCr) were followed. Subjects were divided into two groups: AKI and non-AKI based upon the Kidney Disease Improving Global Outcomes (KDIGO) classification. AKI occurred in 41.9% (18) of the 43 infants enrolled. Patient demographics and baseline CysC levels were similar between groups. CysC levels were 0.97 +/- 0.28 mg/L over the study period, and directly correlated with SCr (R = 0.71, p < 0.0001). Although absolute CysC levels were not significant between groups, the %CysC12h was significantly greater in the AKI group (AKI: - 16% +/- 22% vs. Non-AKI - 28% +/- 9% mg/L; p = 0.003). However, multivariate analysis demonstrated that a lower UOP (Odds Ratio:0.298; 95% CI 0.073, 0.850; p = 0.02) but not %CysC12h was independently associated with AKI. Despite a significant difference in the %CysC12h, only UOP was independently associated with AKI. Larger studies of a more homogenous population are needed to understand these results and to explore the variability in this biomarker seen across institutions.

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Publisher
Springer
Year of Publication
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70.

Triglyceride content of lipoprotein subclasses and kidney hemodynamic function and injury in adolescents with type 1 diabetes.
Pauley M.E., Vinovskis C., MacDonald A., Baca M., Pyle L., Wadwa R.P., Fornoni A., Nadeau K.J., Pavkov M., Nelson R.G., Gordin D., de Boer I.H., Tommerdahl K.L., Bjornstad P.
Embase
Journal of Diabetes and its Complications. 37(2) (no pagination), 2023. Article Number: 108384. Date of Publication: February 2023.
[Article]
AN: 2022102410

Aims: Elevated triglycerides (TG) are associated with development and progression of kidney disease, and TG distributions across lipoprotein subclasses predict kidney dysfunction in adults with type 1 diabetes (T1D). Little is known regarding these relationships in youth.
Method(s): In this single center study conducted from October 2018-2019, lipid constituents from lipoprotein subclasses were quantified by targeted nuclear magnetic resonance spectroscopy. Glomerular filtration rate (GFR), renal plasma flow (RPF), afferent arteriolar resistance (RA), efferent arteriolar resistance (RE), intraglomerular pressure (PGLO), urine albumin-to-creatinine ratio (UACR), and chitinase-3-like protein 1 (YKL-40), a marker of kidney tubule injury, were assessed. Cross-sectional relationships were assessed by correlation and multivariable linear regression (adjusted for age, sex, HbA1c) models.
Result(s): Fifty youth with T1D (age 16 +/- 3 years, 50 % female, HbA1c 8.7 +/- 1.3 %, T1D duration 5.7 +/- 2.6 years) were included. Very-low-density lipoprotein (VLDL)-TG concentrations correlated and associated with intraglomerular hemodynamic function markers including GFR, PGLO, UACR, as did small low-density lipoprotein (LDL)-TG and small high-density lipoprotein (HDL)-TG. YKL-40 correlated with all lipoprotein subclasses.
Conclusion(s): TG within lipoprotein subclasses, particularly VLDL, associated with PGLO, GFR, albuminuria, and YKL-40. Lipid perturbations may serve as novel targets to mitigate early kidney disease.

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71.

Renal function damage in children with duplex kidneys.
Lin Q., Ni J., Li Y., Jin J., Zhu Y.
Embase
International Urology and Nephrology. 55(1) (pp 1-8), 2023. Date of Publication: January 2023.
[Article]
AN: 2019094259
Purpose: To evaluate renal function damage in children with duplex kidneys.
Method(s): A total of 355 duplex kidneys, 110 urinary tract infection (UTI) kidneys without abnormalities, and 104 kidneys with primary unilateral vesicoureteral reflux (VUR) were reviewed. Clinical data including age at diagnosis, body weight, history of UTI, ureteroceles, ectopic ureteral opening, VUR grade, serum creatinine level, cystatin C level, renal scarring, split renal function in dimercaptosuccinic acid scans, and effective renal plasma flow (ERPF) were analyzed.
Result(s): Duplex kidneys had a higher grade of VUR and renal scarring. Split renal function in unilateral duplex kidneys (45.58 +/- 12.85%) was much lower than that in contralateral duplex kidneys (56.33 +/- 11.90%) and controls (50.00 +/- 11.38%) ($P < 0.001$ and $P = 0.014$, respectively). Both left and right split renal functions in bilateral duplex kidneys were similar to those ipsilateral to the controls ($P = 0.906$ and $P = 0.932$, respectively). However, the total ERPFs in the left, right, and bilateral duplex kidneys were significantly lower than that in the control group ($P = 0.003$, $P = 0.001$, and $P = 0.003$, respectively). The total ERPFs in the left and right unilateral duplex kidneys were similar. ERPF in unilateral duplex kidneys (106.70 +/- 48.05 mL/min/m2) was significantly lower than that in contralateral duplex kidneys (150.18 +/- 49.01 mL/min/m2) or those ipsilateral to controls (145.98 +/- 41.16 mL/min/m2) ($P < 0.001$ and $P < 0.001$, respectively).
Conclusion(s): Duplex kidneys are usually accompanied by a higher grade of VUR, more severe renal scarring, and renal function impairment. Split renal function in duplex kidneys often declines significantly. Notably, the evaluation of split renal function in bilateral duplex kidneys should be performed cautiously.

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Springer Science and Business Media B.V.
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72.

Increasing incidence of acute kidney injury in pediatric severe sepsis and related adverse hospital outcomes.

Khatana J., Thavamani A., Umapathi K.K., Sankararaman S., Roy A.
Embase
Pediatric Nephrology. (no pagination), 2023. Date of Publication: 2023.
[Article]
AN: 2021009623
Background: Pediatric severe sepsis (PSS) is associated with increased mortality, and acute kidney injury (AKI) is an independent risk factor of mortality in PSS. However, there is little data on impact of AKI on hospital outcomes in PSS.
Method(s): We analyzed non-overlapping years of the Kids' Inpatient Database (KID) and National Inpatient Sample (NIS) database between 2003 and 2019 of all pediatric patients with severe sepsis between 1 and 18 years of age. Using ICD diagnosis codes, patients were divided into two groups based on AKI status and compared for outcomes measures including in-hospital mortality and healthcare resource utilization using length of stay and inflation-adjusted hospitalization charges.
Result(s): We analyzed 192,712 hospitalizations due to PSS during the 17-year period. Prevalence of AKI was 23.6% with overall increasing trend, P<0.001. Prevalence of AKI was significantly increased in patients with diabetes mellitus, organ transplantation, HIV, urinary tract anomalies, and malnutrition, P<0.001. Mortality rate was significantly higher among patients with AKI (19.8% vs. 8.1%, P<0.001). PSS with AKI had significantly higher median length of stay (14 vs. 11 days) and total hospitalization charges ($168,106 vs. 100,906), P<0.001. Multivariate logistic regression analysis showed that AKI without kidney replacement therapy (KRT) was associated with 3.02 times increased odds of mortality (95% CI 2.99-3.17, P<0.001) and those requiring KRT had 6.4 times increased odds of mortality (95%CI 6.1-6.7, P<0.001). AKI without KRT was associated with 7.7 (95% CI 7.3-8.05) additional days of hospitalization and 154,536 (95% CI 149,500-159,572) additional US dollars in hospitalization charges.
Conclusion(s): Almost 1 in 4 hospitalizations with PSS had AKI and was associated with >3 times increased risk of mortality and need for KRT further adversely impacts mortality and healthcare utilization. Graphical abstract: [Figure not available: see fulltext.]

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73.

Sepsis associated acute kidney injury in pediatric intensive care unit.
Ozkaya P.Y., Taner S., Ersayoglu I., Turan B., Yildirim Arslan S., Karapinar B., Kaplan Bulut I.

Embase
Therapeutic Apheresis and Dialysis. 27(1) (pp 73-82), 2023. Date of Publication: February 2023.
[Article]
AN: 2019278292
Background: We aimed to compare the acute kidney injury (AKI) incidence in pediatric septic shock patients according to the three different classifications.
Method(s): We analyzed retrospectively 52 patients with severe sepsis between January 2019 and December 2019.
Result(s): While 21 patients have been diagnosed with SA-AKI according to the pRIFLE criteria, 20 children have been diagnosed according to the AKIN criteria, and 21 children have been diagnosed according to the KDIGO criteria. Older age, lower platelet count were determined as independently risk factor for SA-AKI. Older age and higher PRISM score were associated with mortality. According to Canonical correlation coefficients, pRIFLE is the most successful classification to distinguish AKI state. The canonical correlation coefficients for pRIFLE, KDIGO, and AKIN were 0.817, 0.648, and 0.615, respectively.
Conclusion(s): Although AKI incidence was similar between the three classifications, pRIFLE was the most successful classification to distinguish AKI state.

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74.

Successful application of continuous renal replacement therapy in a very low birth weight neonate with acute kidney injury.
Huang C., Lu Y., Ma X., Hu J., Yan G., Zhu G., Zhang H.
Embase
Artificial Organs. (no pagination), 2023. Date of Publication: 2023.
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75.

Risk factors, outcomes, and predictors of resolution of acute kidney injury in children with diabetic ketoacidosis.
Al Khalifah R., Al-Eyadhy A., Musibeeh N., Alshalawi A., Alanazi N., Alhboob A., Hassan G., Temsah M.-H., Alhaboob A.A.N., Raina R., Alhasan K.
Embase
Pediatric Nephrology. 38(2) (pp 573-582), 2023. Date of Publication: February 2023.
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AN: 2017013488
Background: Acute kidney injury (AKI) is a common complication in patients with diabetic ketoacidosis (DKA) (incidence 35-77%). AKI evolution during DKA treatment/recovery is poorly understood. Our aim was to assess children with DKA for prevalence, short-term kidney outcomes, severity, and predictors of AKI development and resolution.
Method(s): This retrospective cohort study included children aged 2-14 years admitted with DKA between January 2016 and May 2020 in a Saudi tertiary care hospital. We defined AKI as an increase in serum creatinine of > 1.5 times baseline or > 3 mg/dL (26 mmol/L) within 48 h.
Result(s): Of 213 patients admitted with DKA, 172 (80.75%) developed AKI: stage 1 in 83 (38.96%), stage 2 in 86 (40.37%), and stage 3 in 3 (1.4%). No patient required dialysis. Multivariate analysis showed an increased risk of developing AKI with male gender (OR = 2.85) and lower serum bicarbonate (OR = 0.83) when adjusted for initial heart rate, hematocrit, new onset diabetes, and recurrent AKI. The mean time to AKI resolution was 13.21 +/- 6.78 h. Factors leading to prolonged recovery from AKI in linear regression analysis were older age (B coefficient = 0.44, p = 0.01), recurrent DKA episodes (B coefficient = 3.70, p value 0.003), increased acidosis severity (B coefficient = - 0.44, p = 0.04), increased time to anion gap normalization (B coefficient = 0.44, p = 0.019), and increased initial glucose (B coefficient = 0.01, p = 0.011).
Conclusion(s): In our cohort, AKI is a common, but mostly transient complication in children presenting with DKA, and its severity is associated with longer intensive care stays and time for acidosis resolution. AKI was associated with male gender, and lower serum bicarbonate. Proper consideration of such risk factors is needed for AKI assessment and management in future DKA clinical practice guidelines. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information [Figure not available: see fulltext.]

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76.

Long-term Health Care Utilization and Associated Costs After Dialysis-Treated Acute Kidney Injury in Children.
Robinson C.H., Klowak J.A., Jeyakumar N., Luo B., Wald R., Garg A.X., Nash D.M., McArthur E., Greenberg J.H., Askenazi D., Mammen C., Thabane L., Goldstein S., Silver S.A., Parekh R.S., Zappitelli M., Chanchlani R.
Embase
American Journal of Kidney Diseases. 81(1) (pp 79-89.e1), 2023. Date of Publication: January 2023.
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Rationale & Objective: Acute kidney injury (AKI) is common among hospitalized children and is associated with increased hospital length of stay and costs. However, there are limited data on postdischarge health care utilization after AKI hospitalization. Our objectives were to evaluate health care utilization and physician follow-up patterns after dialysis-treated AKI in a pediatric population.
Study Design: Retrospective cohort study, using provincial health administrative databases.
Setting & Participants: All children (0-18 years) hospitalized between 1996 and 2017 in Ontario, Canada. Excluded individuals comprised non-Ontario residents; those with metabolic disorders or poisoning; and those who received dialysis or kidney transplant before admission, a kidney transplant by 104 days after discharge, or were receiving dialysis 76-104 days from dialysis start date. Exposure: Episodes of dialysis-treated AKI, identified using validated health administrative codes. AKI survivors were matched to 4 hospitalized controls without dialysis-treated AKI by age, sex, and admission year.
Outcome(s): Our primary outcome was postdischarge hospitalizations, emergency department visits, and outpatient physician visits. Secondary outcomes included outpatient visits by physician type and composite health care costs. Analytical Approach: Proportions with >=1 event and rates (per 1,000 person-years). Total and median composite health care costs. Adjusted rate ratios using negative binomial regression models.
Result(s): We included 1,688 pediatric dialysis-treated AKI survivors and 6,752 matched controls. Dialysis-treated AKI survivors had higher rehospitalization and emergency department visit rates

during the analyzed follow-up periods (0-1, 0-5, and 0-10 years postdischarge, and throughout follow-up), and higher outpatient visit rates in the 0-1-year follow-up period. The overall adjusted rate ratio for rehospitalization was 1.46 (95% CI, 1.25-1.69; P < 0.0001) and for outpatient visits was 1.16 (95% CI, 1.09-1.23; P = 0.01). Dialysis-treated AKI survivors also had higher health care costs. Nephrologist follow-up was infrequent among dialysis-treated AKI survivors (18.6% by 1 year postdischarge).
Limitation(s): Potential miscoding of study exposures or outcomes. Residual uncontrolled confounding. Data for health care costs and emergency department visits was unavailable before 2006 and 2001, respectively.
Conclusion(s): Dialysis-treated AKI survivors had greater postdischarge health care utilization and costs versus hospitalized controls. Strategies are needed to improve follow-up care for children after dialysis-treated AKI to prevent long-term complications.

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77.

A risk-stratified assessment of biomarker-based acute kidney injury phenotypes in children.
Stanski NL, Krallman KA, Chima RS, Goldstein SL
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Pediatric Research. 2022 Aug 06.
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BACKGROUND: The functional acute kidney injury (AKI) diagnostic tests serum creatinine (SCr) and urine output are imprecise and make management challenging. Combining tubular injury biomarkers with functional markers reveal AKI phenotypes that may facilitate personalized care. However, when and in whom to obtain injury biomarkers remains unclear.
METHODS: This was a prospective, observational study of patients admitted to a pediatric intensive care unit (PICU). Using the Renal Angina Index (RAI), subjects were screened for the presence (RAI+) or absence (RAI-) of renal angina 12 h post-admission and assigned an AKI phenotype using urinary NGAL (NGAL+: >=150 ng/ml) and SCr (SCr+: >=KDIGO Stage 1). Outcomes for each AKI phenotype were assessed and compared by RAI status.
RESULTS: In all, 200/247 (81%) subjects were RAI+. RAI+ subjects who were NGAL+ had higher risk of Day 3 AKI, renal replacement therapy use, and mortality and fewer ventilator- and PICU-free days, compared to NGAL-, irrespective of Day 0 SCr. Similar findings were not demonstrated in RAI- subjects, though NGAL+/SCr+ was associated with fewer ventilator- and PICU-free days compared to NGAL-/SCr+.
CONCLUSIONS: NGAL- and SCr-based AKI phenotypes provide improved prognostic information in children with renal angina (RAI+) and/or with SCr elevation. These populations may be appropriate for targeted biomarker testing.
IMPACT: New consensus recommendations encourage the integration of kidney tubular injury biomarkers such as urinary NGAL with serum creatinine for diagnosis and staging of acute kidney injury; however, no structured testing framework exists guiding when to test and in whom. Urinary NGAL- and serum creatinine-based acute kidney injury phenotypes increase diagnostic precision in critically ill children experiencing renal angina (RAI+) or serum creatinine-defined acute kidney injury. These data provide preliminary evidence for a proposed framework for directed urinary NGAL assessment in the pediatric intensive care unit.

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78.

Acute and chronic cardiovascular consequences of acute kidney injury: a systematic review and meta-analysis.
De Clercq L, Ailliet T, Schaubroeck H, Hoste EAJ
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Cardiorenal Medicine. 2022 Nov 18.
[Systematic Review]
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INTRODUCTION: We examined whether patients with acute kidney injury (AKI) have a higher risk of developing atrial fibrillation (AF), heart failure (HF), acute coronary syndrome (ACS) and major adverse cardiac events (MACE) in the short- and long-term compared to patients without AKI, and if that risk is related to the severity of AKI. Furthermore, we investigated the influence of a cardiac event following AKI on the risk of all-cause mortality, length of stay in the intensive care unit and in the hospital.
METHODS: We included English and Dutch retrospective and prospective cohort studies on adults (>=15 years) with AKI. Studies lacking epidemiological data, studies not using the consensus definitions (RIFLE, AKIN, KDIGO), animal studies and studies on children were excluded. Studies were identified using the PubMed and Embase search engines. The last search was performed on the first of August 2021. For assessment of method quality, NOS (Newcastle-Ottawa Scale) for assessing risk of bias was used for cohort studies and heterogeneity was determined by the I2-statistic. Statistical analysis was performed using the Cochrane Review Manager (RevMan 5.3). The risk ratio (RR) and 95% confidence interval (CI) were calculated using the Mantel-Haenszel test. Results were presented a summary caterpillar plot. RESULTS : We evaluated 14 studies comprising 736 210 patients. AKI was defined according to the RIFLE consensus in 1 article, to the AKIN criteria in 7 and to the KDIGO guidelines in 6. Of the 14 included studies, 4 were prospective and 10 were retrospective. In comparison to patients without AKI, we found that patients with AKI had a 94% increased risk of developing AF in the short term (RR: 1.94, 95% CI 1.35 to 2.79; P = 0.0004). In the long-term, patients with AKI stage 1 had a 59% increased risk of developing HF and a 77% risk of developing ACS. (RR: 1.59, 95% CI 1.07 to 2.34, P = 0.02 and RR: 1.77, 95% CI 1.68 to 1.88, P < 0.00001, respectively). Patients with AKI stage 2 had a 45% increased risk of ACS development (RR: 1.45, 95% CI 1.11 to 1.90, P = 0.006). AKI stage 3 was associated with a 164% increased risk of HF and a 95% increased risk of ACS development. (RR: 2.64, 95% CI 1.71 to 4.08, P < 0.00001 and RR: 1.95, 95% CI 1.35 to 2.82, P = 0.0004, respectively). Analysis of studies not subdividing AKI in groups showed a 74% increased risk of HF, a 12% increased risk of ACS and a 30% increased risk of developing MACE. (RR: 1.74, 95% CI 1.51 to 2.01, P < 0.00001, RR: 1.12, 95% CI 1.07 to 1.17, P < 0.00001 and RR: 1.30, 95% CI 1.25 to 1.35, P < 0.00001, respectively). CONCLUSIONS : Patients who developed AKI have an increased risk of developing AF at short-term follow-up and HF, ACS and MACE beyond 30 days.

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79.

Rhabdomyolysis-associated acute kidney injury in a teenager: Answers.
Jellouli M, Boussetta A, Hajji M, Falfoul Y, Kacem LH, Abderrahim E, Gargah T
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80.

Rhabdomyolysis-associated acute kidney injury in a teenager: Questions.
Jellouli M, Boussetta A, Hajji M, Falfoul Y, Kacem LH, Abderrahim E, Gargah T
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81.

Acute kidney injury during diabetic ketoacidosis increased the risk of microalbuminuria in children with type 1 diabetes mellitus.
Hayes AL, McAllister J
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82.

Diagnostic Performance of Height-Estimated Baseline Creatinine in Diagnosing Acute Kidney Injury in Children with Type 1 Diabetes Mellitus Onset.
Guarino S, Rivetti G, Di Sessa A, De Lucia M, Palma PL, Miraglia Del Giudice E, Polito C, Marzuillo P
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At type 1 diabetes mellitus (T1DM) onset, acute kidney injury (AKI) is very common. To diagnose AKI, the availability of a baseline serum creatinine (bSCr) is pivotal. However, in most hospitalized children the bSCr is unknown. We aimed to test whether the bSCr estimated on the basis of height (ebSCr) could be a reliable surrogate for AKI diagnosis compared with the measured bSCr (mbSCr). As the mbSCr, we considered the creatinine measured 14 days after T1DM onset while ebSCr (mg/dL) = (k .. height [cm])/120 mL/min/1.73 m2, where k = 0.55 for children and adolescent girls and k = 0.7 for adolescent boys. AKI was defined as serum creatinine values >1.5 times the baseline creatinine. Kappa statistics and the percentage of agreement in AKI classification by ebSCr...AKI versus mbSCr...AKI definition methods were calculated. Bland...Altman plots were used to show the agreement between the creatinine ratio (highest/baseline creatinine; HC/BC) calculated with mbSCr and ebSCr. The number of 163 patients with T1DM onset were included. On the basis of mbSCr, 66/163 (40.5%) presented AKI while, on the basis of ebSCr, 50/163 (30.7%) accomplished AKI definition. ebSCr showed good correlation with mbSCr using both the Spearman test (rho = 0.67; p < 0.001) and regression analysis (r = 0.68; p < 0.001). Moreover, at the Bland...Altman plots, the bias of the highest/baseline creatinine ratio calculated on the basis of the mbSCr compared to ebSCr was minimal (bias = ...0.08 mg/dL; 95% limits of agreement = ...0.23/0.39). AKI determined using ebSCr showed 90% agreement with AKI determined using mbSCr (kappa = 0.66; p < 0.001). Finally, we compared the area under a receiver...operating characteristic curve (AUROC) of HC/BC ratio calculated on the basis of ebSCr with AUROC of the gold standard HC/BC ratio calculated on the basis of mbSCr. As expected, the gold standard had an AUROC = 1.00 with a 95% confidence interval (CI) between 0.98 and 1.00, p < 0.001. The HC/BC ratio calculated on the basis of ebSCr also had significant AUROC (AUROC = 0.94; 95% CI: 0.90...0.97; p < 0.001). The comparison of the two ROC curves showed a p < 0.001. In conclusion, when mbSCr is unknown in patients with T1DM onset, the ebSCr calculated on the basis of height could be an alternative to orientate clinicians toward AKI diagnosis.

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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9221623
Year of Publication
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83.

Early Evidence on Genetic Polymorphisms in Conferring A "Two-Hit" Propensity to Renal Injury in Asian Indian Children.
Anand S, Bajpai M, Kumar A, Kapahtia S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Indian Association of Pediatric Surgeons. 27(6):741-746, 2022 Nov-Dec.
[Journal Article]
UI: 36714477
Background: Congenital anomalies of the kidney and urinary tract (CAKUT) are a common cause of end-stage renal disease in children. While certain nephrogenic genes have been incriminated in these malformations, data to identify the frequency of gene polymorphisms in Asian Indian

children with CAKUT are scarce. This study was done to identify the effect of polymorphisms in paired-box gene 2 (PAX2), bone morphogenetic protein (BMP)-4, angiotensin-converting enzyme (ACE), and angiotensin II receptor Type 2 (AGTR2) nephrogenic genes on the development of CAKUT.
Materials and Methods: In this prospective cohort study, 158 children <12 years old (86 cases with CAKUT and 72 age-matched controls) were analyzed. DNA from both sets was extracted from peripheral blood using the Keygen DNA extraction kit, and single-nucleotide gene polymorphisms (SNPs) in PAX2, BMP-4, ACE, and AGTR2 nephrogenic genes were detected by polymerase chain reaction (PCR) using previously published primers and PCR conditions.
Results: The presence of A allele SNP for AGTR2 gene at rs3736556 was found to be significantly correlated with the development of ureteropelvic junction obstruction and vesicoureteral reflux (VUR) with the TT allelic genotype having a lower incidence of pelviureteric junction obstruction (odds ratio [OR] 0.18 [95% confidence interval [CI], 0.06-0.55], P = 0.01) and VUR (OR 0.31 [95% CI, 0.11-0.91], P = 0.03). Furthermore, on substratification of the patients with the presence of the A allele of AGTR2, 24 out of 27 patients with scarring were found to harbor the D allele of the ACE gene, thus predisposing them to further renal damage.
Conclusion: This study points to early evidence in the implication of nephrogenic genes in development as well as predisposition to renal injury in Asian Indian patients with CAKUT.

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1
Status
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9878535
Year of Publication
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84.

Determinants of Acute Kidney Injury in Children Undergoing Cardiopulmonary Bypass: Single-Center Experience in Saudi Arabia.
Alzahrani A, Alahmadi RA, Alghamdi SK, AlQurashi RA, Al-Hindi MY
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cureus. 14(12):e32666, 2022 Dec.
[Journal Article]
UI: 36540319
Introduction Cardiopulmonary bypass (CPB) is a machine used in open cardiac surgeries and has been linked to many complications, one of which is acute kidney injury (AKI). Also, the Kidney Disease Improving Global Outcomes (KDIGO) criteria are used to diagnose AKI in the pediatric population. The study aimed to investigate the association between cardiopulmonary bypass duration and renal function impairment in pediatric patients who had cardiac surgery. Methods This was an observational, cross-sectional study conducted at the King Abdulaziz Medical City,

King Faisal Cardiac Center, the section of the Pediatric Cardiac Intensive Care Unit (PICU), Ministry of National Guard Health Affairs, from January 2016 to December 2019. Patients younger than 14 years old, those having a cardiac surgery where CPB was implemented, normal pre-operative kidney functions, and having a cardiac surgery longer than 60 minutes (min) were included. The exclusion criteria were patients known to have pre-operative renal impairment and patients with pre-operative hemodynamic instability or cardiac arrest. Demographics of pre-operative, intra-operative, and post-operative data were extracted, and Statistical Package for the Social Sciences (SPSS) version 25 (Armonk, NY: IBM Corp.) was used for analysis. For descriptive statistics, frequencies and percentages for qualitative data were examined, while mean and standard deviation (SD) or median and interquartile range (IQR) quantitative data were used accordingly. Student's t-test, Mann-Whitney (median test), chi-square, or Fisher's exact tests were used for univariate analysis accordingly. Logistic regression analysis was used to determine significant predictors for developing AKI. A p-value of <0.05 would be considered significant. Results Of the 111 patients, 87 patients were included in the analysis. The median age was six months, IQR two to 13 months, body mass index (BMI) mean of 13.8, and SD 3.6. There was similar sex distribution, male 47.1% vs. female 52.9%. There were no patients in Risk Adjustment for Congenital Heart Surgery (RACHS) who scored 5 or 6. The AKI prevalence was 31% (27/87) within three days after surgery. One patient had stage 2 AKI; the rest were mild. One patient (3.7%) died. The CPB time was significantly longer in patients who developed AKI 150 (104-202), vs. non-AKI 104 (82-142) min, p=0.004. In the AKI group, the mean baseline (pre-operative) serum creatinine (sCr) was significantly lower, whereas, it was significantly higher at 24 hours (h), and 48 h post-operation (p=0.001, 0.001, and 0.036, respectively). Additionally, the estimated Glomerular Filtration Rate (eGFR) was significantly higher in the AKI group at 24 h (p=0.007). In logistical regression analysis, CPB time (per min unit time) was a significant predictor for developing AKI, OR 1.015, p=0.011 as a measured outcome. However, only CPB time >180 min was highly significant with OR 16.2, p=00.6 compared to CPB time 121-180 min OR 2.3, p=0.29 and CPB time 91-120 min OR 1.2, p=0.84. Conclusion Acute kidney injury is an expected complication of pediatric congenital heart surgery receiving CPB. Although in our single-center experience, CPB duration was a significant predictor for AKI; however, it is considered a mild complication that does not contribute significantly to short-term morbidity or mortality. A larger multicenter, national prospective data registry is recommended to explore long-term effects.

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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9760221
Year of Publication
2022

85.

Update on Pediatric Acute Kidney Injury. [Review]
Khandelwal P, McLean N, Menon S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Clinics of North America. 69(6):1219-1238, 2022 Dec.
[Journal Article. Review]
UI: 36880931
Acute kidney injury (AKI) is common in children and is associated with significant morbidity and mortality. In the last decade our understanding of AKI has improved significantly, and it is now considered a systemic disorder that affects other organs including heart, lung, and brain. In spite of its limitations, serum creatinine remains the mainstay in the diagnosis of AKI. However, newer approaches such as urinary biomarkers, furosemide stress test, and clinical decision support are being increasingly used and have the potential to improve the accuracy and timeliness of AKI diagnosis.

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1
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Year of Publication
2022

86.

Acute kidney injury requiring renal replacement therapy due to Clostridioides difficile infection in a 15-year-old boy. Aut pse edvi s utst eiiac cby a dusede ifece Cstridiides difficie u 15eth chapce. <Aut pse edvi s utst eiiac cby a dusede ifece Cstridiides difficie u 15eth chapce.>
Papez J, Starha J, Dolezel Z, Homola L, Jabandziev P

OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Epidemiologie, Mikrobiologie, Imunologie. 71(4):208-211, 2022 Winter.
[Journal Article]
UI: 36681514
Acute gastroenteritis is commonly seen in pediatric clinical practice. It is a largely self-limited disease with a benign course. We present a case of teenager with gastroenteritis resulting in severe acute kidney injury. The decline in glomerular filtration was so significant that renal replacement therapy had to be initiated. We had to continue in intermitent hemodialysis for seven days until sufficient improvement in renal function. Clostridioides difficile was identified as a cause of vomiting, bloody diarrhea and subsequent dehydration. To our knowledge, this is the first reported case of C. difficile-associated diarrhea accompanied by acute kidney injury requiring renal replacement therapy in a child.
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1
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Authors Full Name
Papez, J, Starha, J, Dolezel, Z, Homola, L, Jabandziev, P
Year of Publication
2022

87.

Reasons for Altering Bladder Management and Satisfaction with Current Bladder Management in Chronic Spinal Cord Injury Patients.
Yeh HL, Kuo HC, Tsai CH, Lee RP
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
International Journal of Environmental Research & Public Health [Electronic Resource]. 19(24), 2022 12 18.
[Journal Article]
UI: 36554912
Patients with spinal cord injury (SCI) often require bladder management. However, patients routinely change their bladder management for better satisfaction. The reasons for altering a bladder management method in SCI patients remain insufficiently understood. The purposes of this study are to assess current satisfaction with bladder management and the reasons for changing bladder management in SCI patients. A prospective cross-sectional survey with a convenience sampling method was used. The study was conducted from January 2018 to December 2019. The inclusion criteria included an age >=18 years and a diagnosis of SCI more than one year previously. The questionnaires were self-administered and collected from eligible patients during a free clinic service. A total of 515 SCI participants were enrolled. Two hundred and eighty-three (55.0%) participants had experienced changing their bladder management. The most used method of current bladder management was self-voiding. About 84.7% of participants reported being satisfied with their current bladder management. Bladder management changes were most often made due to frequent urinary tract infections. Furthermore, the participants dissatisfied with their management had more urological complications. This study indicates that appropriate bladder management can improve the subjective satisfaction of patients. For long-term care, preventing urinary tract infections is a helpful strategy for patients' satisfaction with bladder management.
Version ID
1

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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9779055
Year of Publication
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88.

Feto-maternal outcome of pregnancy related acute kidney injury in a North Indian population.
Sachan R, Shukla S, Shyam R, Sachan PL, Patel ML
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Family and Community Medicine. 29(3):204-211, 2022 Sep-Dec.
[Journal Article]
UI: 36389031
BACKGROUND: Acute kidney injury (AKI) is a serious complication in pregnancy, resulting in significant maternal and fetal morbidity/mortality. The aim of this study was to evaluate the magnitude of pregnancy-related AKI (PRAKI) in a North Indian population, and its contributing factors.
MATERIALS AND METHODS: This prospective study was carried out at the department of obstetrics and gynecology in collaboration with the nephrology unit and internal medicine department at King George Medical University from June 2019 to October 2020. After informed consent and ethical clearance, a total of 150 PRAKI women were enrolled, and 98 women were subjected to renal replacement therapy as per Kidney Disease Improving Global Outcomes 2012 guideline and were followed for 3 months for renal and fetomaternal outcome.
RESULTS: There was a high incidence (1.02%) of AKI during pregnancy and puerperium. Majority (57.3%) of the women were aged 26-30 years, and 93.3% had institutional deliveries. About 49% of the women suffering from PRAKI were multipara, and most were identified in the postpartum period (82%). Hypertensive disorder of pregnancy (48%), puerperal sepsis (45%), and hemorrhage (34%) were the associated causes for PRAKI. Stillbirth/intrauterine death (IUD) was higher in Stage II (53.8%) and Stage III AKI (37.7%) (none in Stage I AKI). The majority of the neonates were born with a birth weight of <=2500 g irrespective of the stages of AKI. Preterm deliveries were significantly higher in Stage II AKI (53.8%) than in Stage I (33.3%) and Stage III (20.0%). Thirty-seven cases of PRAKI were managed conservatively, while 98 required dialysis. Complete recovery occurred in 27.3% and partial renal recovery in 31.3%. However, 3.3%

progressed to chronic kidney disease, 34% expired, and 4% were lost to follow-up. High maternal mortality of 30.1% was observed in those dialyzed.
CONCLUSION: AKI is associated with fetal growth restriction and preterm deliveries. Stillbirth/IUD is higher in Stage II and Stage III AKI.

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1
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9664464
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2022

89.

Epidemiology of Acute Kidney Injury After Neonatal Cardiac Surgery: A Report From the Multicenter Neonatal and Pediatric Heart and Renal Outcomes Network: Erratum.
Anonymous
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Critical Care Medicine. 50(10):e778, 2022 Oct 01.
[Journal Article. Published Erratum]
UI: 36108275
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Erratum for (EFR)
Year of Publication
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90.

Interaction of Hydration Status and Physical Activity Level on Early Renal Damage in Children: A Longitudinal Study.

Li M, Shu W, Amaerjiang N, Xiao H, Zunong J, Vermund SH, Huang D, Hu Y
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Frontiers in Nutrition. 9:910291, 2022.
[Journal Article]
UI: 35811990
Background: Optimal water intake positively affects various aspects of human physiology, especially renal function. Physical activity (PA) may have an impact on hydration status and renal health, but the interaction of hydration status and PA level on renal function is not well-studied in children.
Methods: We conducted four waves of urine assays in our child cohort (PROC) study from October 2018 to November 2019 in Beijing, China. We measured urinary specific gravity, beta2-microglobulin (beta2-MG), and microalbumin (MA) excretion to assess hydration status and renal damage in the context of PA level and other covariates among 1,914 primary school children. We determined the associations of renal damage with the interaction of hydration status and PA level using generalized linear mixed-effects models.
Results: The prevalence of dehydration was 35.0%, 62.1%, 63.9%, and 63.3%, and the prevalence of insufficient PA was 86.2%, 44.9%, 90.4%, and 90.2% from wave 1 to wave 4 among 1,914 primary school children. From wave 1 to wave 4, the prevalence of renal tubular damage had a significant increasing trend of 8.8%, 15.9%, 25.7%, and 29.0% ($Z = 16.9$, $P < 0.001$), while the prevalence of glomerular damage revealed a declining trend of 5.6%, 5.5%, 4.4%, and 4.1% ($Z = -2.4$, $P = 0.016$). There were stable longitudinal associations of renal tubular and glomerular damage with hydration status (euhydration: OR = 0.50 and 0.33, respectively) but not with PA level. In multivariate analysis, significant interactions of hydration status and PA level were noted with renal tubular damage (beta = 0.43, P = 0.014) and glomerular damage (beta = 0.60, P = 0.047). Children with euhydration and insufficient PA were less likely to have renal tubular damage (OR = 0.46, 95% CI: 0.39, 0.53) or glomerular damage (OR = 0.28, 95% CI: 0.20, 0.39); children with euhydration and sufficient PA were also less likely to have renal tubular damage (OR = 0.57, 95% CI: 0.44, 0.75) or glomerular damage (OR = 0.47, 95% CI: 0.30, 0.74), adjusting for age, sex, BMI z-score, standardized SBP, sleep duration, computer/cell phone screen time, and fruit and vegetable intake.
Conclusion: Children with euhydration and either sufficient or insufficient PA were less likely to have early renal damage. Adequate daily water intake for children is important, especially after PA.

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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9260418
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2022

91.

CUA 2022 Annual Meeting Abstracts - Podium Session 1: BPH, GU Trauma and Reconstruction, Neurogenic Bladder, Urinary Incontinence and Voiding Dysfunction, Pediatrics Friday, June 24, 2022 * 13:30-14:30.
Anonymous
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Canadian Urological Association Journal. 16(6 Suppl 1):S5-S7, 2022 Jun.
[Journal Article]
UI: 35667349
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9239717
Year of Publication
2022

92.

Acute Kidney Injury in Children with Acute Appendicitis.
Marzuillo P, Coppola C, Caiazzo R, Macchini G, Di Sessa A, Guarino S, Esposito F, Miraglia Del Giudice E, Tipo V
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Children. 9(5), 2022 Apr 27.
[Journal Article]
UI: 35626797
We hypothesized that-as in other common pediatric conditions-acute appendicitis (AA) could be complicated by acute kidney injury (AKI). We aimed to investigate the prevalence of, and the factors associated with AKI in a cohort of patients with AA. We retrospectively collected data of 122 children (63.9% of male gender; mean age 8.6 +/- 2.9 years; range: 2.2-13.9 years) hospitalized for AA. AKI was defined according to the Kidney Disease/Improving Global Outcomes creatinine criteria. We considered a basal serum creatinine value as the value of creatinine estimated with the Hoste (age) equation, assuming that the basal estimated glomerular filtration rate (eGFR) was 120 mL/min/1.73 m2. Explorative univariate logistic regression analysis was used to explore the associations with AKI. Out of 122 patients, nine (7.4%) presented with AKI. One patient had stage two AKI and the remaining had stage one AKI. The maximum AKI stage was found at admission. The patients with AKI showed a higher prevalence of fever >=

38.5 degreeC (p = 0.02), vomiting (p = 0.03), >=5% dehydration (p = 0.03), and higher levels of both C-reactive protein (CRP) (p = 0.002) and neutrophils (p = 0.03) compared with patients without AKI. Because all patients with AKI also presented with vomiting, an Odds Ratio (OR) for the vomiting was not calculable. The exploratory univariate logistic regression analysis confirmed that fever >= 38.5 degreeC (OR = 5.0; 95% CI: 1.2/21.5; p = 0.03), >=5% dehydration (OR = 8.4; 95% CI: 1.1/69.6; p = 0.04), CRP (OR = 1.1; 95% CI: 1.05/1.2; p = 0.01), and neutrophil levels (OR = 1.1; 95% CI: 1.01/1.3; p = 0.04) were all predictive factors of AKI. AKI can occur in 7.4% of patients with AA. Particular attention should be paid to the kidney health of patients with AA especially in the presence of vomiting, >=5% dehydration, fever >= 38.5 degreeC, and high CRP and neutrophils levels.
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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9139852
Year of Publication
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93.

Etiology, Clinical Profile, and Short-Term Outcome of Children With Acute Kidney Injury.
Bai S, Moorani KN, Naeem B, Ashfaq M, Rajesh, Rehman EU

OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cureus. 14(2):e22563, 2022 Feb.
[Journal Article]
UI: 35378027
BACKGROUND: Acute kidney injury (AKI) is a common clinical syndrome in hospitalized children and it imposes heavy burden of mortality and morbidity. In resource-constraint settings, management of AKI is very challenging and associated with adverse outcomes. The aim of this study was to determine the clinico-etiological profile and outcome of AKI.
METHODOLOGY: This prospective observational study was done at the department of pediatric nephrology and pediatric intensive care unit, National Institute of Child Health, Karachi, Pakistan from December 2020 to May 2021. A total of 130 children aged 1 month to 15 years, diagnosed with AKI irrespective of the underlying cause were included. Detailed medical information of each child including medical history, examination, and baseline investigations were obtained. Clinical and etiological profile of patients was noted. The patients were followed up to three months and the outcome was noted.
RESULTS: In a total of 130 children, 82 (63.1%) were male. The mean age was 5.5+/-4.4 years (ranging between 1 month and 15 years). There were 117 (90.0%) children who were referred from other centers for either dialysis or surgical treatment. Prerenal cause of AKI was found in 66 (50.8%) children, followed by renal 53 (40.8%) and postrenal in 11 (8.5%) cases. Fever and shortness of breath were the most common clinical presenting symptoms in 102 (78.5%) and 100 (76%) cases, respectively. There were 45 (34.6%) cases who were managed conservatively, 80 (61.5%) needed dialysis, while three children were managed with plasmapheresis and two required surgical intervention in the emergency department. At three-month follow-up period, 64 (49.2%) children recovered (including nine with partial recovery), 46 (36.1%) expired, 9 (6.9%) developed end-stage renal disease, while 11 (8.5%) had chronic kidney disease.
CONCLUSION: Sepsis, nephrotoxic drugs, and acute glomerulonephritis were the major causes of AKI at our center. Mortality was high among children presenting with AKI. A relatively high proportion of children with younger age, septic AKI, and presentation in critical condition could be the reasons for this high mortality.

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1
Status
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8958123
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94.

Utility of Urinary Biomarkers Neutrophil Gelatinase-Associated Lipocalin and Kidney Injury Molecule-1 as a Marker for Diagnosing the Presence of Renal Scar in Children with Vesicoureteral Reflux (VUR): A Cross-Sectional Study.
Naik PB, Jindal B, Kumaravel S, Halanaik D, Rajappa M, Naredi BK, Govindarajan KK
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Indian Association of Pediatric Surgeons. 27(1):83-90, 2022 Jan-Feb.
[Journal Article]
UI: 35261519

Aim: To explore the possibility of using urinary biomarkers neutrophil gelatinase-associated lipocalin (NGAL) and kidney injury molecule-1 (KIM-1) to assess the presence of renal scars in children with Vesicoureteric Reflux (VUR).
Materials and Methods: This cross-sectional study was conducted in 94 children aged 0-16 years diagnosed with VUR in the Department of Pediatric Surgery, JIPMER. Urinary biomarkers were measured using the enzyme-linked immunosorbent assay kits, normalized with urinary creatinine (Cr) and compared with severity of VUR (low grade [I and II] and high grade [III, IV, and V]), presence or absence of renal scar in VUR patients and severity of renal scar. Independent Student's t-test, Mann-Whitney U-test, and analysis of variance Kruskal-Wallis test were used for comparison, and receiver operating characteristic (ROC) curve analysis for predicting the accuracy of biomarkers in detecting the presence of renal scars.
Results: The median urinary NGAL (uNGAL) value was higher in children with renal scar (1.49 ng/mL) than those without renal scar (0.58 ng/mL) and was statistically significant (<0.001). Whereas median uNGAL/Cr was higher in children with renal scar (0.07) than those without renal scar (0.03) but was not statistically significant (P = 0.06). Urinary KIM-1 and urinary KIM-1/urinary Cr (uKIM-1/Cr) was not found to be a significant predictor of renal scar. The difference of uNGAL/Cr was comparable between the grades of renal scar but was not statistically significant. On ROC curve analysis, uNGAL had area under the ROC curve (AUC) of 0.769 with 71% of both specificity and sensitivity, whereas uNGAL/Cr was found to be a poor predictor of renal scar with AUC of 0.611, 60% sensitivity, and 61.2% specificity.
Conclusion: uNGAL can serve as a noninvasive marker for diagnosing the presence of renal scar in children with VUR and a multicentric more extensive cohort study may be needed to strengthen or negate its role.

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1
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95.

Association of Nonrecovery of Kidney Function After Pediatric Acute Kidney Injury With 5-Year Kidney and Nonkidney Outcomes.
Ulrich EH, Hessey E, Perreault S, Dorais M, Jouvet P, Phan V, Zappitelli M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Critical Care Explorations. 4(1):e0614, 2022 Jan.
[Journal Article]
UI: 35072080
Acute kidney injury is common in critically ill children, but the long-term outcomes are not well defined.
OBJECTIVES: Evaluated whether nonrecovery of kidney function, following acute kidney injury, was associated with postdischarge mortality, healthcare utilization, and chronic kidney disease.
DESIGN: Retrospective, two-center, observational study.
SETTING: Two ICUs at tertiary children's hospitals in Montreal, QC.
PARTICIPANTS: Pediatric patients (age <= 18 yr) with index admission to intensive care between January 1, 2003, and March 31, 2005. Children were excluded if they 1) died during admission, 2) did not have serum creatinine or urine output measured, 3) did not develop acute kidney injury, 4) could not be linked to administrative health data, and 5) (for chronic kidney disease outcome) had pre-existing renal disease by chart review, baseline estimated glomerular filtration rate measurement, or administrative health data codes.
MAIN OUTCOMES AND MEASURES: Three-hundred seventy-eight patients' data were included for long-term mortality and healthcare utilization outcomes; 316 patients for long-term chronic kidney disease outcome. Outcomes were defined using provincial administrative healthcare data diagnosis, procedure, and billing codes.
MAIN RESULTS: Nonrecovery of kidney function, defined as serum creatinine greater than or equal to 1.5x baseline at ICU discharge, occurred in 51 patients (13%). Nonrecovery of kidney function was not associated with long-term mortality (at 5-7 yr following hospital discharge), increased hospitalizations or emergency department visits (at 30-days, 1-year, and 5-yr follow-up), or increased physician visits (at 1- and 5-yr follow-up). Nonrecovery was associated with increased 30-day physician visits (adjusted relative risk, 1.40; 95% CI, 1.13-1.73) and chronic kidney disease diagnosis within 5 years of discharge (adjusted hazard ratio, 4.92, 95% CI, 1.77-13.70).
CONCLUSIONS AND RELEVANCE: Nonrecovery of kidney function following an episode of acute kidney injury in critically ill children is associated with nearly five-fold increased risk for long-term chronic kidney disease. Acute kidney injury nonrecovery may be a useful marker to identify patients that are particularly important to follow-up post discharge for chronic kidney disease detection.

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1
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Year of Publication
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96.

Current Knowledge of Selected Cardiovascular Biomarkers in Pediatrics: Kidney Injury Molecule-1, Salusin-alpha and -beta, Uromodulin, and Adropin. [Review]
Mocnik M, Marcun Varda N
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Children. 9(1), 2022 Jan 13.
[Journal Article. Review]
UI: 35053727
Cardiovascular diseases are the leading cause of morbidity and mortality in the modern world. Their common denominator is atherosclerosis, a process beginning in childhood. In pediatrics, the aim of preventive measures is to recognize children and adolescents at risk for accelerated atherosclerosis and possible premature cardiovascular events in adulthood. Several diagnostic procedures and biomarkers are available for cardiovascular risk assessment in adults. However, reliable markers in pediatrics are still insufficiently studied. In this contribution, we discuss five potential biomarkers of particular interest: kidney injury molecule-1, salusin-alpha and -beta, uromodulin, and adropin. Studies regarding the pediatric population are scarce, but they support the evidence from studies in the adult population. These markers might entail both a prognostic and a therapeutic interest.
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1
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97.

Corrigendum to "Risk factors for in-hospital mortality and acute kidney injury in neonatal-pediatric patients receiving extracorporeal membrane oxygenation" [Journal of the Formosan Medical Association 120 (2021) 1758 - 1767].
Liao MT, Tsai IJ, Lin FH, Tseng LJ, Huang SC, Chen YS, Wu ET, Tsau YK
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of the Formosan Medical Association. 121(1 Pt 2):446, 2022 Jan.
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Clinical Trial Number
National Taiwan University Hospital Study Group on Acute Renal Failure (NSARF)
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98.

Antenatal mercury exposure associated with severe acute kidney injury in twins.
Gupta NP, Aggarwal A, Batra A, Thakur G
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Nephrology. 35(9):2395-2397, 2022 12.

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Year of Publication
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99.

Improvised, emergency peritoneal dialysis in children with acute kidney injury amid war in Tigray, Northern Ethiopia: two teaching cases.
Gebrearegay H, Berhe E, Lema HH, Tequare MH
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Nephrology. 35(9):2407-2410, 2022 12.
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Year of Publication
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100.

Risk of acute kidney injury in a pediatric patient with severe acute respiratory syndrome coronavirus 2 infection.
Uejima Y, Suganuma E, Taga Y, Kitajima I, Niimi H
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatrics International. 64(1):e15176, 2022 01.
[Journal Article]
UI: 35704457
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101.

Post-Traumatic Stress Disorder and Post-Traumatic Growth following Kidney Transplantation. [Review]
Nash RP, Loiselle MM, Stahl JL, Conklin JL, Rose TL, Hutto A, Evon DM, Flythe JE, Burker EJ
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Kidney360. 3(9):1590-1598, 2022 09 29.
[Journal Article. Review. Research Support, N.I.H., Extramural]
UI: 36245667
Background: Kidney transplantation (KT) is a life-saving therapy for kidney failure. However, KT recipients can suffer from debilitating depression, post-traumatic stress disorder (PTSD), and suicide. In contrast to PTSD, post-traumatic growth (PTG) is a positive psychologic change in response to a challenging situation. PTG has been studied in other chronic diseases, but less is known about its role in the setting of KT. We sought to elucidate the prevalence, predictors, and

the effect of PTSD and PTG on post-KT outcomes. We also considered the roles of benefit finding and resilience.
Methods: In a literature review, we identified publications that examined PTSD, PTG, benefit finding, and/or resilience in KT recipients. We excluded case reports and first-person narratives. Publications meeting the specified criteria after full text review underwent data abstraction and descriptive analysis.
Results: Of the 1013 unique citations identified, 39 publications met our criteria. PTSD was the most common construct evaluated (16 publications). Resilience was studied in 11 publications, PTG in nine, and benefit finding in five. Up to 21% of adult and 42% of pediatric KT recipients may experience PTSD, which is associated with lower quality of life (QOL), impaired sleep, and other psychiatric comorbidity. PTG was associated with improved QOL, kidney function, and reduced risk of organ rejection. Although benefit finding tended to increase post KT, resilience remained stable post KT. Like PTG, resilience was associated with lower psychologic distress and increased treatment adherence and confidence in the health care team.
Conclusions: PTG, resilience, and benefit finding appear to reduce the risk of PTSD, promote well-being, and reduce risk of graft failure in KT recipients. Future research to understand these relationships better will allow clinicians and researchers to develop interventions to promote PTG, resilience, and benefit finding, and potentially improve post-transplant outcomes such as adherence and reducing risk of organ rejection.

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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9528379
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102.

Expanded Criteria Donor With Severe Acute Kidney Injury: Worth to Use?.
Thotsiri S, Sutharattanapong N, Janphram C, Wiwattanathum P
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Transplantation Proceedings. 54(8):2097-2102, 2022 Oct.
[Journal Article]
UI: 36195498
BACKGROUND: Expanded criteria donors (ECDs) may present with acute kidney injury (AKI). Many transplantation centers refuse to use these kidneys because of concerns about poor transplant outcomes, resulting in a high discard rate. However, long-term results of ECDs with AKI (ECDs + AKI) have not been extensively studied.
METHODS: We retrospectively compared outcomes of ECDs with ECDs + AKI. Primary outcome was 5-year allograft and patient survival rate. Secondary outcomes were allograft function, rates of delayed graft function, and allograft rejection.
RESULTS: Of 743 deceased donor kidney transplant recipients, 95 ECD cases were included in this study. There were 38 patients (40%) with ECDs and 57 patients (60%) with ECDs + AKI. Mean donor creatinine was progressively higher with severity of AKI. Five-year graft and patient survival were comparable between ECDs and ECDs + AKI (80.6% vs 81.1%, P = .95 and 91.7% vs 88.7%, P = .73). Mean (SD) allograft estimated glomerular filtration rate was 36.7 (14.5) vs 40.6 (22.7) mL/min/1.73 m2 with P = .61, respectively. Multivariate analysis showed factors associated graft loss were delayed graft function (P = .01) and donor-recipient age difference >=10 years (P = .038), not AKI status.
CONCLUSIONS: Kidney transplant from ECDs + AKI has comparable allograft survival with ECDs without AKI. Use of ECDs + AKI is worthwhile and kidneys from ECDs + AKI should not be discarded. Recipient selection and perioperative care are important to optimize the use of scarce resource.

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1
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Year of Publication
2022

103.

Risk factors for acute kidney injury after Stanford type A aortic dissection repair surgery: a systematic review and meta-analysis.
Wang L, Zhong G, Lv X, Dong Y, Hou Y, Dai X, Chen L
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Renal Failure. 44(1):1462-1476, 2022 Dec.
[Journal Article. Meta-Analysis. Systematic Review]
UI: 36036431
Background: Risk factors for acute kidney injury (AKI) after Stanford type A aortic dissection (TAAD) repair are inconsistent in different studies. This meta-analysis systematically analyzed the risk factors so as to early identify the therapeutic targets for preventing AKI.
Methods: Studies exploring risk factors for AKI after TAAD repair were searched from four databases from inception to June 2022. The synthesized incidence and risk factors of AKI and its impact on mortality were calculated.
Results: Twenty studies comprising 8223 patients were included. The synthesized incidence of postoperative AKI was 50.7%. Risk factors for AKI included cardiopulmonary bypass (CPB) time >180 min [odds ratio (OR), 4.89, 95% confidence interval (CI), 2.06-11.61, I2 = 0%], prolonged operative time (>7 h) (OR, 2.73, 95% CI, 1.95-3.82, I2 = 0), advanced age (per 10 years) (OR, 1.34, 95% CI, 1.21-1.49, I2 = 0], increased packed red blood cells (pRBCs) transfusion perioperatively (OR, 1.09, 95% CI, 1.07-1.11, I2 = 42%), elevated body mass index (per 5 kg/m2) (OR, 1.23, 95% CI, 1.18-1.28, I2 = 42%) and preoperative kidney injury (OR, 3.61, 95% CI, 2.48-5.28, I2 = 45%). All results were meta-analyzed using fixed-effects model finally ($p < 0.01$). The in-hospital or 30-day mortality was higher in patients with postoperative AKI than in that without AKI [risk ratio (RR), 3.12, 95% CI, 2.54-3.85, $p < 0.01$].
Conclusions: AKI after TAAD repair increased the in-hospital or 30-day mortality. Reducing CPB time and pRBCs transfusion, especially in elderly or heavier weight patients, or patients with preoperative kidney injury were important to prevent AKI after TAAD repair surgery.
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1
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104.

A clinical study of acute kidney injury in children with type 1 diabetes and diabetic ketoacidosis. 1 . <1 .>

Yuan XW, Wang X, Tang N, Xie H, Gu W
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Zhongguo Dangdai Erke Zazhi. 24(8):858-862, 2022 Aug 15.
[Journal Article]
UI: 36036122
OBJECTIVES: To investigate the incidence rate of acute kidney injury (AKI) in children with type 1 diabetes and diabetic ketoacidosis (DKA) and the risk factors for AKI in children with DKA. METHODS: A retrospective analysis was performed on 45 children with type 1 diabetes and DKA who attended Children's Hospital of Nanjing Medical University from 2018 to 2020. According to the presence or absence of AKI on admission, they were divided into two groups: non-AKI (n=37) and AKI (n=8). Socio-demographic data and physical examination data on admission were collected, including height, weight, blood pressure, and heart rate. Chemiluminescence particle immunoassay was used to determine the levels of serum creatinine and blood urea nitrogen on admission and at discharge. The multivariate logistic regression model was used to assess the risk factors for AKI in children with type 1 diabetes and DKA.

RESULTS: The 45 children had a median age of 9.2 years at diagnosis. Among the 8 children (18%) with AKI on admission, 6 had stage 1 AKI and 2 had stage 3 AKI. An increase in corrected serum sodium level was an independent risk factor for AKI in children with type 1 diabetes and DKA (P<0.05), and a relatively high insulin level on admission was an independent protective factor against AKI (P<0.05).
CONCLUSIONS: There is a high incidence rate of AKI in children with type 1 diabetes and DKA. It is important to correct DKA actively, control blood glucose in time, and perform renal function tests and follow-up regularly in such children.
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1
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MEDLINE
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: 1 (diabetic ketoacidosis,DKA) (acute kidney injury,AKI) , DKA AKI : 2018 1 1 2020 12 31 45 1 DKA , AKI AKI (n=37) AKI (n=8) , , , logistic 1 DKA AKI : 45 9.2 ,8 (18%) AKI ,6 1 AKI,2 3 AKI 1 DKA AKI (P<0.05), AKI(P<0.05) : 1 DKA AKI , DKA, , .
Language: Chinese
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105.

Kidney Injuries and Evolution of Chronic Kidney Diseases Due to Neonatal Hyperoxia Exposure Based on Animal Studies. [Review]
Huang LT, Chen CM
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International Journal of Molecular Sciences. 23(15), 2022 Jul 31.
[Journal Article. Review]
UI: 35955627
Preterm birth interrupts the development and maturation of the kidneys during the critical growth period. The kidneys can also exhibit structural defects and functional impairment due to hyperoxia, as demonstrated by various animal studies. Furthermore, hyperoxia during nephrogenesis impairs renal tubular development and induces glomerular and tubular injuries, which manifest as renal corpuscle enlargement, renal tubular necrosis, interstitial inflammation, and kidney fibrosis. Preterm birth along with hyperoxia exposure induces a pathological predisposition to chronic kidney disease. Hyperoxia-induced kidney injuries are influenced by several molecular factors, including hypoxia-inducible factor-1alpha and interleukin-6/Smad2/transforming growth factor-beta, and Wnt/beta-catenin signaling pathways; these are key to cell proliferation, tissue inflammation, and cell membrane repair. Hyperoxia-induced oxidative stress is characterized by the attenuation or the induction of multiple molecular factors

associated with kidney damage. This review focuses on the molecular pathways involved in the pathogenesis of hyperoxia-induced kidney injuries to establish a framework for potential interventions.
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1
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MEDLINE
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Year of Publication
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106.

Inhibition of the NLRP3/caspase-1 signaling cascades ameliorates ketamine-induced renal injury and pyroptosis in neonatal rats.
Bai H, Zhang Z, Ma X, Shen M, Li R, Li S, Qiu D, Gao L
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Biomedicine & Pharmacotherapy. 152:113229, 2022 Aug.
[Journal Article]
UI: 35679721
Ketamine is a widely-used anesthetic in the field of pediatrics and obstetrics. Multiple studies have revealed that ketamine causes neurotoxicity in developing animals. However, further studies are needed to determine whether clinical doses of ketamine (20 mg/kg) are able to cause kidney damage in developing animals. Herein, we investigated the effects of continuous ketamine exposure on kidney injury and pyroptosis in seven-day-old rats. Serum renal function indicators, renal histopathological analysis, pyroptosis, as well as oxidative stress indicators, were tested. Additionally, the NLRP3 inhibitor MCC950 and the Caspase-1 inhibitor VX765 were used to evaluate the role of the NLRP3/Caspase-1 axis in ketamine-induced kidney injury among developing rats. Our findings indicate that ketamine exposure causes renal histopathological injury, increased the levels of blood urea nitrogen (BUN) and creatinine (Cre), and led to upregulation in the levels of pyroptosis. Furthermore, we found that ketamine induced an increase in levels of reactive oxygen species (ROS) and malonaldehyde (MDA), as well as a decrease in the content of glutathione (GSH) and catalase (CAT) in the kidneys of neonatal rats. Moreover, targeting NLRP3 and caspase-1 with MCC950 or VX765 improved pyroptosis and reduced renal damage after continuous ketamine exposure. In conclusion, this study suggested that continued exposure to ketamine caused kidney damage among neonatal rats and that the NLRP3/Caspase-1 axis-related pyroptosis may be involved in this process.

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Year of Publication
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107.

Metabolomic profiling demonstrates evidence for kidney and urine metabolic dysregulation in a piglet model of cardiac surgery-induced acute kidney injury.
Davidson JA, Robison J, Khailova L, Frank BS, Jaggers J, Ing RJ, Lawson S, Iguidbashian J, Ali E, Treece A, Soranno DE, Osorio-Lujan S, Klawitter J
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American Journal of Physiology - Renal Physiology. 323(1):F20-F32, 2022 07 01.
[Journal Article. Research Support, U.S. Gov't, Non-P.H.S.. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 35532069
Acute kidney injury (AKI) is a common cause of morbidity after congenital heart disease surgery. Progress on diagnosis and therapy remains limited, however, in part due to poor mechanistic understanding and a lack of relevant translational models. Metabolomic approaches could help identify novel mechanisms of injury and potential therapeutic targets. In the present study, we used a piglet model of cardiopulmonary bypass with deep hypothermic circulatory arrest (CPB/DHCA) and targeted metabolic profiling of kidney tissue, urine, and serum to evaluate metabolic changes specific to animals with histological acute kidney injury. CPB/DHCA animals

with acute kidney injury were compared with those without acute kidney injury and mechanically ventilated controls. Acute kidney injury occurred in 10 of 20 CPB/DHCA animals 4 h after CPB/DHCA and 0 of 7 control animals. Injured kidneys showed a distinct tissue metabolic profile compared with uninjured kidneys (R2 = 0.93, Q2 = 0.53), with evidence of dysregulated tryptophan and purine metabolism. Nine urine metabolites differed significantly in animals with acute kidney injury with a pattern suggestive of increased aerobic glycolysis. Dysregulated metabolites in kidney tissue and urine did not overlap. CPB/DHCA strongly affected the serum metabolic profile, with only one metabolite that differed significantly with acute kidney injury (pyroglutamic acid, a marker of oxidative stress). In conclusion, based on these findings, kidney tryptophan and purine metabolism are candidates for further mechanistic and therapeutic investigation. Urine biomarkers of aerobic glycolysis could help diagnose early acute kidney injury after CPB/DHCA and warrant further evaluation. The serum metabolites measured at this early time point did not strongly differentiate based on acute kidney injury. NEW & NOTEWORTHY This project explored the metabolic underpinnings of postoperative acute kidney injury (AKI) following pediatric cardiac surgery in a translationally relevant large animal model of cardiopulmonary bypass with deep hypothermic circulatory arrest. Here, we present novel evidence for dysregulated tryptophan catabolism and purine catabolism in kidney tissue and increased urinary glycolysis intermediates in animals who developed histological AKI. These pathways represent potential diagnostic and therapeutic targets for postoperative AKI in this high-risk population.
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108.

The SSLepR mutant rat represents a novel model to study obesity-induced renal injury before puberty.
Poudel B, Shields CA, Ekperikpe US, Brown AK, Travis OK, Maury JC, Fitzgerald S, Smith SV, Cornelius DC, Williams JM
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American Journal of Physiology - Regulatory Integrative & Comparative Physiology. 322(4):R299-R308, 2022 04 01.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 35107024
Prepubertal obesity (PPO) has emerged as a major health problem over the past few decades and is a risk factor for the development of proteinuria. The current study investigated whether the development of renal injury in the obese SSLepR mutant strain occurs before puberty. When determining the temporal changes in serum sex hormones in female and male SS and SSLepR mutant rats between 4 and 10 wk of age, we only observed significant increases in estradiol and testosterone levels in female and male SS rats at 10 wk of age than at 4 wk of age. The results suggest that studying both strains between 4 and 8 wk of age is appropriate to study the effects of PPO on renal injury in this model. Proteinuria was significantly higher in SSLepR mutant rats as opposed to the values observed in SS rats at 8 wk of age, and we did not observe any sex differences in proteinuria in either strain. The kidneys from the SSLepR mutant rats displayed significant glomerular and tubular injury and renal fibrosis versus the values measured in SS rats without any sex differences. Overall, we observed increased immune cell infiltration in the kidneys from SSLepR mutant rats compared with SS rats. Interestingly, female SSLepR mutant rats displayed significant increases in not only M1 macrophages (proinflammatory) but also M2 macrophages (anti-inflammatory) versus male SSLepR mutant rats. These results suggest the SSLepR mutant rat may be a useful model to study early progression of obesity-related renal injury before the onset of puberty.
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109.

Time-Related Changes in Patient Reported Bladder Symptoms and Satisfaction after Spinal Cord Injury.
Moghalu O, Stoffel JT, Elliott SP, Welk B, Zhang C, Presson A, Myers J
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Journal of Urology. 207(2):392-399, 2022 02.
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UI: 34547924
PURPOSE: Increased time after spinal cord injury (SCI) is associated with a migration to bladder managements with higher morbidity such as indwelling catheter (IDC). Still, it is unclear how this affects bladder-related quality of life (QoL). We hypothesized that time from injury (TFI) would be associated with changes in bladder management, symptoms and satisfaction.
MATERIALS AND METHODS: Cross-sectional analysis of time-related changes in patient-reported bladder management, symptoms and satisfaction using the Neurogenic Bladder Research Group SCI Registry. Outcomes included Neurogenic Bladder Symptom Score (NBSS) and bladder-related satisfaction (NBSS-satisfaction). Multivariable regression was performed to assess associations between TFI and outcomes, adjusting for participant characteristics, injury specifics, and psychosocial aspects of health-related QoL. Participants with TFI <1 year were excluded and TFI was categorized 1-5 (reference), 6-10, 11-15, 16-20 and >20 years.
RESULTS: Of 1,420 participants mean age at injury was 29.7 years (SD 13.4) and mean TFI was 15.2 years (SD 11.6). Participants grouped by TFI included 298 (21%) 1-5, 340 (24%) 6-10, 198 (14%) 11-15, 149 (10%) 16-20 and 435 (31%) >20 years. As TFI increased, clean intermittent catheterization (CIC) declined (55% 1-5 vs 45% >20 years, p <0.001) and IDC increased (16% 1-5 vs 21% >20 years, p <0.001). On multivariable analysis, increased TFI was associated with fewer bladder symptoms at >20 years from injury (-3.21 [CI -1.29, -5.14, p <0.001]) and better satisfaction (6-10 years -0.20 [CI -0.41, 0.01, p=0.070], 11-15 years -0.36 [CI -0.60, -0.11, p=0.002], 16-20 years -0.59 [CI -0.86, -0.32, p <0.001], >20 years -0.85 [CI -1.07, -0.63, <0.001]).
CONCLUSIONS: After SCI, CIC decreases and IDC increases over time; however, increasing TFI is associated with reduced urinary symptoms and improved bladder-related satisfaction.
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110.

Urine Neutrophil Gelatinase-Associated Lipocalin and Kidney Injury Molecule-1 to Detect Pediatric Cisplatin-Associated Acute Kidney Injury.
McMahon KR, Chui H, Rassekh SR, Schultz KR, Blydt-Hansen TD, Mammen C, Pinsk M, Cuvelier GDE, Carleton BC, Tsuyuki RT, Ross CJD, Devarajan P, Huynh L, Yordanova M, Crepeau-Hubert F, Wang S, Cockovski V, Palijan A, Zappitelli M
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Kidney360. 3(1):37-50, 2022 01 27.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 35368557
Background: Few studies have described associations between the AKI biomarkers urinary neutrophil gelatinase-associated lipocalin (NGAL) and kidney injury molecule-1 (KIM-1) with AKI in cisplatin-treated children. We aimed to describe excretion patterns of urine NGAL and KIM-1 and associations with AKI in children receiving cisplatin.
Methods: Participants (n=159) were enrolled between 2013 and 2017 in a prospective cohort study conducted in 12 Canadian pediatric hospitals. Participants were evaluated at early cisplatin infusions (at first or second cisplatin cycle) and late cisplatin infusions (last or second-to-last cycle). Urine NGAL and KIM-1 were measured (1) pre-cisplatin infusion, (2) post-infusion (morning after), and (3) at hospital discharge at early and late cisplatin infusions. Primary outcome: AKI defined by serum creatinine rise within 10 days post-cisplatin, on the basis of Kidney Disease Improving Global Outcomes guidelines criteria (stage 1 or higher).
Results: Of 159 children, 156 (median [interquartile range (IQR)] age: 5.8 [2.4-12.0] years; 78 [50%] female) had biomarker data available at early cisplatin infusions and 127 had data at late infusions. Forty six of the 156 (29%) and 22 of the 127 (17%) children developed AKI within 10 days of cisplatin administration after early and late infusions, respectively. Urine NGAL and KIM-1 concentrations were significantly higher in patients with versus without AKI (near hospital discharge of late cisplatin infusion, median [IQR] NGAL levels were 76.1 [10.0-232.7] versus 14.9 [5.4-29.7] ng/mg creatinine; KIM-1 levels were 4415 [2083-9077] versus 1049 [358-3326] pg/mg creatinine; P<0.01). These markers modestly discriminated for AKI (area under receiver operating characteristic curve [AUC-ROC] range: NGAL, 0.56-0.72; KIM-1, 0.48-0.75). Biomarker concentrations were higher and better discriminated for AKI at late cisplatin infusions (AUC-ROC range, 0.54-0.75) versus early infusions (AUC-ROC range, 0.48-0.65).
Conclusions: Urine NGAL and KIM-1 were modest at discriminating for cisplatin-associated AKI. Further research is needed to determine clinical utility and applicability of these markers and associations with late kidney outcomes.

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111.

Risk factors for end-stage renal disease in patients with trauma and stage 3 acute kidney injury.
Choi K, Kim MS, Keum MA, Choi S, Kyoung KH, Kim JT, Kim S, Noh M
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Medicine. 101(3):e28581, 2022 Jan 21.
[Journal Article]
UI: 35060520
ABSTRACT: Research on long-term renal outcomes in patients with acute kidney injury (AKI) and trauma, especially those with traumatic brain injury (TBI), has been limited. In this study, we enrolled patients with stage 3 AKI as per the Kidney Disease Improving Global Outcomes guidelines, who initiated renal replacement therapy (RRT). These patients were divided into 2 groups depending on the presence of TBI. Comparing the baseline characteristics and management strategies of each group, we analyzed whether TBI affects the progression of kidney disease.Between January 1, 2014 and June 30, 2020, 51 patients who initiated RRT due to AKI after trauma were enrolled in this study. TBI was identified in 20 patients, and the clinical conditions were not related to TBI in the remaining 31. The study endpoint was set to determine whether the patients of each group needed RRT persistently at discharge and at the time of recent outpatient clinic. Six (30.0%) out of 20 patients with TBI and 2 (6.5%) out of 31 patients without TBI required conventional hemodialysis, as per the most recent data. No significant within-group differences were found in terms of the baseline characteristics and management strategies. In the logistic regression analysis, TBI was independently associated with disease progression to end-stage renal disease.TBI is a risk factor for end-stage renal disease in patients with trauma and stage 3 AKI who initiate RRT.

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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8772680
Year of Publication
2022

112.

Acute kidney injury contributes to worse physical and quality of life outcomes in survivors of critical illness.
Mayer KP, Ortiz-Soriano VM, Kalantar A, Lambert J, Morris PE, Neyra JA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BMC Nephrology. 23(1):137, 2022 04 07.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 35392844
OBJECTIVES: Survivors of critical illness and acute kidney injury (AKI) are at risk of increased morbidity. The purpose of this study was to compare physical, emotional, and cognitive health in survivors of critical illness with and without AKI.
METHODS: Retrospective cohort study of adult (>= 18 years old) survivors of critical illness due to sepsis and/or acute respiratory failure who attended follow-up in a specialized ICU Recovery Clinic. Outcomes were evaluated during 3-month visit and comprised validated tests for evaluation of physical function, muscle strength, cognitive and emotional health, and self-reported health-related quality of life (HRQOL). Descriptive statistics and group comparisons were performed.
RESULTS: A total of 104 patients with median age of 55 [49-64] years, 54% male, and median SOFA score of 10 [8-12] were analyzed. Incidence of AKI during ICU admission was 61 and 19.2% of patients required renal replacement therapy (RRT). Patients with AKI stage 2 or 3 (vs. those with AKI stage 1 or no AKI) walked less on the 6-min walk test (223 +/- 132 vs. 295 +/- 153 m, p = 0.059) and achieved lower of the predicted walk distance (38% vs. 58%, p = 0.041). Similar patterns of worse physical function and more significant muscle weakness were observed in multiple tests, with overall worse metrics in patients that required RRT. Patients with AKI stage 2 or 3 also reported lower HRQOL scores when compared to their counterparts, including less ability to return to work or hobby, or reengage in driving. There were no significant differences in cognitive function or emotional health between groups.
CONCLUSIONS: Survivors of critical illness and AKI stage 2 or 3 have increased physical debility and overall lower quality of life, with more impairment in return to work, hobby, and driving when compared to their counterparts without AKI or AKI stage 1 at 3 months post-discharge.

Version ID
1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8991933
Year of Publication
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113.

Effect of fluid load on the prognosis of children with sepsis-associated acute kidney injury undergoing continuous renal replacement therapy. . <.>
Lai ZJ, Yang WH, Ma KZ
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Zhongguo Dangdai Erke Zazhi. 24(3):279-284, 2022 Mar 15.
[Journal Article]
UI: 35351258
OBJECTIVES: To evaluate the effect of fluid load on the prognosis of children with sepsis-associated acute kidney injury (AKI) undergoing continuous renal replacement therapy (CRRT).
METHODS: A total of 121 children who underwent CRRT for sepsis-associated AKI from August 2018 to March 2021 were enrolled in the retrospective study. According to the fluid load from admission or disease progression to CRRT, they were divided into three groups: low fluid load (fluid load: <5%; n=35), high fluid load (fluid load: 5% - <10%; n=35), and fluid overload (fluid load: >=10%; n=51). Baseline data and clinical biochemical data before CRRT were collected for comparison and analysis. The Kaplan-Meier survival curve analysis was used for comparison of 28-day survival between groups. The multivariate logistic regression model was used to identify the influencing factors for the prognosis of the children.
RESULTS: The survival analysis showed that the fluid overload group had a significantly higher 28-day mortality rate than the low fluid load and high fluid load groups (P<0.05). The multivariate

logistic regression analysis showed that an increase in fluid overload volume was a risk factor for increased 28-day mortality in the fluid overload group, while earlier initiation of CRRT was a protective factor (P<0.05).
CONCLUSIONS: Fluid overload before CRRT may increase the mortality in children with sepsis-associated AKI, and CRRT should be performed for these children as early as possible.
Version ID
1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8974647
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Publisher
: (fluid load,FL) (continuous renal replacement therapy,CRRT) (acute kidney injury,AKI) : 2018 8 2021 3 AKI CRRT 121 , CRRT FL (n=35,FL<5%) (n=35,5%<=FL<10%) (n=51,FL>=10%) CRRT Kaplan-Meier 28 d logistic FL : 28 d (P<0.05); logistic 28 d , CRRT (P<0.05) : CRRT AKI , CRRT .
Language: Chinese
Year of Publication
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114.

Intraoperative visualization of urethra using illuminating catheter in laparoscopy-assisted anorectoplasty for imperforated anus-A novel and safe technique for preventing urethral injury.
Onishi S, Muto M, Harumatsu T, Murakami M, Kedoin C, Matsui M, Sugita K, Yano K, Yamada K, Yamada W, Matsukubo M, Kaji T, Ieiri S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Asian Journal of Endoscopic Surgery. 15(4):867-871, 2022 Oct.
[Journal Article]
UI: 35343076
PURPOSE: In this study, we used a near-infrared ray catheter (NIRC) to visualize the urethral line. We herein report our intraoperative visualization technique of the urethra using an illuminating catheter in laparoscopy-assisted anorectoplasty (LAARP) for imperforated anus.
PATIENT AND SURGICAL TECHNIQUE: A 3.0-kg term male neonate with anorectal malformation was delivered. An invertogram revealed the type as intermediate. Transverse colostomy was performed at the left upper abdomen. A recto-bulbar urethral fistula (RBUF) was diagnosed via distal colostogram and voiding cystourethrogram. LAARP was planned at 6 months of age. We performed the operation with four trocars. A 45degree 5-mm scope was used to clearly view the deep pelvic space. Before starting rectal dissection, a 6-Fr pig-tail-type NIRC was inserted through the external opening of the urethra to visualize the urethra during the laparoscopic procedure. The catheter tip was placed in the bladder, and excretion of urine was

maintained through the NIRC during the procedures. While dissecting the deep pelvic space between the posterior wall of the urethra and anterior wall of the rectum, the exact line of the urethra was clearly confirmed by overlay images of the NIRC. The RBUF was dissected safely using this innovative image-guided technique. Anoplasty was performed between the rectal stump and perineal skin. The postoperative course was uneventful. Oral intake was started on postoperative day 1. Postoperative dynamic urography showed no complications.
CONCLUSION: An NIRC is useful for detecting the urethra during LAARP.

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Year of Publication
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115.

Acute kidney injury in hospitalized children with sickle cell anemia.
Batte A, Menon S, Ssenkusu J, Kiguli S, Kalyesubula R, Lubega J, Mutebi EI, Opoka RO, John CC, Starr MC, Conroy AL
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BMC Nephrology. 23(1):110, 2022 03 18.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 35303803
BACKGROUND: Children with sickle cell anemia (SCA) are at increased risk of acute kidney injury (AKI) that may lead to death or chronic kidney disease. This study evaluated AKI prevalence and risk factors in children with SCA hospitalized with a vaso-occlusive crisis (VOC) in a low-resource setting. Further, we evaluated whether modifications to the Kidney Disease: Improving Global Outcomes (KDIGO) definition would influence clinical outcomes of AKI in children with SCA hospitalized with a VOC.
METHODS: We prospectively enrolled 185 children from 2 - 18 years of age with SCA (Hemoglobin SS) hospitalized with a VOC at a tertiary hospital in Uganda. Kidney function was assessed on admission, 24-48 h of hospitalization, and day 7 or discharge. Creatinine was measured enzymatically using an isotype-dilution mass spectrometry traceable method. AKI was defined using the original-KDIGO definition as >= 1.5-fold change in creatinine within seven days or an absolute change of >= 0.3 mg/dl within 48 h. The SCA modified-KDIGO (sKDIGO) definition excluded children with a 1.5-fold change in creatinine from 0.2 mg/dL to 0.3 mg/dL.
RESULTS: Using KDIGO, 90/185 (48.7%) children had AKI with 61/185 (33.0%) AKI cases present on admission, and 29/124 (23.4%) cases of incident AKI. Overall, 23 children with AKI had a 1.5-fold increase in creatinine from 0.2 mg/dL to 0.3 m/dL. Using the sKDIGO-definition, 67/185 (36.2%) children had AKI with 43/185 (23.2%) cases on admission, and 24/142 (16.9%) cases of incident AKI. The sKDIGO definition, but not the original-KDIGO definition, was associated with increased mortality (0.9% vs. 7.5%, p = 0.024). Using logistic regression, AKI risk factors included age (aOR, 1.10, 95% CI 1.10, 1.20), hypovolemia (aOR, 2.98, 95% CI 1.08, 8.23), tender hepatomegaly (aOR, 2.46, 95% CI 1.05, 5.81), and infection (aOR, 2.63, 95% CI 1.19, 5.81) (p < 0.05).
CONCLUSION: These results demonstrate that AKI is a common complication in children with SCA admitted with VOC. The sKDIGO definition of AKI in children with SCA was a better predictor of clinical outcomes in children. There is need for promotion of targeted interventions to ensure early identification and treatment of AKI in children with SCA.

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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8933904
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116.

Acute Kidney Injury Outcome in COVID-19 Patients.
Sabaghian T, Ahmadi Koomleh A, Nassiri AA, Kharazmi AB, Khalili S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Iranian journal of Kidney Diseases. 1(1):44-51, 2022 01.
[Journal Article]
UI: 35271499
INTRODUCTION: Despite the high incidence of AKI in patients with COVID-19, the characteristics and consequences of this condition have not been well studied.
METHODS: This retrospective cohort study investigated the clinical characteristics, treatment methods, and outcome of COVID-19 patients aged 18 years and older who were hospitalized in Imam Hossein Hospital, Tehran, from February 20th, 2020 to June 20th, 2020.
RESULTS: Out of the total 367 patients with COVID-19, 104 (28%) patients were diagnosed with AKI at the time of admission or during hospitalization, 86 (23%) and 18 (5%) patients were diagnosed with the AKI on admission (early AKI) and after the first 24 h (late AKI), respectively. Concerning the AKI stages, 20 (19%) and 18 (17%) patients were in stages 2 and 3, and the cause of AKI in 52 (50%) patients was renal. Moreover, out of all patients with AKI, 25 (24%) and 29 (28%) patients had transient (Kidney function improvement within 48 h) and persistent AKI (kidney function improvement between 48 h to 7 days). Furthermore, 32 (31%) patients developed acute kidney damage (AKD) (no improvement in AKI after 7 days). The survival rate of AKI patients was lower in higher stages of AKI, and in cases that the reason for kidney

dysfunction was renal or unknown. However, there was no difference in the mortality rate between the early and late AKI.
CONCLUSION: Since about one-third of the patients with AKI eventually develop AKD, it is of great importance to closely monitor all COVID-19 patients, especially the high-risk ones, for the appropriate diagnosis and treatment of AKI. DOI: 10.52547/ijkd.6610.
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1
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Year of Publication
2022

117.

Spectrum of Kidney Injury Following COVID-19 Disease: Renal Biopsy Findings in a Single Italian Pathology Service.
Gambella A, Barreca A, Biancone L, Roccatello D, Peruzzi L, Besso L, Licata C, Attanasio A, Papotti M, Cassoni P
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Biomolecules. 12(2), 2022 02 12.
[Journal Article]
UI: 35204798
The onset of coronavirus disease (COVID-19) as a pandemic infection, has led to increasing insights on its pathophysiology and clinical features being revealed, such as a noticeable kidney involvement. In this study, we describe the histopathological, immunofluorescence, and ultrastructural features of biopsy-proven kidney injury observed in a series of SARS-CoV-2 positive cases in our institution from April 2020 to November 2021. We retrieved and retrospectively reviewed nine cases (two pediatric and seven adults) that experienced nephrotic syndrome (six cases), acute kidney injury (two cases), and a clinically silent microhematuria and leukocyturia. Kidney biopsies were investigated by means of light microscopy, direct immunofluorescence, and electron microscopy. The primary diagnoses were minimal change disease (four cases), acute tubular necrosis (two cases), collapsing glomerulopathy (two cases), and C3 glomerulopathy (one case). None of the cases showed viral or viral-like particles on ultrastructural analysis. Novel and specific histologic features on kidney biopsy related to SARS-CoV-2 infection have been gradually disclosed and reported, harboring relevant clinical and therapeutic implications. Recognizing and properly diagnosing renal involvement in patients experiencing COVID-19 could be challenging (due to the lack of direct proof of viral infection, e.g., viral particles) and requires a proper integration of clinical and pathological data.
Version ID
1
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Year of Publication
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118.

Induction of APOBEC3-mediated genomic damage in urothelium implicates BK polyomavirus (BKPyV) as a hit-and-run driver for bladder cancer.
Baker SC, Mason AS, Slip RG, Skinner KT, Macdonald A, Masood O, Harris RS, Fenton TR, Periyasamy M, Ali S, Southgate J
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Oncogene. 41(15):2139-2151, 2022 04.
[Journal Article]
UI: 35194151
Limited understanding of bladder cancer aetiopathology hampers progress in reducing incidence. Mutational signatures show the anti-viral apolipoprotein B mRNA editing enzyme catalytic polypeptide (APOBEC) enzymes are responsible for the preponderance of mutations in bladder tumour genomes, but no causative viral agent has been identified. BK polyomavirus (BKPyV) is a common childhood infection that remains latent in the adult kidney, where reactivation leads to viruria. This study provides missing mechanistic evidence linking reactivated BKPyV-infection to bladder cancer risk. We used a mitotically-quiescent, functionally-differentiated model of normal human urothelium to examine BKPyV-infection. BKPyV-infection led to significantly elevated APOBEC3A and APOBEC3B protein, increased deaminase activity and greater numbers of apurinic/apyrimidinic sites in the host urothelial genome. BKPyV Large T antigen (LT-Ag) stimulated re-entry from G0 into the cell cycle through inhibition of retinoblastoma protein and

activation of EZH2, E2F1 and FOXM1, with cells arresting in G2. The single-stranded DNA displacement loops formed in urothelial cells during BKPyV-infection interacted with LT-Ag to provide a substrate for APOBEC3-activity. Addition of interferon gamma (IFNgamma) to infected urothelium suppressed expression of the viral genome. These results support reactivated BKPyV infections in adults as a risk factor for bladder cancer in immune-insufficient populations.

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1
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Year of Publication
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119.

Risk assessment for acute kidney injury and death among new COVID-19 positive adult patients without chronic kidney disease: retrospective cohort study among three US hospitals.
Li D, Ren H, Varelmann DJ, Sarin P, Xu P, Wu D, Li Q, Lin X
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BMJ Open. 12(2):e053635, 2022 02 21.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 35190428
OBJECTIVE: To develop simple but clinically informative risk stratification tools using a few top demographic factors and biomarkers at COVID-19 diagnosis to predict acute kidney injury (AKI) and death.
DESIGN: Retrospective cohort analysis, follow-up from 1 February through 28 May 2020.
SETTING: 3 teaching hospitals, 2 urban and 1 community-based in the Boston area.
PARTICIPANTS: Eligible patients were at least 18 years old, tested COVID-19 positive from 1 February through 28 May 2020, and had at least two serum creatinine measurements within 30 days of a new COVID-19 diagnosis. Exclusion criteria were having chronic kidney disease or having a previous AKI within 3 months of a new COVID-19 diagnosis.
MAIN OUTCOMES AND MEASURES: Time from new COVID-19 diagnosis until AKI event, time until death event.
RESULTS: Among 3716 patients, there were 1855 (49.9%) males and the average age was 58.6 years (SD 19.2 years). Age, sex, white blood cell, haemoglobin, platelet, C reactive protein (CRP) and D-dimer levels were most strongly associated with AKI and/or death. We created risk scores using these variables predicting AKI within 3 days and death within 30 days of a new COVID-19 diagnosis. Area under the curve (AUC) for predicting AKI within 3 days was 0.785 (95% CI 0.758 to 0.813) and AUC for death within 30 days was 0.861 (95% CI 0.843 to 0.878). Haemoglobin was the most predictive component for AKI, and age the most predictive for death. Predictive accuracies using all study variables were similar to using the simplified scores.
CONCLUSION: Simple risk scores using age, sex, a complete blood cell count, CRP and D-dimer were highly predictive of AKI and death and can help simplify and better inform clinical decision making.

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120.

A child presents with acute kidney injury, alkalosis and hypercalcaemia-a new-age cause for a historical syndrome: Questions.
Kermond R, Carter S, Quinlan C
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 37(8):1805-1806, 2022 08.
[Journal Article]
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121.

Malignancy risk stratification of cystic renal lesions based on a contrast-enhanced CT-based machine learning model and a clinical decision algorithm.
Dana J, Lefebvre TL, Savadjiev P, Bodard S, Gauvin S, Bhatnagar SR, Forghani R, Helenon O, Reinhold C

OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
European Radiology. 32(6):4116-4127, 2022 Jun.
[Journal Article]
UI: 35066631
OBJECTIVE: To distinguish benign from malignant cystic renal lesions (CRL) using a contrast-enhanced CT-based radiomics model and a clinical decision algorithm.
METHODS: This dual-center retrospective study included patients over 18 years old with CRL between 2005 and 2018. The reference standard was histopathology or 4-year imaging follow-up. Training and testing datasets were acquired from two institutions. Quantitative 3D radiomics analyses were performed on nephrographic phase CT images. Ten-fold cross-validated LASSO regression was applied to the training dataset to identify the most discriminative features. A logistic regression model was trained to classify malignancy and tested on the independent dataset. Reported metrics included areas under the receiver operating characteristic curves (AUC) and balanced accuracy. Decision curve analysis for stratifying patients for surgery was performed in the testing dataset. A decision algorithm was built by combining consensus radiological readings of Bosniak categories and radiomics-based risks.
RESULTS: A total of 149 CRL (139 patients; 65 years [56-72]) were included in the training dataset-35 Bosniak(B)-IIF (8.6% malignancy), 23 B-III (43.5%), and 23 B-IV (87.0%)-and 50 CRL (46 patients; 61 years [51-68]) in the testing dataset-12 B-IIF (8.3%), 10 B-III (60.0%), and 9 B-IV (100%). The machine learning model achieved high diagnostic performance in predicting malignancy in the testing dataset (AUC = 0.96; balanced accuracy = 94%). There was a net benefit across threshold probabilities in using the clinical decision algorithm over management guidelines based on Bosniak categories.
CONCLUSION: CT-based radiomics modeling accurately distinguished benign from malignant CRL, outperforming the Bosniak classification. The decision algorithm best stratified lesions for surgery and active surveillance.
KEY POINTS: * The radiomics model achieved excellent diagnostic performance in identifying malignant cystic renal lesions in an independent testing dataset (AUC = 0.96). * The machine learning-enhanced decision algorithm outperformed the management guidelines based on the Bosniak classification for stratifying patients to surgical ablation or active surveillance.

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122.

Chediak Higashi syndrome with acute kidney injury: Answers.
Kalra S, Khera S, Sharma A, Daryani H, Singh V
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 37(6):1317-1318, 2022 06.
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Year of Publication
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123.

Chediak Higashi syndrome with acute kidney injury: Questions.
Kalra S, Khera S, Sharma A, Daryani H, Singh V
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 37(6):1313-1315, 2022 06.
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124.

Renal transplant injury at caesarean delivery: A cautionary tale and a plan for the future.
McCormick CA, de Crespigny PC, Suh N, Unterscheider J
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Australian & New Zealand Journal of Obstetrics & Gynaecology. 62(2):332-335, 2022 04.
[Journal Article]
UI: 35040486
Pregnancy following renal transplantation is increasingly common. Overall pregnancy outcomes are favourable; however, specific transplant-related risks do exist. In particular, the risk of caesarean delivery is much higher in renal transplant recipients when compared to the general obstetric population. This is owing to the necessity for preterm delivery in cases of severe and early-onset pre-eclampsia and/or fetal growth restriction. We describe two recent cases of renal transplant injury at caesarean delivery at our institution, a tertiary/quaternary obstetric service, which highlight the potential operative risks associated with abdominal surgery. We propose a standardised approach in the care of transplant recipients undergoing caesarean delivery which is aimed at minimising harm and increasing patient safety.

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Year of Publication
2022

125.

Effect of liver resection-induced increases in hepatic venous pressure gradient on development of postoperative acute kidney injury.
Reiterer C, Taschner A, Luf F, Hecking M, Tamandl D, Zotti O, Reiberger T, Starlinger P, Mandorfer M, Fleischmann E
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BMC Nephrology. 23(1):21, 2022 01 08.
[Journal Article]
UI: 34996372
BACKGROUND: The impact of changes in portal pressure before and after liver resection (defined as DELTAHVPG) on postoperative kidney function remains unknown. Therefore, we investigated the effect of DELTAHVPG on (i) the incidence of postoperative AKI and (ii) the renin-angiotensin system (RAAS) and sympathetic nervous system (SNS) activity.
METHODS: We included 30 patients undergoing partial liver resection. Our primary outcome was postoperative AKI according to KDIGO criteria. For our secondary outcome we assessed the plasma renin, aldosterone, noradrenaline, adrenaline, dopamine and vasopressin concentrations prior and 2 h after induction of anaesthesia, on the first and fifth postoperative day. HVPG was measured prior and immediately after liver resection.
RESULTS: DELTAHVPG could be measured in 21 patients with 12 patients HVPG showing increases in HVPG (HVPG>=1 mmHg) while 9 patients remained stable. AKI developed in 7/12 of patients with increasing HVPG, but only in 2/9 of patients with stable DELTAHVPG (p = 0.302). Noradrenalin levels were significantly higher in patients with increasing DELTAHVPG than in patients with stable DELTAHVPG. (p = 0.009). Biomarkers reflecting RAAS and SNS activity remained similar in patients with increasing vs. stable DELTAHVPG.
CONCLUSIONS: Patients with increased HVPG had higher postoperative creatinine concentrations, however, the incidence of AKI was similar between patients with increased versus stable HVPG.

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1
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126.

Epidemiologic study of bladder and urethral injury in Korea: A nationwide population-based study.
Tae BS, Yoon YE, Na W, Oh KJ, Park SY, Park JY, Moon HS
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Investigative And Clinical Urology. 63(1):92-98, 2022 01.
[Journal Article]
UI: 34983127
PURPOSE: We aimed to analyze the characteristics and management of bladder and urethral injuries in Korea by use of the National Health Insurance Service (NHIS) database.
MATERIALS AND METHODS: Data from the NHIS database representative of all cases of Korean bladder injury (n=4,631) and urethral injury (n=17,858) reported between 2012 and 2016 were analyzed. We used the International Classification of Diseases, 10th revision, clinical modification codes to identify the diagnoses.

RESULTS: A total of 491 males (1.97/100,000) and 590 females (2.39/100,000) experienced bladder injury in 2012, and 449 males (1.76/100,000) and 624 females (2.47/100,000) in 2016. The risk of bladder injury was higher in female than in male (hazard ratio [HR], 1.267; p<0.001). The annual incidence of bladder injury did not increase (HR, 0.992; p=0.409). A total of 2,886 (62.3%) patients were managed with conservative treatment, and 1,745 (37.7%) patients underwent surgical treatment. A total of 4,114 males (16.5/100,000) and 285 females (1.2/100,000) had urethral injury in 2012, while 4,465 males (17.5/100,000) and 303 females (1.2/100,000) had urethral injury in 2016. The incidence of urethral injury is increasing annually (HR, 1.010; p=0.036).
CONCLUSIONS: The incidence of urethral injury increased continuously over the years studied, whereas that of bladder injury remained unchanged in Korea. The incidence of bladder injury was higher in females, and more than 90% of total urethral injuries were reported in males. This is the first study to evaluate the epidemiology of bladder and urethral injury using a nationwide population database.

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127.

Impact of decreasing vancomycin exposure on acute kidney injury in stem cell transplant recipients.
Hambrick HR, Greco KF, Weller E, Ganapathi L, Lehmann LE, Sandora TJ

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Infection Control & Hospital Epidemiology. 43(10):1375-1381, 2022 10.
[Journal Article. Research Support, Non-U.S. Gov't. Research Support, N.I.H., Extramural]
UI: 34874001
OBJECTIVE: To evaluate the change in vancomycin days of therapy (DOT) and vancomycin-associated acute kidney injury (AKI) after an antimicrobial stewardship program (ASP) intervention to decrease vancomycin use in stable patients after hematopoietic stem cell transplantation (HSCT).
DESIGN: Retrospective cohort study and quasi-experimental interrupted time series analysis. Change in unit-level vancomycin DOT per 1,000 inpatient days after the intervention was assessed using segmented Poisson regression. Subject-specific risk of vancomycin-associated AKI was evaluated using a random intercept logistic regression model with mediation analysis.
SETTING: HSCT unit at a single quaternary-care pediatric hospital.
PARTICIPANTS: Inpatients aged 3 months and older who underwent HSCT between January 1, 2015, and March 31, 2019 (27 months before and after the intervention) who received any dose of vancomycin.
INTERVENTION: An ASP intervention in April 2017 creating a new practice guideline to decrease prolonged (>72 hours) vancomycin courses for stable HSCT patients with febrile neutropenia.
RESULTS: Overall, 439 vancomycin exposures (234 before the intervention and 205 after the intervention) occurring across 300 transplants and 259 subjects were included. The mean vancomycin DOT was 307 per 1,000 inpatient days (95% confidence interval [CI], 272-342) and decreased after the intervention to 207 per 1,000 inpatient days (95% CI, 173-240). In multivariable analyses, the odds of AKI in the postintervention period were 37% lower than in the preintervention period (adjusted OR, 0.63; 95% CI, 0.42-0.95; P = .0268); 56% of the excess risk was mediated by vancomycin DOT.
CONCLUSIONS: An ASP intervention successfully decreased vancomycin use after HSCT and resulted in a decrease in AKI. Reducing empiric antibiotic exposure for stable patients after HSCT can improve clinical outcomes.
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128.

Renal lesions mimicking acute focal bacterial nephritis in pediatric leukemia.
Kimura Y, Kiyota K, Koga H, Suenobu S, Ihara K
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
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Year of Publication
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129.

Association of antibiotic use and acute kidney injury in patients hospitalized with community-acquired pneumonia.
Le P, Navaneethan SD, Yu PC, Pallotta AM, Rastogi R, Patel P, Brateanu A, Imrey PB, Rothberg MB
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Current Medical Research & Opinion. 38(3):443-450, 2022 Mar.

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UI: 34714213
BACKGROUND: Acute kidney injury (AKI) is common among hospitalized patients with community-acquired pneumonia (CAP). We aimed to estimate and compare the risk of AKI for various antibiotic combinations in adults hospitalized for CAP.
METHODS: We conducted a retrospective cohort study of the Premier Healthcare Database containing all admissions for 660 US hospitals from 2010 to 2015. We included adults aged >=18 years hospitalized with CAP and considered 6 different antibiotic combinations based on continuous use in the first 3 hospital days. The primary outcome was incident AKI, defined by ICD-9 codes 584.5-584-9. We evaluated associations of AKI with in-hospital mortality and length-of-stay. We excluded patients who were admitted directly to the intensive care unit, had AKI codes present on admission or had dialysis in the first 2 days. We used generalized linear mixed models with the hospital as a random effect and covariate adjustment for patient demographics, comorbidities, other treatments on day 0/1, and hospital characteristics.
RESULTS: The total sample included 449,535 patients, 3.15% of whom developed AKI. All other regimens but fluoroquinolones exhibited higher AKI odds than 3rd generation cephalosporin with or without macrolide. The combination of piperacillin/tazobactam and vancomycin with or without other antibiotics was associated with the highest AKI odds (OR = 1.89; 95% CI: 1.73-2.06). Patients with incident AKI had an increased odds of hospital mortality (OR = 6.37; 95% CI: 6.07-6.69) and longer length-of-stay (mean multiplier = 1.84; 95% CI: 1.82, 1.86).
CONCLUSION: Compared to 3rd generation cephalosporin with or without macrolide, piperacillin/tazobactam, vancomycin, and their combination were associated with higher odds of developing AKI, which in turn were associated with worse clinical outcomes.
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Year of Publication
2022

130.

Ability of the surgical Apgar score to predict acute kidney injury following radical cystectomy.
Lone Z, Campbell RA, Corrigan D, Ramkumar R, Hegde P, Rahmy A, Murthy PB, Haber GP, Almassi N, Lee BH
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Urologic Oncology. 40(5):194.e1-194.e6, 2022 05.
[Journal Article]
UI: 34654645
PURPOSE: Acute kidney injury (AKI) is a common complication after radical cystectomy (RC). Previous literature has shown that intraoperative hemodynamic instability measured via the surgical Apgar score is an independent predictor of major complications following RC. We sought to determine whether the surgical Apgar score is predictive of postoperative AKI.
METHODS: We performed a retrospective review of RC patients at our institution from 2010 to 2017. Intraoperative hemodynamic instability was captured via the Apgar score based on the lowest intraoperative mean arterial blood pressure, lowest heart rate, and estimated blood loss. Patients were divided into 3 groups: high-risk (HR; Apgar <=4), intermediate-risk (IR; Apgar score 5-6), and low-risk (LR; Apgar score >=7). AKIs were graded according to the Kidney Disease Improving Global Outcomes (KDIGO) criteria. High grade AKIs were defined as KDIGO grade 2 or 3. Categorical variables were assessed using the Pearson Chi-Square test, quantitative with the Kruskal-Wallis test, and multivariable logistic regression to identify predictors of AKI and high grade AKIs within 30 days of RC.
RESULTS: Eight hundred and seventy-three patients were included with a median follow-up of 35 months. AKI within 30 days was observed in 28% of patients. Predictors of AKI within 30 days on adjusted analysis included IR (OR: 1.83, P=0.002) and HR (OR: 3.53, P < 0.001) Apgar scores. IR (OR: 2.23, P=0.007) and HR (OR: 4.87, P < 0.001) Apgar scores were also predictors of high-grade AKIs.
CONCLUSION: Intraoperative hemodynamic instability measured via the Apgar score can be predictive of AKI, which can guide individualized fluid management in the postoperative period.

Version ID
1
Status
MEDLINE
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Lone, Zaeem, Campbell, Rebecca A, Corrigan, Dillon, Ramkumar, Rathika, Hegde, Pranay, Rahmy, Abdelrahman, Murthy, Prithvi B, Haber, Georges Pascal, Almassi, Nima, Lee, Byron H
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Year of Publication
2022

131.

Prediction of early acute kidney injury after trauma using prehospital systolic blood pressure and lactate levels: A prospective validation study.
Nasu T, Ueda K, Kawashima S, Okishio Y, Kunitatsu K, Iwasaki Y, Kato S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Injury. 53(1):81-85, 2022 Jan.
[Journal Article]
UI: 34649731
BACKGROUND: Acute kidney injury (AKI) after trauma is a major complication independently associated with a prolonged hospital stay and increased mortality. We previously reported that the prehospital systolic blood pressure (SBP) and early hospital arterial lactate level, along with specific cut-off values, show good performance in the early prediction of AKI using AUC-ROC [1]. The purpose of this study was to prospectively validate whether or not these parameters are predictive of newly occurring AKI after trauma.
METHODS: This was a prospective review of trauma patients who were admitted to a single trauma center from January to December 2019. Patients who were <16 years old, who had burns, and who had chronic kidney disease were excluded. AKI was defined according to the Risk, Injury, Failure, Loss of the kidney function, and End-stage kidney disease (RIFLE) classification based on serum creatinine alone. Patients with a low prehospital SBP (<=126 mmHg) and high lactate levels (>=2.5 mmol/L) were defined as the high-risk group, and other patients were defined as the low-risk group.
RESULTS: A total of 489 trauma patients were admitted to our center, of whom 403 were eligible for the study. The high-risk group consisted of 38 patients, and the low-risk group consisted of 365 patients. The incidence of severe AKI in Stage Injury and Failure was significantly higher in the high-risk group (5 patients, 13.2%) than in the low-risk group (7 patients, 1.9%), with an odds ratio of 7.75 and 95% confidence interval of 2.33-25.77.
CONCLUSIONS: These predictors showed good performance in the early prediction of severe AKI after trauma. Early prediction of the high-risk groups for severe AKI after trauma prompting early treatment may help improve the prognosis of trauma patients.

Version ID
1
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MEDLINE
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Year of Publication
2022

132.

Recurrent acute kidney injury in preterm neonates is common and associated with worse outcomes and higher mortality.
Adegboyega OO, Singh Y, Bhutada A, Kupferman JC, Rastogi S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Research. 92(1):284-290, 2022 07.
[Journal Article]
UI: 34593979
BACKGROUND: Acute kidney injury (AKI) in preterm neonates is associated with poor outcomes that may worsen in the setting of recurrent episodes of AKI. This study defines and studies the incidence, risk factors, and outcomes of recurrent AKI (rAKI).
METHODS: Retrospective chart review of the neonates born at a gestational age of <=28 weeks admitted to the neonatal intensive care unit (NICU) between January 2014 and December 2018. We identified AKI based on the serum creatinine (Scr) concentrations using the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. rAKI was defined as the occurrence of AKI after Scr from the prior AKI had returned to baseline.
RESULTS: Forty-nine of the 205 (24%) preterm neonates developed rAKI. An earlier diagnosis (<7 days old) and a higher KDIGO stage (stage 3) at the initial episode of AKI was associated with rAKI (p = 0.03). Preterm neonates with rAKI had higher mortality as compared to those with a single episode of AKI (sAKI) (adjusted odds ratio (aOR) 4.55, 95% confidence interval (CI), 1.12-18.51). Length of stay (LOS) was longer among neonates with rAKI as compared to those with sAKI by 36 days (95% CI 24.9-47.1).
CONCLUSIONS: Recurrent AKI in preterm neonates was associated with earlier episodes and higher KDIGO stage of the initial AKI episode. Neonates with rAKI had higher mortality and longer LOS compared to those with sAKI.
IMPACT: Definition and study of the incidence of rAKI and its associated outcomes among preterm neonates. Recurrent AKI is common among preterm neonates and may contribute to worse outcomes for premature neonates in the NICU. Early recognition of the risk factors for AKI, and effective management of initial AKI and early phase of recurrent AKI may improve outcomes of these preterm neonates.

Version ID
1
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MEDLINE
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Year of Publication

2022

133.

Clinical efficacy of low-dose dopamine in the treatment of renal injury after neonatal asphyxia and evaluation of renal function improvement.
Yang Z, Geng W, Hei M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Minerva Pediatrics. 74(2):232-234, 2022 04.
[Journal Article]
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1
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Year of Publication
2022

134.

Nephrectomy Is Not Associated with Increased Risk of Mortality or Acute Kidney Injury after High-Grade Renal Trauma: A Propensity Score Analysis of the Trauma Quality Improvement Program (TQIP).
McCormick BJ, Horns JJ, Das R, Paudel N, Hanson HA, McCrum M, Nirula R, Myers JB
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Urology. 207(2):400-406, 2022 Feb.
[Journal Article]
UI: 34549590
PURPOSE: Patients with high-grade renal trauma (HGRT) undergoing nephrectomy may be at higher risk for mortality compared to those treated conservatively. However, no study has controlled for degree of hemorrhage as a measure of shock. We hypothesized that after controlling for blood transfusions and other factors, nephrectomy after HGRT would be associated with increased mortality and acute kidney injury (AKI).
MATERIALS AND METHODS: We identified adult patients with HGRT (American Association for the Surgery of Trauma grade III-V) in TQIP (2013-2017). Propensity scoring was used to adjust for the probability of nephrectomy. Conditional logistic regression was used to analyze the association between nephrectomy and mortality and AKI. We adjusted for patient characteristics, injury specifics, and physiological factors including blood transfusions.

RESULTS: There were 12,780 patients with HGRT, and 1,014 (7.9%) underwent nephrectomy. Mortality was 10.6% and 4.2% in the nephrectomy and nonnephrectomy groups, respectively (p <0.001). In nephrectomy patients, 8.6% experienced AKI vs 2.4% of nonnephrectomy patients (p <0.001). In the adjusted analysis, there was no association between nephrectomy and mortality (OR=0.367, 95% CI 0.09-1.497, p=0.162). There was also no association between nephrectomy and AKI. Increasing age, nonCaucasian race, increasing Injury Severity Score, decreasing Glasgow Coma Score and blood transfusions were associated with higher mortality. For AKI, independent predictors included increasing age, male sex, and blood transfusions.
CONCLUSIONS: After adjusting for volume of blood transfused in the first 24 hours, nephrectomy after HGRT was not associated with increased mortality or AKI. As a clinical principle, trauma nephrectomy should be avoided when possible.
Version ID
1
Status
MEDLINE
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McCormick, Benjamin J, Horns, Joshua J, Das, Rupam, Paudel, Niraj, Hanson, Heidi A, McCrum, Marta, Nirula, Raminder, Myers, Jeremy B
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Comments
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Year of Publication
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135.

Early post-operative PV-ACO2/CA-VO2 predicts subsequent acute kidney injury after complete repair of tetralogy of Fallot.
Xu Y, Zhu X, Xu L, Li Z
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cardiology in the Young. 32(4):558-563, 2022 Apr.
[Journal Article]
UI: 34210376
BACKGROUND: Acute kidney injury is a severe complication following complete repair of tetralogy of Fallot. Anaerobic metabolism is believed to contribute to the development of acute kidney injury. The ratio of central venous to arterial carbon dioxide tension to arterio-venous oxygen content (PV-ACO2/CA-VO2) has been proposed as a surrogate for respiratory quotient and an indicator of tissue oxygenation. We hypothesised that a small increase of PV-ACO2/CA-VO2 might have superior discrimination ability in subsequent acute kidney injury prediction.
METHODS: This study is retrospective and single-centre design study. The study population consisted of 61 children with tetralogy of Fallot that underwent a complete surgical repair between July 2017 and January 2021. Baseline characteristics and intra-operative parameters were

collected through a retrospective chart review. PV-ACO2/CA-VO2 was collected within 12 hours of surgical completion. Acute kidney injury was defined according to the criteria established by the Kidney Disease: Improving Global Outcomes group. Univariate and logistic regression analyses were performed to determine risk factors for acute kidney injury.
RESULTS: Of the 61 patients, 20 (32.8%) developed acute kidney injury. Multivariate logistic analyses showed that age, height, haematocrit, and Pv-aCO2/Ca-vO2 were independently associated with the development of acute kidney injury. The addition of Pv-aCO2/Ca-vO2 to the model significantly increased model discrimination [AUROC 0.939 (95% CI 0.894-0.984) and AUROC 0.922 (95% CI 0.869-0.975), respectively].
CONCLUSIONS: The increase of PV-ACO2/CA-VO2 could improve the predictive ability for subsequent development of acute kidney injury in children with tetralogy of Fallot.
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1
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MEDLINE
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Year of Publication
2022

136.

Early detection of acute kidney injury in critically ill children: Predictive value of renal arterial Doppler assessment.
de Carvalho A.V., de Siqueira Ferraz I., de Souza F.M., Brandao M.B., Nogueira R.J.N., Alves D.F.S., de Souza T.H.
Embase
medRxiv. (no pagination), 2022. Date of Publication: 20 Apr 2022.
[Preprint]
AN: 2018155186
Objective: Renal resistive index (RRI) and renal pulsatility index (RPI) are Doppler-based variables proposed to assess renal perfusion at the bedside in critically ill patients. This study aimed to assess the accuracy of such variables to predict acute kidney injury (AKI) in mechanically ventilated children.
Design(s): Prospective single-center observational study Setting: Pediatric intensive care unit of a quaternary care teaching hospital.

Patient(s): 84 children under controlled ventilation (median age of 5.1 months and weight of 6.6 kg).
Intervention(s): Consecutive children underwent renal Doppler ultrasound examination within 24 hours of invasive mechanical ventilation. Renal resistive index (RRI) and renal pulsatility index (RPI) were measured. The primary outcome was severe AKI (KDIGO stage 2 or 3) on day 3. Secondary outcomes included the persistence of severe AKI on day 5.
Result(s): On day 3, 22 patients were classified as having AKI (any stage), of which 12 were severe. RRI could effectively predict severe AKI (area under the ROC curve [AUC] 0.94; 95% CI 0.86 - 0.98; p < 0.001) as well as RPI (AUC 0.86; 95% CI 0.76 - 0.92; p < 0.001). The AUC of the IRR was significantly greater than that obtained from the RPI (p = 0.023). The optimal cutoff for RRI was 0.85 (sensitivity, 91.7%; specificity, 84.7%; positive predictive value, 50.0%; and negative predictive value 98.4%). Similar results were obtained when the accuracy to predict AKI on day 5 was assessed. Significant correlations were observed between RRI and estimated glomerular filtration rate at enrollment (rho = - 0.495, p<0.001) and on day 3 (rho = -0.467, p <0.001).
Conclusion(s): Renal Doppler ultrasound may be a promising tool to predict AKI in critically ill children under invasive mechanical ventilation.

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Publisher
medRxiv
Year of Publication
2022

137.

Prenatal Metal Exposures and Associations with Kidney Injury Biomarkers in Children.
Politis M.D., Yao M., Gennings C., Tamayo-Ortiz M., Valvi D., Kim-Schulze S., Qi J., Amarasiriwardena C., Pantic I., Tolentino M.C., Estrada-Gutierrez G., Greenberg J.H., Tellez-Rojo M.M., Wright R.O., Sanders A.P., Rosa M.J.
Embase
Toxics. 10(11) (no pagination), 2022. Article Number: 692. Date of Publication: November 2022. [Article]
AN: 2021950394
Prenatal exposure to arsenic (As), cadmium (Cd), mercury (Hg), and lead (Pb) may be nephrotoxic, yet limited studies have examined subclinical kidney injury biomarkers in children. We assessed whether metal exposure in the second trimester (2T), a crucial time of kidney development, is associated with altered urine kidney injury and function biomarkers in preadolescent children. Analyses included 494 children participating in a birth cohort study in

Mexico City. Concentrations of As, Cd, and Pb were measured from pregnant women in 2T blood and urine, and Hg in urine only. Kidney biomarkers were measured from children in urine at age 8-12 years. We assessed the associations between individual metals and (1) kidney biomarkers using linear regression and (2) a multi-protein kidney mixture using weighted quantile sum (WQS) regression. Associations of separate urine and blood metal mixtures with individual kidney biomarkers were assessed via WQS. Within the multi-protein mixture, the association with increased urinary As was predominated by urine alpha-1-microglobulin (A1M), interferon gamma-induced protein 10 (IP10), and fatty acid binding protein 1; the association with increased urinary Cd was predominated by A1M, clusterin, and albumin. The urine metal mixture was associated with increased albumin (0.23 ng/mL; 95% confidence interval (CI): 0.10, 0.37), IP10 (0.15 ng/mL; 95% CI: 0.02, 0.28), and cystatin C (0.17 ng/mL; 95% CI: 0.04, 0.31); these associations were mainly driven by urinary As and Cd. We observed null associations between prenatal blood or urine metal mixtures and estimated glomerular filtration rate. Higher prenatal urinary metals, individually and as a mixture were associated with altered kidney injury biomarkers in children. Further research and longer participant follow-up are required to ascertain the risk of kidney disease later in life.

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Publisher
MDPI
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138.

Chromatin accessibility dynamics dictate renal tubular epithelial cell response to injury.
Cao X., Wang J., Zhang T., Liu Z., Liu L., Li Z., Zhao Y., Yu Q., Liu T., Nie J., Niu Y., Chen Y., Yang L., Zhang L.
Embase
Nature Communications. 13(1) (no pagination), 2022. Article Number: 7322. Date of Publication: December 2022.
[Article]
AN: 2020316619
Renal tubular epithelial cells (TECs) can initiate an adaptive response to completely recover from mild acute kidney injury (AKI), whereas severe injury often leads to persistence of maladaptive repair and progression to kidney fibrosis. Through profiling of active DNA regulatory elements by ATAC-seq, we reveal widespread, dynamic changes in the chromatin accessibility of TECs after ischemia-reperfusion injury. We show that injury-specific domains of regulatory chromatin become accessible prior to gene activation, creating poised chromatin states to activate the consequent gene expression program and injury response. We further identify RXRalpha as a key transcription factor in promoting adaptive repair. Activation of RXRalpha by bexarotene, an FDA-approved RXRalpha agonist, restores the chromatin state and gene expression program to protect TECs against severe kidney injury. Together, our findings elucidate a chromatin-mediated mechanism underlying differential responses of TECs to varying injuries and identify RXRalpha as a therapeutic target of acute kidney injury.

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Publisher
Nature Research
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2022

139.

Major adverse kidney events after acute kidney injury in the pediatric intensive care unit: a propensity score-matched cohort study.
Kula A.J., Qu P., Strub B., Smith J.M., Menon S.
Embase
Pediatric Nephrology. 37(9) (pp 2099-2107), 2022. Date of Publication: September 2022.
[Article]
AN: 2014760186
Background: Acute kidney injury (AKI) in patients admitted to the pediatric intensive care unit (PICU) is associated with poor short-term and long-term outcomes. Greater awareness of long-term AKI-associated outcomes is needed to optimally plan follow-up and management after ICU discharge. We used propensity score methods to study associations between pediatric AKI and major adverse kidney outcomes, including mortality.
Method(s): We included all children 6 months-18 years admitted to PICU at Seattle Children's Hospital from 7/1/2009 to 12/31/2018. Our primary outcome measure was Major Adverse Kidney Events at 30 days (MAKE30): creatinine > 200% of baseline, eGFR < 60 mL/min/1.73 m2, dialysis dependence, or mortality. Propensity scores for AKI development in PICU were generated using demographic, medical history, admission, and PICU hospitalization variables. Patients with AKI were matched to control patients without AKI. Logistic regression was used to test association between AKI status and MAKE30.
Result(s): In the unmatched cohort (n = 878), patients with AKI had lower platelet count (160 vs. 222) and higher PRISM III score (11 vs. 3.5). After propensity score matching, those with AKI vs. no AKI had similar PRISM III scores (9 vs. 10) and platelet count (163 vs. 159). AKI was significantly associated with MAKE30 after propensity score matching (OR: 2.97; 95% CI 1.82-4.84).
Conclusion(s): Propensity score matching significantly reduced imbalance in baseline characteristics between those with and without AKI. After matching, AKI remained significantly associated with MAKE30. Patients who developed AKI were more likely to have abnormal kidney function at 30 and 90 days after ICU admission and may be at high risk for developing CKD in the future. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information[Figure not available: see fulltext.].

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35041037 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35041037]
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Publisher
Springer Science and Business Media Deutschland GmbH

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140.

Frequency of Acute Kidney Injury and Association With Mortality Among Extremely Preterm Infants.
Aziz K.B., Schles E.M., Makker K., Wynn J.L.
Embase
JAMA Network Open. 5(12) (no pagination), 2022. Article Number: e2246327. Date of Publication: 2022.
[Article]
AN: 2023007465
IMPORTANCE Neonatal acute kidney injury (AKI) is common and associated with morbidity and mortality. The temporal relationship between AKI and critical illness, as well as the frequency of AKI definition components (urine output and serum creatinine [sCr] concentration change), are unknown in extremely low-birth-weight (ELBW) (<1000 g), extremely preterm (<29 weeks' completed gestational age [GA]) infants. OBJECTIVE To measure the frequency of AKI from birth to death or discharge with attention to the definition components as well as the temporal relationship of AKI to critical illness and death. DESIGN, SETTING, AND PARTICIPANTS A single-center, multiyear, retrospective cohort study was conducted at an academic level IV neonatal intensive care unit between January 1, 2012, and January 1, 2020. Participants included inborn ELBW and infants at 22 to 28 weeks' completed GA with confirmed congenital anomalies who survived 12 hours or more. EXPOSURES Extremely preterm birth and ELBW. MAIN OUTCOMES AND MEASURES The primary outcome was AKI frequency. The timing, severity, and criteria for AKI were measured. The temporal relationship between AKI, organ dysfunction, and outcomes were quantified using odds ratios (ORs), logistic regression, and Shapley Additive Explanations. Acute kidney injury recognition, imaging, pediatric nephrology consultation, and follow-up were determined. RESULTS A total of 436 infants (52% male; 44% Black) met the inclusion criteria (median BW, 725 g; median GA, 25.7 wk). Acute kidney injury was common in the first week of life (44%), primarily based on the change in the sCr concentration criterion (88%), and negatively associated with GA (OR, 0.69; 95% CI, 0.60-0.78), but positively associated with antecedent critical illness (OR, 1.17; 95% CI, 1.12-1.23), severe intraventricular hemorrhage (OR, 1.86; 95% CI, 1.12-3.08), late-onset sepsis (OR, 1.03; 95% CI, 1.02-1.03), and mortality (OR, 2.77; 95% CI, 1.63-4.72). Acute kidney injury had negligible clinical contribution to death within the model (Shapley Additive Explanation, <0.5% change to outcome) relative to antecedent patient-concentration organ dysfunction (6%-15% change). Among infants with severe AKI, recognition (32%), nephrology inpatient consultation (16%), and outpatient follow-up (9%) were not common. CONCLUSIONS AND RELEVANCE In this cohort study of ELBW infants, AKI was common in the first week of life, inversely associated with GA, and followed organ (primarily cardiovascular) dysfunction. Acute kidney injury considered as the primary pathway to mortality was rare, and amelioration of AKI to modify death was not well supported.

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141.

Acute kidney injury in pediatrics: an overview focusing on pathophysiology.
Ruas A.F.L., Lebeis G.M., de Castro N.B., Palmeira V.A., Costa L.B., Lanza K., Simoes e Silva A.C.
Embase
Pediatric Nephrology. 37(9) (pp 2037-2052), 2022. Date of Publication: September 2022.
[Article]
AN: 2014327372
Acute kidney injury (AKI) is defined as an abrupt decline in glomerular filtration rate, with increased serum creatinine and nitrogenous waste products due to several possible etiologies. Incidence in the pediatric population is estimated to be 3.9 per 1,000 hospitalizations, and prevalence among children admitted to intensive care units is 26.9%. Despite being a condition with important incidence and morbimortality, further evidence on pathophysiology and management among the pediatric population is still lacking. This narrative review aimed to summarize and discuss current data on AKI pathophysiology in the pediatric population, considering all the physiological particularities of this age range and common etiologies. Additionally, we reported current diagnostic tools, novel biomarkers, and newly proposed medications that have been studied with the aim of early diagnosis and appropriate treatment of AKI in the future.

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Publisher
Springer Science and Business Media Deutschland GmbH
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142.

Autophagy promotes GSDME-mediated pyroptosis via intrinsic and extrinsic apoptotic pathways in cobalt chloride-induced hypoxia reoxygenation-acute kidney injury.
Liu W., Gan Y., Ding Y., Zhang L., Jiao X., Liu L., Cao H., Gu Y., Yan L., Wang Y., Wang L., Chen S., Shao F.
Embase
Ecotoxicology and Environmental Safety. 242 (no pagination), 2022. Article Number: 113881. Date of Publication: 01 Sep 2022.
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AN: 2019318156
Cobalt is a transition element that abundantly exists in the environment. Besides direct hypoxia stress, cobalt ions indirectly induce hypoxia-reoxygenation injury (HRI), the main cause of acute kidney injury (AKI), a life-threatening clinical syndrome characterized by the necrosis of the proximal tubular epithelial cells (PTECs) and inflammation. Pyroptosis, a type of inflammatory programmed cell death, might play an essential role in HRI-AKI. However, whether pyroptosis is involved in cobalt chloride (CoCl2)-induced HRI-AKI remains unknown. Autophagy is a cellular biological process maintaining cell homeostasis that is involved in cell damage in AKI, yet the underlying regulatory mechanism of autophagy on pyroptosis has not been fully understood. In this study, the in vitro and in vivo models of CoCl2-induced HRI-AKI were established with HK-2 cell line and C57BL/6J mouse. Pyroptosis-related markers were detected with western blotting and immunofluorescence assays, and results showed that gasdermin E (GSDME)-mediated pyroptosis was involved in the cell damage in HRI-AKI. Specific chemical inhibitors of caspase 3, caspase 8, and caspase 9 significantly inhibited GSDME-mediated pyroptosis, verifying that GSDME-mediated pyroptosis was induced via the activation of caspase 3/8/9. The western blotting and immunofluorescence assays were adopted to detect the accumulation of the autophagosomes, and results suggested that HRI increased the autophagic level. The effects of autophagy on apoptosis and pyroptosis were evaluated using lentivirus transfection assays to knock down autophagy-specific genes atg5 and fip200, and results demonstrated that autophagy induced GSDME-mediated pyroptosis via apoptotic pathways in HRI-AKI. Our results revealed the involvement of GSDME-mediated pyroptosis in CoCl2-induced HRI-AKI and promoted the understanding of the regulatory mechanism of GSDME cleavage. Our study might provide a potential therapeutic target for HRI-AKI, and will be helpful for the risk evaluation of cobalt exposure.

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143.

Does intraoperative cyst rupture of malignant cystic renal masses really have no negative impact on oncologic outcomes?.
Xu P., Zhang S., Cao B., Huang J., Li Y., Lin W., Cheng J., Chen W., Zhu Y., Jiang S., Hu X., Guo J., Wang H.
Embase
World Journal of Surgical Oncology. 20(1) (no pagination), 2022. Article Number: 369. Date of Publication: December 2022.
[Article]
AN: 2020249060
Background: To assess the impact of malignant cystic renal masses (CRM) rupture on oncologic outcomes.
Method(s): The study included 406 cases with partial nephrectomy (PN) and 17 cases with cyst decortication confirmed as malignant CRM by pathology. Recurrence-free survival (RFS), metastasis-free survival (MFS), cancer-specific survival (CSS), and overall survival (OS) were analyzed by the Kaplan-Meier method and log-rank test. Cox regression was used to identify risk factors associated with RFS, MFS, CSS, and OS. Logistic regression was performed to explore predictors of rupture.
Result(s): Tumor rupture occurred in 32 of 406 cases (7.9%). With median follow-up of 43 months, 4 (12.5%) and 5 (1.3%) cases experienced recurrence in rupture and non-rupture group, respectively (P = 0.003). Estimated RFS, MFS, and CSS were shorter in cyst ruptured (CR) group than non-ruptured (nonCR) cases (P < 0.001; P = 0.001; P < 0.001). Cox regression analysis indicated that CR was an independent prognostic factor for RFS (HR = 7.354; 95% CI = 1.839-29.413; P = 0.005), MFS (HR = 8.069; 95% CI = 1.804-36.095; P = 0.006), and CSS (HR = 9.643; 95% CI = 2.183-42.599; P = 0.003). Multivariable logistic regression showed that Bosniak IV was a protective factor for CR (OR = 0.065; 95% CI = 0.018-0.239; P < 0.001). However, compared to Bosniak III and I-IIF, Bosniak IV CRMs showed higher rate of clear cell renal cell carcinoma (ccRCC) (76.8% vs 36.5% vs 81.4%) (P < 0.001) and lower rate of Fuhrman I staging (11.2% vs 66.7% vs 7.4%) (P < 0.001). Therefore, in ruptured cases, the recurrence rate was higher in CRM with Bosniak IV (50%, 2/4) than Bosniak I-III (4.4%, 2/45) (P = 0.029).
Conclusion(s): Intraoperative malignant CRM rupture had negative impacts on oncologic outcomes. Bosniak IV was more aggressive than Bosniak I-III and had a higher risk of recurrence after rupture. However, Bosniak IV had a lower risk of rupture, which could weaken even cover-up of the true effect of tumor rupture on oncologic outcomes.

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144.

The pathological and outcome characteristics of renal lesions in Crohn's disease.
Yang Z., Xu X., Dong Y., Zhang Y.
Embase
BMC Nephrology. 23(1) (no pagination), 2022. Article Number: 256. Date of Publication: December 2022.
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AN: 2018281011
Background: The inflammatory bowel disease, containing Crohn's disease and ulcerative colitis, was rare in the population, especially in the complication of kidney disease. A few studies had found proteinuria played a potential indicator of inflammatory bowel disease occurrence and activity. This study aimed to better define the histopathologic spectrum and study the outcome of renal disease in Crohn's disease.
Method(s): A retrospective study of 3557 Crohn's disease from January 1st, 2016 to July 1st, 2021 in the Sixth Affiliated Hospital of Sun Yat-sen University identified 20 (0.56% [20/3557]) patients who underwent kidney biopsy. All biopsy specimens were examined by standard procedures containing light microscopy, immunofluorescence, and electron microscopy.
Result(s): Twenty cases were shown in this review study. Subnephrotic proteinuria (30% [6 of 20]), persistent hematuria and proteinuria (25% [5 of 20]), and isolated hematuria with acanthocytes (25% [5 of 20]) were the main indications for kidney biopsy. The most common diagnosis was IgA nephropathy (70% [14/20]), followed by minimal change disease (10% [2/20]), acute interstitial nephritis (5% [1/20]), granulomatous interstitial nephritis (5% [1/20]), non-IgA mesangial proliferative nephritis (5% [1/20]) and thin basement membrane nephropathy (5% [1/20]). The Lee classification of IgA nephropathy was mostly II or III level. Glomerular mesangial hyperplasia was the most common pathologic manifestation according to the MEST-C Sore. After twelve-month treatment, the majority of patients turned to complete remission of renal disease by measuring proteinuria, while 3 patients still stayed in the relapse stage and 6 patients turned to partial remission by measuring hematuria.
Conclusion(s): IgA nephropathy is the most common kidney biopsy diagnosis in Crohn's disease. Renal damage in Crohn's disease mainly involves the glomerulus, especially the mesangial matrix. After the treatment, proteinuria might be in remission, but hematuria remains.

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145.

Clinical impact of severe acute kidney injury on post-operative and brain injury outcomes in preterm infants following surgical necrotizing enterocolitis.
Garg P.M., Paschal J.L., Zhang M., Pippins M., Taylor C., Sanderson K., Reddy K., Askenazi D., Padbury J.F., Hillegass W.B.
Embase
Journal of Maternal-Fetal and Neonatal Medicine. 35(25) (pp 10124-10136), 2022. Date of Publication: 2022.
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AN: 2019064884
Background: To evaluate post-operative outcomes and white matter injury (WMI) using brain MRI at term equivalent in neonates with and without severe acute kidney injury (AKI) following surgical necrotizing enterocolitis (NEC).
Method(s): A retrospective cohort study comparing neonates with severe (Stage 2/3) vs. other (no AKI/Stage 1) AKI using KDIGO classification with multivariable models assessing this association in the context of multiple systemic comorbidities.
Result(s): Of 103 neonates with surgical NEC, 60 (58%) had severe AKI. Those with severe AKI had lower birth weight (BW; 715 vs. 950 g; p =.023), more frequently treated with indomethacin (18.3 vs. 2.4%); p =.014), higher CRP levels at 24 h after NEC onset (14.4 [6.4-19.8] vs. 4.8 [1.6-13.4]; p =.005), higher presence of cholestasis (73.3 vs. 51.2%); p =.023), later age of NEC onset (14 vs. 7 d); p =.004), longer length of bowel resected (14.9 vs. 4.3 cm); p =.011), longer post-operative ileus days (14 vs. 9 d); p <.001), longer post-operative days at starting enteral feedings (15 vs. 10 d; p <.001), longer days of attainment of full enteral feedings (75 vs. 44.5 d; p =.008) and longer length of stay (140.5 vs. 94 d; p =.028) compared to those without severe AKI. Compared to infants without AKI by serum creatinine, those with AKI had significantly more cases of white matter abnormality (WMA; 90 vs. 36.6%; p <.001) and retinopathy of prematurity (63.9 vs. 35.3%; p =.017). In addition, the presence of AKI Stage 2 and 3 by serum creatinine was independently associated with higher odds of sustaining severe WMI level on an ordinal scale (OR = 6.2; 95% CI = (1.1-35.5); p =.041).
Conclusion(s): Neonates with severe AKI following surgical NEC were more likely to experience longer post-operative morbidity and higher WMI by MRI at term.

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146.

Prevalence and Mortality of Post-traumatic Acute Kidney Injury in Children; a Systematic Review andMeta-analysis.
Yousefifard M., Toloui A., Forouzannia S.A., Ataei N., Hossein H., Khaneh A.Z.S., Ghahfarokhi M., Jones M.E., Hosseini M.
Embase
Archives of Academic Emergency Medicine. 10(1) (no pagination), 2022. Article Number: e89. Date of Publication: 2022.
[Article]
AN: 2021091262
Introduction: Numerous studies on acute kidney injury (AKI) following trauma have been performed, and acceptable findings have been reported in the adult population. The present meta-analysis summarizes the studies performed on the pediatric population to evaluate the prevalence of AKI following trauma in this population.
Method(s): The Medline, Embase, Scopus and Web of Sciences databases were searched for articles published until the July, 31, 2021. Two independent reviewers screened observational studies performed on children with physical trauma and AKI related to it. The interested outcomes were the prevalence and mortality of traumarelated AKI in traumatized children.
Result(s): Data of 9 articles were included in the present meta-analysis. The prevalence of trauma-related AKI varied between 0% and 30.30% among included studies. Pooled analysis showed that the prevalence of trauma-related AKI was 9.86% (95% CI: 8.02 to 11.84%). The prevalence of AKI after exertional rhabdomyolysis, direct physical trauma, and earthquake related injuries was 0%, 12.64% and 24.60%, respectively. There was a significant relationship between the prevalence of AKI and trauma etiology (p = 0.038). Moreover, the occurrence of AKI in children with trauma was associated with an increased risk of mortality (OR = 5.55; 95% CI: 2.14 to 13.93).
Conclusion(s): The findings of the present study showed that 9.86% of children develop AKI following trauma, which may increase their risk of death by about 5.5 times. Nevertheless, since none of the studies had adjusted their analyzes for potential confounders, caution should be exercised in interpreting the relationship between trauma-related AKI and mortality.

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147.

Incidence of Acute Kidney Injury (AKI) Secondary to Acute Gastroenteritis in Patients Presenting to Ayub Teaching Hospital, Abbottabad.
Jamal N., Banaras F., Ashfaq M., Tahir T., Jadoon I., Raza A.
Embase
Pakistan Journal of Medical and Health Sciences. 16(12) (pp 537-538), 2022. Date of Publication: December 2022.
[Article]
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Background: Acute kidney injury is a decrease in kidney functions that results in reduced glomerular filtration rate, retention of nitrogenous waste products, and disturbances of extracellular volume and electrolytes. The incidence of acute kidney injury is about 20-200 per million, about 7-18% of patients in a hospital.2 Acute diarrheal diseases are one of the important causes of preventable acute kidney injury. Improper fluid deficit restoration in diarrheal diseases results in acute kidney injury, manifested as decreased renal function and a rise in serum creatinine level with or without reducing urine output. The injury may range from mild to severe renal dysfunction; sometimes requiring renal replacement therapy.4The rapid and effective restoration of extracellular fluid can prevent acute kidney injury.
Material(s) and Method(s): An observational cross-sectional Study, among patients with acute diarrheal illnesses presented to all medical units (A, B, C&D) and the emergency department of Ayub Teaching Hospital, Abbottabad. A total of 140 patients presented in 3 months duration from 1st July - 30th Sep 2022. Data were analyzed by using SPSS 16 Results: In the sample size of 140 patients, the minimum age was 14 years and the maximum age was 70 with a mean of 38 years with a standard deviation of +/- 14 y. Among 140, 80 patients were male and 60 patients were female. Out of 140 patients, 47 were having hypertension, 19 were diabetic and 16 were known, cardiac patients. Urine output of 13 (9.3%) patients was less than 100ml/day, while 46 (32.9%) patients were having 100-400ml/day, 37 (26.4%) patients was having 400-1200ml/day and 44 (31.4%) patients had greater than 1200ml/day. The serum creatinine level was greater than 2.8mg/dl (more than 2 times normal) in 35 patients (25%), and 18 patients were having creatinine levels in the range of 1.5-2.8mg/dl (up to 2 times greater than normal) and 87 patients had creatinine levels in the normal range (0.7-1.4mg/dl). Out of 140 patients, 41 (29.3%) presented to the tertiary care hospital in shock (systolic blood pressure less than 90mmhg), 96 (68.6%) were normotensive and 3 (2.1%) patients were hypertensive.
Conclusion(s): The incidence of acute kidney injury in patients presenting with acute gastroenteritis to a tertiary care hospital is 25%, due to hypovolemia caused by fluid losses in acute diarrheal illnesses. It can be prevented by prompt diagnosis and treatment by fluid administration.

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148.

Interventions for preventing and treating acute kidney injury in children.
Bhatt G.C., Esezobor C.I., Raina R., Hodson E.M., Das R.R.
Embase
Cochrane Database of Systematic Reviews. 2022(11) (no pagination), 2022. Article Number: CD015296. Date of Publication: 22 Nov 2022.
[Article]
AN: 639570456
Objectives: This is a protocol for a Cochrane Review (intervention). The objectives are as follows:. This review aims to look at the benefits and harms of all pharmacological interventions except dialysis for the prevention and treatment of AKI.

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149.

Neutrophil gelatinase-associated lipocalin distribution in preterm newborns without acute kidney injury as defined by a reference method.
De Mul A., Parvex P., Wilhelm-Bals A.
Embase
Journal of Maternal-Fetal and Neonatal Medicine. 35(25) (pp 4956-4960), 2022. Date of Publication: 2022.
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AN: 2010184175
Introduction: Neutrophil gelatinase-associated lipocalin (NGAL) has been proposed as an early acute kidney injury (AKI) biomarker in the neonatal population. Our goal is to describe this biomarker behavior in this high-risk population, in absence of AKI as confirmed by inulin clearance.
Material(s) and Method(s): Prospective study including 42 preterm newborns (mean gestational age: 30.7 +/- 2.3 weeks) with a urinary NGAL collection between day 1 and 6 of life.

Result(s): Median urinary neutrophil gelatinase-associated lipocalin (uNGAL) value is 122.8 ng/ml (7-1981.5 ng/ml). Statistically significant higher uNGAL values are found in female. uNGAL median values are decreasing when comparing extremely, very, and late preterm groups (812.2 ng/ml [75.8-1453.9] vs. 124.4 ng/ml [31.4-1981.5] vs. 65.3 ng/ml [7.1-1091]). There is a statistically significant inverse correlation between gestational age and uNGAL values (Pearson's coefficient r= -0.37). uNGAL median values are higher in groups exposed to gentamicin, neonatal asphyxia, early onset sepsis, or patent ductus arteriosus. Median inulin clearance is 18.8 ml/min/1.73 m2 [14.8-25.5 ml/min/1.73 m2]. There is no correlation between uNGAL values and inulin clearance results (Pearson's coefficient r=-0. 29, p:.06).
Conclusion(s): In this preterm newborn's series without AKI, the median uNGAL and its high variability are in accordance with published reference ranges. Correlation between uNGAL and gestational age exists, as well as gender impact. Newborns exposed to different renal insults present higher uNGAL values, suggesting potential undetected tubular toxicity or reflecting NGAL production in case of inflammatory or ischemic processes.

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150.

Evaluation of acute kidney injury after surgery for congenital heart disease in neonates: a tertiary hospital experience.
Oktener Anuk E., Erdogan I., Ozkan M., Baskin E., Varan B., Tokel N.K.
Embase
Journal of Maternal-Fetal and Neonatal Medicine. 35(25) (pp 9496-9503), 2022. Date of Publication: 2022.
[Article]
AN: 2015522100
Purpose of the article: Acute kidney injury (AKI) after cardiac surgery in children with congenital heart disease (CHD) is a serious complication closely associated with high morbidity and mortality. Despite numerous studies on AKI in children, most studies have excluded neonates. We sought to characterize AKI associated with cardiac surgery in neonates, determine its incidence, perioperative and postoperative risk factors, and short-term results.
Material(s) and Method(s): This retrospective study included 177 neonates who were operated on for CHD in our hospital between January 2015 and December 2019. Data of the patients were analyzed according to nKDIGO (neonatal Kidney Disease Improving Global Outcomes) and nRIFLE (neonatal Risk, Injury, Failure, Loss of function, End-stage kidney disease) criteria for evaluating AKI retrospectively. Data of groups with and without AKI were analyzed.
Result(s): The average age of 177 neonates were 8.2 +/- 6.1 (1-28) days. Twenty-two (12.4%) neonates had CS-AKI defined according to nKDIGO criteria. Four (2.3%) neonates reached

nKDIGO stage I, 1 (0.6%) reached stage II, 17 (9.6%) reached stage III. Thirty-eight (21.5%) neonates had CS-AKI defined according to nRIFLE criteria. Twenty-four (13.6%) neonates reached nRIFLE stage risk(R), 6 (3.4%) reached stage injury(I), 8 (4.5%) reached stage failure (F). The incidence of cardiac surgery-associated acute kidney injury (CS-AKI) in neonates was 12.5% and 21.5% for nKDIGO and nRIFLE, respectively. The percentage difference between nKDIGO and nRIFLE for AKI assessment was due to the criteria for nRIFLE stage risk(R) urine output < 1.5 mL/kg/h for 24 h. In both classifications, the duration of cardiopulmonary bypass, operation, inotropic treatment, and mechanical ventilation, length of intensive care unit (ICU), and hospital stay were significantly higher in the AKI group than those without AKI group (p.05). The mortality rate in the groups with AKI was found to be significantly higher (p.05) than in the groups without AKI. In Kappa analysis, when two classifications were compared according to AKI stages, a significant agreement was found between nKDIGO and nRIFLE classifications (p.05) (Kappa: 0.299).
Conclusion(s): AKI and mortality rates were similar between groups according to the nKDIGO and nRIFLE criteria. For early prediction of AKI and adverse outcomes, diagnostic reference intervals might be specified in more detail in neonates undergoing cardiac surgery for CHD.

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151.

The role of urinary N-acetyl-beta-D-glucosaminidase in early detection of acute kidney injury among pediatric patients with neoplastic disorders in a retrospective study.
Biro E., Szegedi I., Kiss C., Olah A.V., Dockrell M., Price R.G., Szabo T.
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BMC Pediatrics. 22(1) (no pagination), 2022. Article Number: 429. Date of Publication: December 2022.
[Article]
AN: 2018284531

Background: The 1-year cumulative incidence of AKI reportedly is high (52%) in pediatric neoplastic disorders. About half of these events occur within 2 weeks. However, subclinical AKI episodes may remain unrecognized by the conventional creatinine-based approaches. We investigated the diagnostic value of urinary N-acetyl-beta-D-glucosaminidase (uNAG) as an early marker of acute kidney injury (AKI).
Method(s): In our retrospective study, 33 children with neoplastic disorders were inculded who had serial uNAG tests (at least 5 samples/patient) with a total of 367 uNAG measurements. Renal function was determined by cystatin-C and creatinine based GFR, and relative increase of uNAG index (uNAGRI). We focused on detecting both clinical and subclinical AKI episodes (according to Biomarker-Guided Risk Assessment using pRIFLE criteria and /or elevated uNAG levels) and the incidence of chronic kidney damage.
Result(s): Sixty episodes in 26 patients, with positivity at least in one parameter of kidney panel, were identified during the observation period. We detected 18/60 clinical and 12/60 subclinical renal episodes. In 27/60 episodes only uNAG values was elevated with no therapeutic consequence at presentation. Two patients were detected with decreased initial creatinine levels with 3 silent" AKI. In 13 patients, modest elevation of uNAG persisted suggesting mild, reversible tubular damage, while chronic tubuloglomerular injury occurred in 5 patients. Based on ROC analysis for the occurence of AKI, uNAGRI significantly indicated the presence of AKI, the sensitivity and specificity are higher than the changes of GFRCreat. Serial uNAG measurements are recommended for the reduction of the great amount of false positive uNAG results, often due to overhydratation.
Conclusion(s): Use of Biomarker-guided Risk Assessment for AKI identified 1.5 x more clinical and subclinical AKI episodes than with creatinine alone in our pediatric cancer patients. Based on the ROC curve for the occurence of AKI, uNAGRI has relatively high sensitivity and specificity comparable to changes of GFRCysC. The advantage of serial uNAG measurements is to decrease the number of false positive results. Trial registration: The consent to participate is not applicable because it was not reqired for ethical approval and it is a retrospectiv study.

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152.

Acute Kidney Injury in Patients with Diabetic Ketoacidosis at National Institute of Child Health.
Ahmed S.S., Khan M.
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Pakistan Journal of Medical and Health Sciences. 16(12) (pp 499-501), 2022. Date of Publication: December 2022.

[Article]
AN: 2022666343
Objectives: To determine the frequency of acute kidney injury (AKI) in patients with diabetic Ketoacidosis at National Institute of Child Health (NICH).
Material(s) and Method(s): Totally 80 patients who were enrolled. Demographics data were noted. Five ml venous blood sample and urine sample were collected from of each child in aseptic conditions in sterilized container and sent to laboratory of the hospital for random blood sugar (RBS), serum urea, serum creatinine, serum electrolytes (Na, K, Ph,) complete blood count (CBC, hemoglobin (Hb), white blood cells (WBC), platelets count, arterial blood gas (ABG), and ketones. All were drawn at the time of admission and after 24 hours. All children were catheterized at time of admission to monitor urine output which is part of DKA protocol and was recorded at 6, 12, 24 hours. AKI were labelled according to KDIGO classification as stage I, II, III depending upon rise in serum creatinine from baseline or according to urine output at 6, 12, 24 hours. All the demographic details and duration of diabetes mellitus and DKA and its treatment were recorded on a predesigned data collection proforma.
Result(s): Out of 80 patients, 44.3% were male and 55.7% were female with mean age of 9.63+/-3.34 years. 67% of the patients were aged 7.1-14 years, followed by 27% patients were aged 1-7 years and only 5.7% patients were aged of 14.1-18 years. The mean Duration of hospital stay was 6.88+/-1.45 days. The Mean Hb and WBCs, and Platelets level were 12.13+/-1.9 g/l, 16.37+/-7.97 and 348836.3+/-140355.4 respectively. The mean PH of all the enrolled patients was found 7.08+/-0.14 and mean Bicarbonate was 7.54+/-3.37mmol/L. The mean RBS at admission time and after 24-hour treatment were 403.7+/-95.42 mg/dl and 266.7+/-65.1 mg/dl respectively. The mean Serum Urea at admission time and after 24-hour treatment were 36.6+/-28.9 mg/dl and 36.9+/-23.5 mg/dl respectively. And the mean serum creatinine (mg/dl) at admission time and after 24-hour treatment were 0.75+/-0.58 and 0.76+/-0.55 mg/dl respectively. The mean electrolytes (Na, K, Ph) at admission time and after 24 hours were 138.4+/-7.0 mmol/l and 139.1+/-4.0 mmol/l, 4.0+/-0.83 mg/dl and 4.88+/-4.83 mg/dl, 19.2+/-30.7 mg/dl and 16.1+/-22.0 mg/dl respectively. Frequency of AKI was 31.8% and patients needed for peritoneal dialysis were 3.4%. Practical implication: In our study it was find out that AKI is a common complication in patients with Diabetic ketoacidosis. So this study will help the clinical practioner to also treat the patients for acute kidney injury that will provide early recovery from all the symptom of acute kidney injury.
Conclusion(s): AKI is a common complication in children who are admitted for DKA and clinical practitioner should take precautionary parameter to avoid such complication.

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153.

Cardiac Surgery-Associated Acute Kidney Injury (CSA-AKI) in Adults and Pediatrics; Prevention is the Optimal Management.
Alghamdi A.A., Aqeeli M.O., Alshammari F.K., Altalhi S.M., Bajebair A.M., Al-Ebrahim K.E.
Embase
Heart Surgery Forum. 25(4) (pp E504-E509), 2022. Date of Publication: 2022.

[Article]
AN: 2020996028
Background: Cardiac surgery-associated acute kidney injury (CSA-AKI) is a significant and severe complication that affects morbidity and mortality. We studied both pediatric and adult patients using the Acute Kidney Injury Network (AKIN) definition.
Method(s): This was an observational retrospective cohort study done at King Abdulaziz University Hospital in Jeddah, Saudi Arabia, and approved by the ethical committee. The exclusion criteria were baseline serum creatinine (SCr) >= 4 mg/dL or preexisting renal failure requiring dialysis, reoperation, death within 24 hours postoperatively, and operative mortality or missing data. We included 941 patients in the analysis using statistical software SPSS, version 15.0.
Result(s): Of the total number of patients, 28.68% in the adult group and 20.07% in the pediatric group developed CSA-AKI. Adult risk factors included the age group 60-69 years, cardiopulmonary bypass (CPB), number of grafts, and hypertension. In the pediatric group, CPB, aortic cross-clamping (ACX), and the lower preoperative SCr were the main risk factors
Conclusion(s): Conventional conservative management and preoperative identification of predictor risk factors are essential for preventing CSA-AKI, constituting the primary strategy for optimal management.

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154.

SARS-CoV-2 infection increases risk of acute kidney injury in a bimodal age distribution.
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Embase

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[Article]

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Background: Hospitalized patients with SARS-CoV2 develop acute kidney injury (AKI) frequently, yet gaps remain in understanding why adults seem to have higher rates compared to children. Our objectives were to evaluate the epidemiology of SARS-CoV2-related AKI across the age spectrum and determine if known risk factors such as illness severity contribute to its pattern.

Method(s): Secondary analysis of ongoing prospective international cohort registry. AKI was defined by KDIGO-creatinine only criteria. Log-linear, logistic and generalized estimating equations assessed odds ratios (OR), risk differences (RD), and 95% confidence intervals (CIs) for AKI and mortality adjusting for sex, pre-existing comorbidities, race/ethnicity, illness severity, and clustering within centers. Sensitivity analyses assessed different baseline creatinine estimators.

Result(s): Overall, among 6874 hospitalized patients, 39.6% (n = 2719) developed AKI. There was a bimodal distribution of AKI by age with peaks in older age (>=60 years) and middle childhood (5-15 years), which persisted despite controlling for illness severity, pre-existing comorbidities, or different baseline creatinine estimators. For example, the adjusted OR of developing AKI among hospitalized patients with SARS-CoV2 was 2.74 (95% CI 1.66-4.56) for 10-15-year-olds compared to 30-35-year-olds and similarly was 2.31 (95% CI 1.71-3.12) for 70-75-year-olds, while adjusted OR dropped to 1.39 (95% CI 0.97-2.00) for 40-45-year-olds compared to 30-35-year-olds.

Conclusion(s): SARS-CoV2-related AKI is common with a bimodal age distribution that is not fully explained by known risk factors or confounders. As the pandemic turns to disproportionately

impacting younger individuals, this deserves further investigation as the presence of AKI and SARS-CoV2 infection increases hospital mortality risk.

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155.

Non-urothelial lesions of the urinary bladder A 14.5-year, single-institution review.
Caputo A., Califano A., Addesso M., Caleo A., Zeppa P., D'Antonio A.
Embase
Pathology Research and Practice. 237 (no pagination), 2022. Article Number: 153998. Date of Publication: September 2022.
[Article]
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Context: In contrast to urothelial cancers, non-urothelial neoplasms involving the bladder are uncommon and often diagnostically challenging. These lesions include a variety of benign and malignant tumors often presenting with a combination of hematuria and the presence of a polypoid lesion at cystoscopy that may lead to an erroneous diagnosis of urothelial cancer.
Objective(s): We set out to quantify and classify the spectrum of non-urothelial lesions diagnosed in our institution, and briefly review the relevant literature on each lesion, with a focus on differential diagnosis and potential pitfalls.
Design(s): We performed a retrospective review (Jan 2008 - Jun 2022) of the cases diagnosed on TURB material at our institution.

Result(s): Out of 4071 TURB specimens, a total of 66 (1.62 %) non-urothelial lesions were identified. Most of these lesions were malignant (n = 51, 77 %), with metastases being the most common (n = 40, 60.6 %), followed by non-Hodgkin lymphoma (n = 8, 12 %). The remaining cases were benign lesions (n = 15, 22.7 %), with the most common being inflammatory myofibroblastic tumor (n = 4, 6.1 %) and endometriosis (n = 3, 4.5 %).
Conclusion(s): In this retrospective case series, we identified various malignant and benign entities, some of which have been rarely reported in the bladder, such as paragangliomas, inflammatory myofibroblastic tumor, and leiomyosarcoma. These lesions may macroscopically and histologically mimic urothelial carcinoma. Because of their relative rarity and diagnostic overlap with conventional urothelial tumors, the pathologist should always keep in the mind the possibility of non-urothelial lesions.

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156.

Validation of the STARZ neonatal acute kidney injury risk stratification score in an independent prospective cohort.
Dhooria G.S., Nautiyal A., Wazir S., Agrawal G., Tiwana A., Bajaj N., Gupta N.P., Mirgunde S., Sahoo J., Balachandran B., Afzal K., Shrivastava A., Bagla J., Krishnegowda S., Konapur A., Soni K., McCulloch M., Bunchman T., Sethi S.K., Raina R.
Embase
Journal of Neonatal-Perinatal Medicine. 15(4) (pp 777-785), 2022. Date of Publication: 2022.
[Article]
AN: 2022191301
OBJECTIVE: A rapid AKI risk assessment score would allow for improving management and outcomes. STARZ (Sethi, Tibrewal, Agrawal, Raina, waZir) score was developed for acute kidney injury (AKI) risk stratification of critically ill neonates. This is the first independent validation for the novel score outside the original enrolled centres. STUDY DESIGN: 750 neonates were included in the study. The STARZ score was calculated after 12 hours of admission. Neonates admitted in NICU and receiving IV fluids for at least 48 hours were included.
RESULT(S): A total of 8.8% neonates had AKI in the first 7 days post admission. The duration of hospital stay was significantly higher among neonates with AKI [10.5 (7-19) vs. 7 (5-10) days; $p < 0.001$]. Mortality risk was 6.4 times higher among those with AKI [8 (12.1%) vs. 13 (1.9%); $p < 0.001$; RR (95% CI): 6.38 (2.74-14.83)]. In this study, the STARZ neonatal scoring model showed a sensitivity of 89.4% in detecting AKI with a 90.9% specificity and a high negative predictive value of 98.9%. The area under ROC was 0.958 (0.934-0981)-a high discriminative power.
CONCLUSION(S): The STARZ score allows for AKI risk stratification, providing opportunity for therapeutic interventions which may improve outcomes in critically ill neonates.

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157.

Biomarkers for Monitoring Renal Damage Due to Fabry Disease in Patients Treated with Migalastat: A Review for Nephrologists.
Jaurretche S., Conde H., Gonzalez Schain A., Ruiz F., Sgro M.V., Venera G.
Embase
Genes. 13(10) (no pagination), 2022. Article Number: 1751. Date of Publication: October 2022. [Review]
AN: 2019783854
Nephropathy is a major Fabry disease complication. Kidney biopsies reveal glomerulosclerosis even in pediatric patients. The main manifestations of Fabry nephropathy include reduced glomerular filtration rate and proteinuria. In 2016, an oral pharmacological Chaperone was approved to treat Fabry patients with "amenable" mutations. Because (i) Fabry disease is a rare disorder that frequently causes kidney damage, and (ii) a new therapeutic is currently available, it is necessary to review wich biomarkers are useful for nephropathy follow-up among Fabry "amenable" patients receiving migalastat. The literature search was conducted in MEDLINE, EMBASE, SCOPUS, Cochrane, and Google academic. Prospective studies in which renal biomarkers were the dependent variable or criterion, with at least 6 months of follow-up, were included. Finally, we recorded relevant information in an ad hoc database and summarized the main results. To date, the main useful biomarker for nephropathy monitoring among Fabry

"amenable" patients receiving migalastat is glomerular filtration rate estimated by equations that include serum creatinine.

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158.

A Comparative Study of Etiopathological Profile and Outcome in Acute Kidney Injury in Inborn and Outborn Neonates: A Cross Sectional Observational Study in Central India.
Shrivastava P., Singhai A., Agarwal R., Tripathi P.
Embase
International Journal of Pharmaceutical and Clinical Research. 14(6) (pp 643-651), 2022. Date of Publication: 2022.
[Article]
AN: 2017509558
Background: Acute kidney injury (AKI) is a common occurrence in the neonatal intensive care unit (NICU) as has been shown to be associated with adverse outcomes including increased length of mechanical ventilation, prolonged length of stay, and rise in mortality. Neonatal modified Kidney Disease: Improving Global Outcomes (KDIGO) criteria is applied as the standard definition for neonatal AKI for clinical and research purpose.
Aim(s): To study and compare etiopathological profile and outcome of acute kidney injury in outborn and inborn neonates, estimate incidence of AKI and compare outcome of acute kidney injury in outborn and inborn neonate Methods: A cross-sectional study was done at tertiary centre from December 2021 to May 2022 for duration of 6 months in which neonates with AKI were admitted in inborn and outborn unit respectively and were analysed in detail and outcome was studied.
Result(s): There was preponderance of AKI in term neonates in outborn newborns (55%) as compared to more preterm neonates in inborn unit (60%). More number of neonates with AKI was admitted during summer months (i.e. April, May). Among outborn neonates the most common risk factor associated with developing AKI was sepsis, followed by perinatal asphyxia and shock. Out of 20 outborn neonates who had AKI, nine (45%) expired and eleven (55%) were successfully discharged with complete recovery of renal functions, while out of ten inborn neonates who had

AKI, two (20%) expired and six (60%) were successfully discharged with complete recovery while two were discharged with residual kidney disease and called for further follow up.
Conclusion(s): The results show better outcome in inborn unit patients as were discharged with complete recovery and are maintained on follow up. The study emphasises on proper antenatal and perinatal management with postnatal monitoring of newborn to prevent AKI and also for the early diagnosis and management in patients with risk factors to avoid morbidity and mortality due to acute kidney injury.

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159.

Artificial Intelligence in Acute Kidney Injury Prediction.
Bajaj T., Koyner J.L.
Embase
Advances in Chronic Kidney Disease. 29(5) (pp 450-460), 2022. Date of Publication: September 2022.
[Review]
AN: 2020696279
The use of artificial intelligence (AI) in nephrology and its associated clinical research is growing. Recent years have seen increased interest in utilizing AI to predict the development of hospital-based acute kidney injury (AKI). Several AI techniques have been employed to improve the ability to detect AKI across a variety of hospitalized settings. This review discusses the evolutions of AKI risk prediction discussing the static risk assessment models of yesteryear as well as the more recent trend toward AI and advanced learning techniques. We discuss the relative improvement in AKI detection as well as the relative dearth of data around the clinical implementation and patient outcomes using these models. The use of AI for AKI detection and clinical care is in its infancy, and this review describes how we arrived at our current position and hints at the promise of the future.

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Publisher
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Year of Publication
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160.

The severity of acute kidney injury correlates with plasma venom levels in Bothrops atrox envenomings.
Brasileiro-Martins L.M., Nascimento T.P., Silva-Neto A.V., Martins F., Cavalcante S.A., Martins R.B., Marques H., Colombini M., Martins M., Sartim M.A., Wen F.H., Carlos de Lima Ferreira L., de Almeida Goncalves Sachett J., Moura-da-Silva A.M., Ferreira de Aquino P., Monteiro W.M.
Embase
Toxicon. 219 (no pagination), 2022. Article Number: 106924. Date of Publication: November 2022.
[Article]
AN: 2020337554
The Brazilian Amazon has high rates of snakebite envenomings (SBEs), with ~90% caused by Bothrops atrox. Envenomings by this species can trigger local and systemic effects, such as acute kidney injury (AKI). Our aim was to identify predictors of AKI in Bothrops SBEs in patients from Manaus, Western Brazilian Amazon. A total of 127 patients were enrolled, with a predominance of men between 16 and 45 years old from rural areas. Of the 127 patients, 38.6% developed AKI, with 61.2% presenting stage I, 34.7% presenting stage II and 4.1% presenting stage III severity. The age groups 0-10 years and >=60 years presented a significantly higher frequency of AKI compared to the 11-40 years group. Moderate/severe edema in the affeccted limb was significantly associated with lower risk of AKI [p = 0.01; OR = 0.11 (95%CI 0.02-0.53)]. Nausea [p = 0.01; OR = 54.44 (95%CI = 3.26-909.27)] and high blood urea levels [p = 0.01; OR = 5.38 (95%CI = 2.12-13.66)] were risk factors for AKI. There was a significant positive correlation between circulating venom levels and the highest creatinine serum values during the hospital stay (p = 0.03) and with the difference between the maximum creatinine levels and the creatinine levels on admission (p = 0.02). A positive correlation between serum venom concentrations and creatinine levels suggests a direct or indirect dose-dependent participation of the venom toxins in the pathogenesis of AKI.

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161.

Acute kidney injury and kidney recovery after cardiopulmonary bypass in children.
LoBasso M., Schneider J., Sanchez-Pinto L.N., Del Castillo S., Kim G., Flynn A., Sethna C.B.
Embase
Pediatric Nephrology. 37(3) (pp 659-665), 2022. Date of Publication: March 2022.
[Article]
AN: 2013440983
Background: Acute kidney injury (AKI) that improves in the pediatric intensive care unit (PICU) is associated with better outcomes compared to AKI that persists, but no study has investigated whether this also occurs in children undergoing cardiopulmonary bypass (CPB).
Method(s): A retrospective study of children <=18 years who underwent CPB in three children's hospitals was conducted. Patients were classified into groups by kidney recovery after AKI according to Acute Disease Quality Initiative (ADQI) guidelines. Adjusted regression models evaluated associations between kidney recovery group and hospital outcomes.
Result(s): Among 3620 children, AKI developed in 701 (19.4%): 610 transient AKI, 47 persistent AKI, and 44 acute kidney disease (AKD). Mortality increased with severity of kidney recovery group: 4.5% in the never developed AKI group, 8.9% in the transient AKI group, 25.5% in the persistent AKI group, and 31.8% in the AKD group (p <0.0001). In adjusted analysis, transient AKI (HR 1.4, CI 1.02, 2), persistent AKI (HR 22.4, CI 10.2, 49.2), and AKD (HR 3.7, CI 1.7, 7.9) had a greater hazard of mortality when compared to the never developed AKI group. Patients with transient AKI had a longer length of PICU stay than those with never developed AKI (HR 5.1, CI 2.9, 7.3).
Conclusion(s): Patterns of kidney recovery after AKI were associated with worse PICU outcomes in children after CPB compared to those who did not develop AKI, even after rapid AKI recovery. Identification of factors that increase risk for these AKI patterns is necessary for prevention of AKI during CPB in children. Graphical abstract: [Figure not available: see fulltext.]

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Publisher
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162.

Acute kidney injury in infants with congenital diaphragmatic hernia.
Arattu Thodika F.M.S., Dassios T., Deep A., Greenough A.
Embase
Journal of Perinatology. 42(7) (pp 925-929), 2022. Date of Publication: July 2022.
[Article]
AN: 2015570935
Objectives: To assess the incidence of acute kidney injury (AKI) in infants with congenital diaphragmatic hernia (CDH), including those who had fetoscopic endoluminal tracheal occlusion (FETO), and the effect of AKI on mortality and length of stay. Study design: Ten-year retrospective review of infants admitted with CDH to a tertiary perinatal centre.
Result(s): Ninety-four infants with median gestational age of 38+1 weeks were included. Fifty-nine (62.8%) infants had AKI. Compared to infants without AKI, infants with AKI, had a similar incidence of mortality (p = 0.989). In survivors, AKI was not independently associated with a longer adjusted median length of stay [23 versus 15 days (p = 0.194)]. FETO was associated with an increased risk of AKI (p = 0.005), but neither the mortality nor length of stay of FETO infants who had AKI was increased.
Conclusion(s): AKI was present in the majority of infants with CDH and most common in those who had undergone FETO.

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163.

A study on histopathological spectrum of lesions in urinary bladder specimens in tertiary center in Bihar.
Priya K., Bharti R.R., Kumar D., Atreya K., Kumar B.
Embase
European Journal of Molecular and Clinical Medicine. 9(3) (pp 750-758), 2022. Date of Publication: December 2022.
[Article]
AN: 2017381945
Introduction- Urinary bladder pathology (benign or malignant) are a common cause of morbidity or mortality in general population, so knowing the types of lesions is helpful in management. Objective- The purpose of this study to find out the histopathological spectrum of urinary bladder lesions in TURBT and cystoscopic biopsies and to study the frequency of different types of urinary bladder lesions particularly urothelial neoplasm in tertiary care centre of Bihar . Material & Methods - 100 TURBT specimens of patients undergoing cystoscopic biopsies of all age and both sexes have been studies. Results- Out of 100 patients undergoing cystoscopic biopsies, 30 cases were nonneoplastic and 70 cases were neoplastic, Out of those 70 cases, 21 were low grade urothelial carcinoma and 27 were high grade urothelial carcinoma. Conclusion- Our study revealed that neoplastic lesions are more common. Most common age group is 51 to 60 years. High grade papillary urothelial carcinoma with muscles invasion was the commonest urothelail neoplasm at the time of presentation. Hence inclusion of detrusor muscle in the cystoscopic biopsy is of utmost importance.

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164.

Risk factors for acute kidney injury after pediatric cardiac surgery: a meta-analysis.
Van den Eynde J., Delpire B., Jacquemyn X., Pardi I., Rotbi H., Gewillig M., Kutty S., Mekahli D.
Embase
Pediatric Nephrology. 37(3) (pp 509-519), 2022. Date of Publication: March 2022.
[Review]
AN: 2013832787
Background: Cardiac surgery-associated acute kidney injury (AKI) is associated with increased morbidity and mortality in both adults and children.
Objective(s): This study aimed to identify clinical risk factors for AKI following cardiac surgery in the pediatric population. Data sources: PubMed/MEDLINE, Embase, Scopus, and reference lists of relevant articles were searched for studies published by August 2020. Study eligibility criteria: Studies were included if (1) the population consisted of pediatric patients (< 18 years old), (2) patients underwent cardiac surgery, (3) risk factors were compared between patients who developed AKI and those who did not, and (4) studies were prospective or retrospective observational studies or randomized controlled trials. Participants and interventions: Children

undergoing pediatric cardiac surgery. Study appraisal and synthesis methods: Random-effects meta-analysis was performed, comparing potential risk factors between pediatric patients who developed CS-AKI and those who did not.
Result(s): Sixty-one publications including a total of 19,680 participants (AKI: 7257 participants; no AKI: 12,423 participants) were included from studies published between 2008 and 2020. The pooled estimated incidence of AKI was 34.3% (95% confidence interval 30.0-38.8%, I2 = 96.8%). Binary risk factors that were significantly and consistently associated with AKI were the presence of pulmonary hypertension, cyanotic heart disease, univentricular heart, risk adjustment for congenital heart surgery 1 (RACHS-1) score >= 3, vasopressor use, cardiopulmonary bypass use, reoperation, and sepsis. Significant continuous risk factors included younger age, lower body weight, lower preoperative creatinine, higher preoperative estimated glomerular filtration rate (eGFR), higher RACHS-1 score, longer surgery time, longer cardiopulmonary bypass time, longer aortic cross-clamp time, and higher red blood cell transfusion volume.
Limitation(s): Results are limited by heterogeneity and potential residual confounding.
Conclusions and implications of key findings: Our meta-analysis identified clinical risk factors that are associated with AKI in children undergoing cardiac surgery. This might help clinicians anticipate and manage more carefully this population and implement standardized preventive strategies. Systematic review registration number: CRD42021262699. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information. [Figure not available: see fulltext.]

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Publisher
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165.

Postnatal urinary tract dilatation classification: improvement of the accuracy in predicting kidney injury.
Melo F.F., Vasconcelos M.A., Mak R.H., Silva A.C.S., Dias C.S., Colosimo E.A., Silva L.R., Oliveira M.C.L., Oliveira E.A.
Embase

Pediatric Nephrology. 37(3) (pp 613-623), 2022. Date of Publication: March 2022.
[Article]
AN: 2013558423
Background: The grading of urinary tract dilatation (UTD) on postnatal sonography is a fundamental step to establish rational management for infants with antenatal hydronephrosis (ANH). The aim of this study was to compare the prediction accuracy of UTD grading systems for relevant clinical outcomes. In addition, we propose a refinement of the UTD classification by adding quantitative measurements and evaluate its impact on accuracy.
Method(s): Between 1989 and 2019, 447 infants diagnosed with isolated AHN were prospectively followed. The events of interest were surgical interventions and kidney injury. Comparison of performance of the grading systems and the impact on the accuracy of a modified UTD classification (including the size of the kidney parenchyma) was assessed by the area under the receiver-operating characteristic curve (AUC).
Result(s): Of 447 infants, 131 (29%) underwent surgical intervention and 26 (5.8%) had developed kidney injury. The median follow-up time was 9 years (IQ range, 7-12 years). The performance for detecting the need for surgical intervention was excellent for all grading systems (AUC > 0.90). However, for predicting kidney injury, the modified UTD classification exhibited significant improvement in accuracy (AUC = 0.913, 95%CI, 0.883-0.937) as compared with UTD classification (AUC = 0.887, 95%CI, 0.854-0.915) (P = 0.027).
Conclusion(s): Our study confirms that the hydronephrosis grading systems provide excellent accuracy in discriminating patients who need surgical intervention among infants with AHN. Our findings suggest that the inclusion of kidney parenchymal thickness to UTD classification might increase the accuracy for predicting infants who may develop kidney injury. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information.
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166.

Neutrophil gelatinase-associated lipocalin is elevated in children with acute kidney injury and sickle cell anemia, and predicts mortality.
Batte A., Menon S., Ssenkusu J.M., Kiguli S., Kalyesubula R., Lubega J., Berrens Z., Mutebi E.I., Ogwang R., Opoka R.O., John C.C., Conroy A.L.
Embase

Kidney International. 102(4) (pp 885-893), 2022. Date of Publication: October 2022.
[Article]
AN: 2019390003
Urine neutrophil gelatinase-associated lipocalin (NGAL) is a biomarker of acute kidney injury that has been adapted to a urine dipstick test. However, there is limited data on its use in low-and-middle-income countries where diagnosis of acute kidney injury remains a challenge. To study this, we prospectively enrolled 250 children with sickle cell anemia aged two to 18 years encompassing 185 children hospitalized with a vaso-occlusive pain crisis and a reference group of 65 children attending the sickle cell clinic for routine care follow up. Kidney injury was defined using serial creatinine measures and a modified-Kidney Disease Improving Global Outcome definition for sickle cell anemia. Urine NGAL was measured using the NGAL dipstick and a laboratory reference. The mean age of children enrolled was 8.9 years and 42.8% were female. Among hospitalized children, 36.2% had kidney injury and 3.2% died. Measured urine NGAL levels by the dipstick were strongly correlated with the standard enzyme-linked immunosorbent assay for urine NGAL (hospitalized children, 0.71; routine care reference, 0.88). NGAL levels were elevated in kidney injury and significantly increased across injury stages. Hospitalized children with a high-risk dipstick test (300ng/mL and more) had a 2.47-fold relative risk of kidney injury (95% confidence interval 1.68 to 3.61) and 7.28 increased risk of death (95% confidence interval 1.10 to 26.81) adjusting for age and sex. Thus, urine NGAL levels were found to be significantly elevated in children with sickle cell anemia and acute kidney injury and may predict mortality.

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167.

Antenatal Steroids and Acute Kidney Injury in Preterm Infants.
Ustun N., Arslanoglu S., Ovali F.
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American Journal of Perinatology. 39(12) (pp 1334-1340), 2022. Date of Publication: 31 Aug 2022.
[Article]
AN: 633912060
Objective The aim of this study was to identify the effects of antenatal steroids (ANS) on acute kidney injury (AKI) in very low birth weight (VLBW) preterm infants. Study Design We performed a retrospective cohort study of VLBW infants admitted to a tertiary-care neonatal intensive care unit between January 2016 and June 2019. Infants were divided into no ANS, partial ANS, and complete ANS groups. Serum creatinine (SCr) levels and rates of AKI during the first 2 weeks of life were compared. Results During the study period, 335 infants met our inclusion criteria. Among no, partial, and complete ANS groups, there were significant differences in rates of stages 2 and 3 AKI (17, 11, and 6%, respectively). Logistic regression analysis revealed that complete ANS course was associated with lower rates of AKI (odds ratio [OR] = 0.41 95% confidence interval [CI]: 0.20-0.83) and stages 2 and 3 AKI (OR = 0.205 95% CI: 0.075-0.563) compared with no ANS. Infants in complete ANS group had significantly lower SCr at 72 hours of life and at discharge, SCr peak was compared with infants in no ANS group. Conclusion In VLBW infants, complete ANS exposure may be associated with improved renal function and decreased risk for AKI compared with no ANS. Key Points The effects of antenatal steroid treatment on renal function in preterm infants are not clear. A complete course of antenatal steroid decreases the risk for acute kidney injury in preterm infants. Infants who are not exposed to antenatal steroids need closer observation of their renal function.

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168.

Covid-19 and adolescent acute kidney injury: Renal recovery with combined enalapril and estrogen therapy.
Sills E.S., Wood S.H., Walsh A.P.H.
Embase
Clinica Chimica Acta. 535 (pp 108-111), 2022. Date of Publication: 01 Oct 2022.
[Article]
AN: 2019900025

Covid-19 in adolescence with multisystem inflammatory injury (MIS-C) is a newly described condition sharing key features with Kawasaki disease and toxic shock syndrome. A May 2020 United Nations WHO brief covering findings from North America and Europe drew notice to this acute post-viral illness characterized by severe, diffuse hyperinflammation leading to multiorgan failure. While females diagnosed with Covid-19 generally have more favorable outcomes than males, this protection is negated by a low estrogen state. This case reports on acute kidney injury/MIS-C with amenorrhea from ovarian insufficiency in childhood, itself an uncommon presentation of idiopathic hypogonadism. Three exon variants were previously identified in a healthy, phenotypically normal 46,XX adolescent who subsequently underwent whole genome sequencing (WGS). She had only two spontaneous menses with a provisional diagnosis of premature ovarian insufficiency made by age 15. Against this background, Covid-19 infection necessitated hospital admission where progressively reduced renal function was a prime component of MIS-C. Combined angiotensin-converting enzyme inhibitor plus transdermal estrogen replacement therapy resulted in normalized estimated glomerular filtration rate (eGFR) from baseline 43 to 68 ml/min/1.73 m2, post-treatment. Serum cystatin-C also improved during this interval from 1.69 to 1.19 mg/L. Among 7 Covid-19 high risk intron variants identified was rs3131294 (6p21), near NOTCH4. Another finding at rs8068318 (17q23) was associated with creatine level and eGFR. This is the first work to explore Covid-19 and associated kidney injury as a component of MIS-C at the intersection of rare multigene variants and functional ovarian loss. The context of transition from adolescence to adulthood is also considered, where successful recovery of renal function was achieved with combined enalapril and supplemental estrogen.

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169.

LncRNA NORAD deficiency alleviates kidney injury in mice and decreases the inflammatory response and apoptosis of lipopolysaccharide-stimulated HK-2 cells via the miR-577/GOLPH3 axis.
Xie Z., Wei L., Chen J., Chen Z.
Embase
Cytokine. 153 (no pagination), 2022. Article Number: 155844. Date of Publication: May 2022.
[Article]
AN: 2017101653
Background: Long noncoding RNAs (lncRNAs) are significant regulators for sepsis-associated acute kidney injury (AKI). Noncoding RNA activated by DNA damage (NORAD) is highly expressed in the serum of patients with neonatal sepsis. We aimed to reveal the role of NORAD in sepsis-associated AKI.

Methods and Results: In this study, we established an AKI mouse model by cecal ligation and puncture (CLP) method and used the lipopolysaccharide (LPS)-stimulated HK-2 cells as the in vitro model of AKI. We identified the upregulation of NORAD expression in AKI mice and LPS-treated HK-2 cells. Silencing of NORAD alleviated renal injury by suppressing inflammation and apoptosis in vivo. The influences of NORAD suppression on cell apoptosis and inflammatory response in LPS-treated HK-2 cells were investigated by TUNEL and western blotting. NORAD deficiency inhibited HK-2 cell apoptosis and relieved the inflammation. Moreover, we explored the underlying mechanism by which NORAD regulates HK-2 cells. MiR-577 was verified to directly bind to NORAD, and GOLPH3 was identified as a target downstream miR-577. In addition, GOLPH3 overexpression countervailed the impacts of NORAD downregulation on apoptosis and inflammation in vitro.
Conclusion(s): Our findings revealed that NORAD knockdown alleviates kidney injury in mice and decreases the inflammatory response and apoptosis of LPS-stimulated HK-2 cells via the miR-577/GOLPH3 axis.

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Publisher
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170.

An Online Pre-procedural Nomogram for the Prediction of Contrast-Associated Acute Kidney Injury in Patients Undergoing Coronary Angiography.
Li D., Jiang H., Yang X., Lin M., Gao M., Chen Z., Fu G., Lai D., Zhang W.
Embase
Frontiers in Medicine. 9 (no pagination), 2022. Article Number: 839856. Date of Publication: 11 Mar 2022.
[Article]
AN: 2015429711
Background: Identifying high-risk patients for contrast-associated acute kidney injury (CA-AKI) helps to take early preventive interventions. The current study aimed to establish and validate an online pre-procedural nomogram for CA-AKI in patients undergoing coronary angiography (CAG).
Method(s): In this retrospective dataset, 4,295 patients undergoing CAG were enrolled and randomized into the training or testing dataset with a split ratio of 8:2. Optimal predictors for CA-AKI were determined by Least Absolute Shrinkage and Selection Operator (LASSO) and Random Forest (RF) algorithm. Nomogram was developed and deployed online. The discrimination and accuracy of the nomogram were evaluated by receiver operating characteristic (ROC) and

calibration analysis, respectively. Clinical usefulness was estimated by decision curve analysis (DCA) and clinical impact curve (CIC).
Result(s): A total of 755 patients (17.1%) was diagnosed with CA-AKI. 7 pre-procedural predictors were identified and integrated into the nomogram, including age, gender, hemoglobin, N-terminal of the prohormone brain natriuretic peptide, neutrophil-to-lymphocyte ratio, cardiac troponin I, and loop diuretics use. The ROC analyses showed that the nomogram had a good discrimination performance for CA-AKI in the training dataset (area under the curve, AUC = 0.766, 95%CI [0.737 to 0.794]) and testing dataset (AUC = 0.737, 95%CI [0.693 to 0.780]). The nomogram was also well-calibrated in both the training dataset (P = 0.965) and the testing dataset (P = 0.789). Good clinical usefulness was identified by DCA and CIC. Finally, this model was deployed in a web server for public use (https://duanbin-li.shinyapps.io/DynNomapp/).
Conclusion(s): An easy-to-use pre-procedural nomogram for predicting CA-AKI was established and validated in patients undergoing CAG, which was also deployed online.

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Publisher
Frontiers Media S.A.
Year of Publication
2022

171.

Role of serum cystatin C in the prediction of acute kidney injury following pediatric cardiac surgeries: A single center experience.
Zakaria M., Hassan T., Refaat A., Fathy M., Hashem M.I.A., Khalifa N., Ali A.A., Elhewala A., Ramadan A., Nafea A.
Embase
Medicine (United States). 101(49) (pp E31938), 2022. Date of Publication: 09 Dec 2022.
[Article]
AN: 2021813514
Intense contemporary research is directed towards validating novel biomarkers to predict acute kidney injury (AKI) in children undergoing cardiothoracic surgeries. We aimed to evaluate the role of cystatin C in early prediction of AKI following cardiac surgery in children with congenital heart disease. Prospective observational cohort study was conducted on 40 children with congenital heart disease undergoing cardiac surgery. 40 healthy children with matched age and sex were enrolled as a control group. Children were subjected to physical examination, routine blood tests, echocardiography, and measurement of plasma cystatin C level on different occasions. The median age of the patients was 3.65 years, a range from 1 to 5 years with no significant difference regarding the age and sex of cases and control groups. The mean serum cystatin C level in patients was 0.75 +/- 0.15, 1.35 +/- 0.34 and 1.21 +/- 0.38 mg/dL (preoperative, at 6 h and at 24 h postoperative, respectively) with statistically significant difference P < .05. 30% of the patients developed postoperative AKI with significantly higher serum cystatin C at 6 hours

postoperative >1.33 mg/dL compared to preoperative level p P < .05. Serum cystatin C level was positively correlated with cardiac bypass time, ischemic time and length of hospital stay at 6 hours postoperative. Serum cystatin C is a sensitive marker for early detection of AKI following cardiac surgery in children with congenital heart disease and it was positively correlated with cardiac bypass time, ischemic time and length of hospital stay.

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172.

Derivation and validation of urinary TIMP-1 for the prediction of acute kidney injury and mortality in critically ill children.
Huang H., Lin Q., Dai X., Chen J., Bai Z., Li X., Fang F., Li Y.
Embase
Journal of Translational Medicine. 20(1) (no pagination), 2022. Article Number: 102. Date of Publication: December 2022.
[Article]
AN: 2015145325
Background: Acute kidney injury (AKI) is associated with high morbidity and mortality. Multiple urinary biomarkers have been identified to be associated with the prediction of AKI and outcomes. However, the accuracy of these urinary biomarkers for AKI and associated outcomes has not been clearly defined, especially in heterogeneous populations. The aims of the study were to compare the ability of 10 existing or potential urinary biomarkers to predict AKI and pediatric intensive care unit (PICU) mortality and validate urinary tissue inhibitor of metalloproteinases-1 (uTIMP-1) as a better biomarker for early prediction in heterogeneous critically ill children.
Method(s): A derivation-validation approach with separate critically ill cohorts was designed. We first conducted a prospective cohort study to determine the ability of 10 urinary biomarkers serially measured in 123 children during the first 7 days of PICU stay to predict AKI and PICU mortality (derivation study) and further validated the better biomarker of uTIMP-1 in a separate cohort of 357 critically ill children (validation study). AKI diagnosis was based on KDIGO classification with serum creatinine and urine output. PICU mortality was defined as all-cause mortality.
Result(s): In the derivation cohort, 17 of 123 (13.8%) children developed AKI stage 3 or died during the PICU stay, and both the initial and peak uTIMP-1 displayed the highest AUCs of 0.87 (0.79-0.94) and 0.90 (0.84-0.96), respectively, for predicting AKI stage 3 or death. In the validation cohort, 78 of 357 (21.8%) developed AKI during the first week after admission, and 38 (10.6%) died during the PICU stay. The initial uTIMP-1 level was validated to be independently associated with AKI (AOR = 2.88, 95% CI 1.97-4.21), severe AKI (AOR = 2.62, 95% CI 1.78-3.88), AKI stage 3 (AOR = 2.94, 95% CI 1.84-4.68) and PICU mortality (AOR = 1.92, 95% CI

1.11-3.30) after adjustment for potential confounders. The predictive values of uTIMP-1 for AKI, severe AKI, AKI stage 3 and PICU mortality were 0.80 (0.74-0.86), 0.83 (0.77-0.89), 0.84 (0.77-0.92) and 0.83 (0.76-0.89), respectively.
Conclusion(s): Urinary TIMP-1 levels have been identified and validated to be independently associated with AKI and PICU mortality in independent prospective cohorts and may be an early potential indicator of AKI and PICU mortality in critically ill children.

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173.

Nadir oxygen delivery is associated with postoperative acute kidney injury in low-weight infants undergoing cardiopulmonary bypass.
Gao P., Jin Y., Zhang P., Wang W., Hu J., Liu J.
Embase
Frontiers in Cardiovascular Medicine. 9 (no pagination), 2022. Article Number: 1020846. Date of Publication: 16 Dec 2022.
[Article]
AN: 2020887404
Background: Acute kidney injury (AKI) is common after cardiac surgery with cardiopulmonary bypass (CPB) and is associated with increased mortality and morbidity. Nadir indexed oxygen delivery (DO2i) lower than the critical threshold during CPB is a risk factor for postoperative AKI. The critical DO2i for preventing AKI in children has not been well studied. The study aimed to explore the association between nadir DO2i and postoperative AKI in infant cardiac surgery with CPB.
Method(s): From August 2021 to July 2022, 413 low-weight infants (<=10 kg) undergoing cardiac surgery with CPB were consecutively enrolled in this prospective observational study. Nadir DO2i was calculated during the hypothermia and rewarming phases of CPB, respectively. The association between nadir DO2i and postoperative AKI was investigated in mild hypothermia (32-34degreeC) and moderate hypothermia (26-32degreeC).
Result(s): A total of 142 (38.3%) patients developed postoperative AKI. In patients undergoing mild hypothermia during CPB, nadir DO2i in hypothermia and rewarming phases was independently associated with postoperative AKI. The cutoff values of nadir DO2i during hypothermia and rewarming phases were 258 mL/min/m2 and 281 mL/min/m2, respectively.

There was no significant association between nadir DO2i and postoperative AKI in patients undergoing moderate hypothermia during CPB.
Conclusion(s): In low-weight infants undergoing mild hypothermia during CPB, the critical DO2i for preventing AKI was 258 mL/min/m2 in the hypothermia phase and 281 mL/min/m2 for rewarming. Moreover, an individualized critical DO2i threshold should be advocated during CPB.

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174.

Risk factors and occurrence of chronic kidney disease following acute kidney injury in Children.
Jan M., Ashraf M., Baba R.A., Bhat S.A.
Embase
Annals of African Medicine. 21(4) (pp 366-370), 2022. Date of Publication: October 2022.
[Article]
AN: 2021982592
Background: Chronic kidney disease (CKD) is an irreversible progressive condition with diverse etiologies among which acute kidney injury (AKI) is increasingly being recognized as an important one.
Method(s): This was a prospective observational study of pediatric intensive care unit (PICU) patients admitted with different etiologies, at a tertiary care hospital for children in Kashmir India, between October 2018 and September 2020. AKI was defined as an increase in absolute serum creatinine (SCr) >=0.3 mg/dL or by a percentage increase in SCr 50% and/or by a decrease in urine output to <0.5 mL/kg/h for >6 hours (h). Besides analysis of AKI and associated PICU mortality, post-AKI patients after discharge were kept on follow-up for complete 1 year.
Result(s): From 119 enrolled patients with AKI with no preexisting risk factors, 5.6% (n = 8/119) developed CKD. The AKI-associated mortality rate after 48 h of PICU stay was 13.4% (n = 16/119). At time of discharge from hospital, elevated blood pressure (BP) (n = 5/8) and subnephrotic proteinuria (n = 3/8) were the statistically significant sequels of AKI (P value <0.001) for progression to CKD. After 3 months of follow-up, elevated BP (n = 7/8) and subnephrotic proteinuria (n = 3/8) were significantly associated with progression to CKD at 1 year (P < 0.005).
Conclusion(s): Occurrence of CKD after an attack of AKI was not uncommon and the risk of long-term consequences in the form of hypertension, proteinuria, and CKD is significant, which may be much higher than observed. It is prudent that all post-AKI PICU discharged patients must be monitored for the long-term consequences of AKI.

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175.

Monitoring of intraoperative femoral oxygenation predicts acute kidney injury after pediatric cardiac surgery.
Inoue T., Kohira S., Ebine T., Shikata F., Fujii K., Miyaji K.
Embase
International Journal of Artificial Organs. 45(12) (pp 981-987), 2022. Date of Publication: December 2022.
[Article]
AN: 2018814844
Cardiopulmonary bypass-associated acute kidney injury (CPB-AKI) is a pediatric cardiac surgery postoperative complication that is associated with a longer duration of mechanical ventilation and length of hospital stay. Identifying an early predictor of CPB-AKI is critical. Near infrared spectroscopy (NIRS), which can provide real-time monitoring of regional tissue oxygen saturation (rSO2) during CPB, may predict CPB-AKI in an early phase of surgical treatment. This study analyzed clinical data from 87 children who underwent an elective surgical repair of ventricular septal defect (VSD) from January 2013 to March 2019. NIRS sensors were placed on the patients' forehead, abdomen, and thighs. The pediatric modified risk, injury, failure, loss, and end-stage (p-RIFLE) score was determined for each patient postoperatively. The incidence of AKI based on the p-RIFLE classification was 11.5% at the end of surgery, 23.0% at 24 h after surgery, and 5.7% at 48 h after surgery. The AKI incidence rate was highest at 24 h after surgery. Multiple regression analysis revealed that femoral oxygenation (rSO2) during CPB, CPB time, oxygen delivery index (DO2i), and lactate at the end of CPB were independent risk factors for AKI. Receiver-operating characteristic curve analysis indicated that femoral oxygenation of 74% or less predicted AKI development within 24 h after surgery. In conclusion, rSO2 measured at the thigh during CPB is highly predictive of CPB-AKI.

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176.

Risk factors for mortality in critically ill infants with acute kidney injury: A resource-limited setting experience.
Mishra O.P., Verma A.K., Abhinay A., Singh A., Prasad R.
Embase
Therapeutic Apheresis and Dialysis. 26(2) (pp 297-305), 2022. Date of Publication: April 2022.
[Article]
AN: 2013333910
Infants with acute kidney injury (AKI) who are critically ill often will have multiorgan dysfunctions. Objective of the present study was to find out mortality, recovery of kidney function at discharge and at 3 months, and to determine risk factors for mortality. Fifty-two infants (24 newborns and 28 postneonatal) with AKI were included. Staging was done as per Kidney Disease Improving Global Outcomes classification. Patients were subjected to medical treatment and peritoneal dialysis (PD), wherever indicated. Kidney function tests were performed at admission, discharge, and at 3 months follow-up. Median age of neonates was 8 days and postneonatal infants were 4.5 months. Stage 1, 2, and 3 AKI were present in 14 (26.9%), 16 (30.7%), and 22 (42.3%) cases, respectively. PD was required in 22 (42.3%) infants, and significantly higher in postneonatal than in neonates (57.1% vs. 25%, p < 0.05). Significant recovery of kidney function occurred at discharge and cases had normal parameters at 3 months. Mortality was 17.3%. Patients had significantly higher risk of mortality, if they had metabolic acidosis (OR 13.22, CI 2.33-74.94, p = 0.002) and needed ventilation (OR 14.93, 95% CI 1.7-130.97, p = 0.006) and PD (OR 6.53, 95% CI 1.20-35.48, p = 0.026). In logistic regression analysis, fluid overload (p < 001), hypotension (p < 0.01), and higher PRISM-III score (p < 0.05) were found as significant risk factors for mortality. Medical management including PD led to good recovery of kidney function. Presence of fluid overload, hypotension, and higher PRISM-III score adversely affected the outcome.

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Publisher
John Wiley and Sons Inc
Year of Publication
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177.

The comparison of three different acute kidney injury classification systems after congenital heart surgery.
Ozcanoglu H.D., Ozturk E., Tanidir I.C., Sahin G.T., Ozalp S., Yildiz O., Ozcan F.G., Hatemi A.
Embase
Pediatrics International. 64(1) (no pagination), 2022. Article Number: e15270. Date of Publication: January/December 2022.
[Article]
AN: 2020859367

Background: We aimed to compare the frequency of acute kidney injury (AKI) and its effects on mortality and morbidity with different classification systems in pediatric patients who had surgery under cardiopulmonary bypass for congenital heart disease.
Method(s): This study included children younger than 18 years old who were followed up in the pediatric cardiac intensive care unit between September 1 and December 1, 2020, after congenital heart surgery with cardiopulmonary bypass. Each case was categorized postoperatively in terms of AKI using Pediatric-Modified Risk, Injury, Failure, Loss, and End-Stage (pRIFLE), Acute Kidney Injury Network (AKIN), and Kidney Disease: Improving Global Outcomes (KDIGO). Hospital mortality (developed within the first 30 days postoperatively) and morbidity (longer than 7 days intensive care unit stay) were compared by three model classes. Results were evaluated statistically.
Result(s): One hundred patients were included in the study. The median age was 3 months (1 day-180 months). Acute kidney injury was diagnosed in 49% of the cases according to the pRIFLE classification. It was diagnosed in 31% of the patients by AKIN classification. It was diagnosed in 41% of the patients with the KDIGO criteria. Morbidity was observed in 25% (n = 25) of all cases. The morbidity predictor was 0.800 for pRIFLE, 0.747 for AKIN and 0.853 for KDIGO by receiver operating characteristics analysis. All three categories predicted morbidity significantly ($P < 0.001$). Mortality was 10% (n = 10) for all groups. The mortality predictor was 0.783 for pRIFLE, 0.717 for AKIN and 0.794 for KDIGO by receiver operating characteristics analysis, and all three categories predicted mortality significantly ($P < 0.001$).
Conclusion(s): Regardless of the three methods used, AKI was commonly detected in pediatric patients undergoing congenital heart surgery. pRIFLE classification diagnosed more patients with AKI than AKIN and KDIGO. The KDIGO and pRIFLE classifications were better in predicting hospital mortality.

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178.

Clinical Outcomes of Renal Replacement Therapy in Pediatric Acute Kidney Injury: A 10-Year Retrospective Observational Study.
Voraruth C., Pirojsakul K., Saisawat P., Chantarogh S., Tangnararatchakit K.
Embase
Global Pediatric Health. 9 (no pagination), 2022. Date of Publication: January-December 2022.
[Article]

AN: 2020645139
Children with severe acute kidney injury (AKI) have had a high mortality rate despite the use of advanced renal replacement therapy (RRT). This study aims to determine the clinical outcomes and the predictors of survival in pediatric AKI requiring RRT in Thailand. All patients aged 1 month to 18 years with AKI requiring RRT in the Department of Pediatrics, Ramathibodi Hospital from January 1st, 2010 to December 31st, 2019 were enrolled. Clinical and laboratory data were obtained through a medical record review. There were 92 patients with a 45% survival rate. Five factors associated with mortality included multi-organ dysfunction syndrome, presence of sepsis, high pediatric risk of mortality III, use of nephrotoxic drugs, and use of vasopressors. By multivariate analysis, the presence of sepsis and the use of nephrotoxic drugs were independently associated with mortality. Patients with fluid overload >=10% was associated with poor survival.

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Year of Publication
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179.

The sequence of intervention determines the risk of early postoperative acute kidney injury in infants with bilateral ureteropelvic junction obstruction.
Elbaset M.A., Edwan M., Elmeniar A.M., Sharaf M.A., Ezzat O., Elgamal M., Ashour R., Abouelkheir R.T., Badawy M., Soltan M.A., Hafez A.T., Dawaba M., Abdelhalim A.
Embase
Journal of Pediatric Urology. 18(6) (pp 801.e1-801.e9), 2022. Date of Publication: December 2022.
[Article]
AN: 2019981303
Introduction and objectives: The management of bilateral ureteropelvic junction obstruction (UPJO) is greatly debated. We aim to identify the risk of early postoperative acute kidney injury (AKI) in relation to the sequence of intervention in children with bilateral UPJO managed in a sequential manner.
Method(s): A single center database was retrospectively reviewed for children <=2 years who underwent bilateral pyeloplasty. According to the differential renal function on the preoperative renograms, patients were categorized into group A: pyeloplasty on the poorer functioning kidney first and group B: pyeloplasty on the better functioning side first. Serum creatinine and eGFR, using the modified Schwartz formula, were evaluated at four time points (I): before the first intervention (II): within 48 h of the first intervention (III): before the second intervention and (IV): within 48 h of the second intervention. Preoperative and postoperative values were compared. The incidence of early postoperative AKI in both groups was defined according to the Acute Kidney Injury Network (AKIN) criteria.
Result(s): The study comprised 46 children treated by staged pyeloplasty, 28 of them underwent pyeloplasty on the poorer functioning side first. Baseline serum creatinine and eGFR were not

significantly different between both groups. Patients who underwent pyeloplasty on the poorer functioning side first, had a significant decline of eGFR after the first intervention (p = 0.006). Conversely, no significant eGFR changes were observed after the first or second interventions in the other group (figure). Overall, 64.3% and 33.3% of patients developed some degrees of AKI when intervention was started on the poorer and better functioning renal units, respectively (p = 0.04).
Discussion(s): Bilaterality is seen in approximately 1/4 of patients with UPJO. Oftentimes, both renal units are asymmetrically affected with little data to guide surgeons on the optimal sequence of intervention. Following pyeloplasty, 52.2% of the evaluated children with bilateral UPJO had early postoperative AKI, mostly of low stage. Our data suggest that intervening first on the better functioning side allows for better recovery of the renal functional reserve and lowers the risk of postoperative AKI.
Conclusion(s): In children with bilateral UPJO, starting intervention on the poorer functioning kidney is associated with increased risk of postoperative AKI. Long-term prospective studies are needed to confirm our findings.[Formula presented]

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Elbaset, Mohamed A.; ORCID: https://orcid.org/0000-0001-5669-2999 Edwan, Mohamed; ORCID: https://orcid.org/0000-0002-3663-9194
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180.

Evaluating renal microcirculation in patients with acute kidney injury by contrast-enhanced ultrasonography: a protocol for an observational cohort study.
Wang X., Chen L., Su T.
Embase
BMC Nephrology. 23(1) (no pagination), 2022. Article Number: 392. Date of Publication: December 2022.
[Article]
AN: 2020562224
Background: Acute kidney injury (AKI) in critically ill patients has poor renal outcome with high mortality. Changes in intra-renal microcirculation and tissue oxygenation are currently considered essential pathophysiological mechanisms to the development and progression of AKI. This study aims to investigate the characteristics of contrast-enhanced ultrasonography (CEUS) derived parameters in biopsy-proven AKI patients, and examine the predictive value of these markers for renal outcome. Methods and design: This prospective observational study will enroll AKI patients

who are diagnosed and staging following KDIGO (Kidney Disease: Improving Global Outcomes) criteria. All patients undergo a kidney biopsy and pathological tubulointerstitial nephropathy is confirmed. The CEUS examination will be performed at 0, 4 and 12 weeks after biopsy to monitor renal microcirculation. The percentage decrease of serum creatinine, 4-week and 12-week eGFR (estimated glomerular filtration rate) will also be reviewed as renal prognosis. The relationship of CEUS parameters with clinical and pathological markers will be analyzed. We perform a lassologit procedure to select potential affecting variables, including clinical, laboratory indexes and CEUS markers, to be included in the logistic regression model, and examine their predictive performance to AKI outcomes.
Discussion(s): If we are able to show that CEUS derived parameters contribute to diagnosis and prognosis of AKI, the quality of life of patients will be improved while healthcare costs will be reduced. Trial registration: This study is retrospectively registered on the Chinese Medical Research Registration information System(https://61.49.19.26/login) on December 31, 2021: MR-11-22-003,503. This study has been approved by the Ethics and Scientific Research Department of Peking University First Hospital.

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36482379 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36482379]
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181.

The effectiveness of locally-prepared peritoneal dialysate in the management of children with acute kidney injury in a south-east Nigerian tertiary hospital.
Mbanefo N.R., Uwaezuoke S.N., Chikani U.N., Bisi-Onyemaechi A.I., Muoneke U.V., Odetunde O.I., Okafor H.U.
Embase
African Health Sciences. 22(4) (pp 679-685), 2022. Date of Publication: 2022.
[Article]
AN: 2018944551
Background: Peritoneal dialysis (PD) is the preferred mode of renal replacement therapy (RRT) in children with acute kidney injury (AKI). The gold standard remains the use of commercially-prepared PD fluid. In resource-poor nations, its availability and affordability remain a challenge.
Aim(s): This study aims to report the effectiveness of locally-prepared PD fluid in the management of AKI in a south-east Nigerian tertiary hospital. Subjects and Methods: This was a retrospective study conducted at the paediatric ward of the University of Nigeria Teaching hospital, Enugu. The case records of 36 children seen over three years, diagnosed with AKI and requiring PD were reviewed. The retrieved information comprised biodata, aetiology of AKI, indications for PD, pre-and post-dialysis estimated glomerular filtration rate (eGFR) and patient outcomes.

Result(s): The children (20 males and 16 females) were aged 3 to 36 months with a mean age of 9.92 +/- 6.29 months. The com-mon aetiologies of AKI were septicemia (30.6%), hemolytic uremic syndrome (19.4%), and toxic nephropathy (16.7%). The frequent indications for PD were uremic encephalopathy (58.3%) and severe metabolic acidosis (38.8%). The pre-and post-dialysis mean urine flow rate was 0.16 + 0.13 and 2.77 + 0.56 ml/kg/hour respectively. The eGFR before PD, at discontinuation, and a week later was 6.06 + 2.87, 24.44 + 15.71 and 59.07 + 22.22 mls/min/1.73m2 respectively.
Conclusion(s): PD with locally-prepared dialysate is safe, effective and a life-saving alternative in the management of AKI in children.

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Publisher
Makerere University, Medical School
Year of Publication
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182.

No matter the hemisphere or language, neonatal acute kidney injury is common and is associated with poor outcomes.
Askenazi D.J.
Embase
Jornal de pediatria. (no pagination), 2022. Date of Publication: 26 Dec 2022.
[Article]
AN: 639913002
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36581311 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36581311]
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183.

Acute Kidney Injury and Hemolytic Uremic Syndrome in Severe Pneumococcal Pneumonia-A Retrospective Analysis in Pediatric Intensive Care Unit.
Kuok C.I., Hsu M.L.N., Lai S.H.F., Wong K.N.K., Chan W.K.Y.
Embase
Journal of Pediatric Intensive Care. (no pagination), 2022. Date of Publication: 2022.

[Article]
AN: 2021916543
Objectives: This study aimed to evaluate the prevalence of acute kidney injury (AKI) and hemolytic uremic syndrome (HUS) in severe pediatric pneumonia due to Streptococcus pneumoniae and to identify factors associated with AKI and HUS in these patients.
Method(s): We retrospectively analyzed pediatric patients who were admitted to our pediatric intensive care unit due to severe pneumococcal pneumonia between 2013 and 2019.
Result(s): Forty-two patients with a median age of 4.3 years were included. Among these patients, 14 (33.3%) developed AKI, including seven (16.7%) stage 1, two (4.8%) stage 2, and five (11.9%) stage 3 AKI. Features of HUS were present in all of the patients with stage 3 AKI, and four required renal replacement therapy (RRT), with a median duration of 10.5 days (range 3 to 16 days). All patients with HUS required mechanical ventilation and inotropic supports. Patients with lower leukocyte and platelet counts, serum sodium and bicarbonate levels, positive urine dipstick (heme or protein = 2 +), and presence of bacteremia were associated with stage 2 and 3 AKI.
Conclusion(s): Pediatricians should be aware of the relatively high prevalence of kidney involvement in severe pneumococcal pneumonia, with one-third having AKI and 11.9% developing HUS. Majority (80%) of HUS patients required RRT. Positive urine dipstick, serum sodium, and bicarbonate at presentation, which can be measured in point-of-care tests, may potentially be useful as quick tests to stratify the risks of moderate-to-severe AKI.

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Publisher
Georg Thieme Verlag
Year of Publication
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184.

Biomarkers for Acute Kidney Injury in Critically ill Patients.
Ahmed S.H., Amin E.K., Khalifa N.A., Ali Y.M.
Embase
NeuroQuantology. 20(11) (pp 3094-3100), 2022. Date of Publication: September 2022.
[Article]
AN: 2018132012
Background: Acute kidney injury formally called acute renal failure is commonly defined as an abrupt decline in renal function, clinically manifesting as a reversible acute increase in nitrogen waste products. The deterioration of renal function may be discovered by a measured decrease in urine output.
Aim(s): The aim of this study is early prediction of AKI in critically ill patients. Subject and Methods: This study was conducted at Picu, Department of Pediatrics, Zagazig University. Patients were divided into 2 groups according to development of AKI.
Result(s): There was significant elevation in NGAL, KIM-1 and Hsp72 levels at 3rd day compared to levels on admission. Urinary output showed significant decrease in AKI group compared to no AKI group. There were no statistically significant differences between the two groups regarding nephrotoxic drug.

Conclusion(s): Most of the cases of AKI were classified as AKIN 1, a class seen by clinicians as having little relevance or clinical impact. To efficiently detect AKI before conventional markers, the balance between cost and benefit would favor daily urinary Hsp72 detection, from ICU admission to three to five days after ICU discharge. The third day NGAL, KIM and HSP 72 were reliable biomarkers in detecting AKI in critically ill children. HSP 72 at day 3 was the best diagnostic preference; the biomarker Hsp72 is enough sensitive and specific to predict AKI in critically ill patients up to 3 days before the diagnosis.

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185.

Acute kidney injury and diabetic kidney disease in children with acute complications of diabetes.
Soltysiak J., Krzysko-Pieczka I., Gertig-Kolasa A., Mularz E., Skowronska B., Ostalska-Nowicka D., Zachwieja J.
Embase
Pediatric Nephrology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2019557835
Background: Diabetic ketoacidosis (DKA) and hyperglycaemia without ketoacidosis are common acute complications of diabetes. Their association with acute kidney injury (AKI) and diabetic kidney disease (DKD) was studied.
Method(s): The study group consisted of 197 children with type 1 diabetes with average diabetes duration of 8.08 +/- 2.32 years. The medical history of the patients was retrospectively reviewed. The number of children with severe hyperglycaemia, DKA and AKI was assessed. The association with the risk of chronic kidney disease (CKD) was analysed.
Result(s): AKI was found in 14% of cases hospitalised for DKA and 8% of cases hospitalised for hyperglycaemia. Patients with AKI showed a significantly increased corrected sodium (141.23 +/- 5.09 mmol/L, p = 0.035). Patients with AKI in DKA showed a significant increase in WBC (20.73 +/- 8.71 x 103/microL, p = 0.0009). Follow-up analysis after a minimum of 5 years of diabetes revealed that a single episode of DKA was found in 63 patients and a single episode of AKI in 18 patients. Two or more episodes of DKA were found in 18 patients, and nine cases were complicated by AKI. These patients showed a significant increase in urinary albumin excretion (44.20 +/- 64.21 mg/24 h), the highest values of eGFR and the worst glycaemic control.
Conclusion(s): Diabetic children can develop AKI in the course of DKA and hyperglycaemia without ketoacidosis, which is associated with volume depletion and reflected by corrected sodium concentration. AKI in DKA seems to be complicated by stress and inflammation activation. AKI and poor glycaemic control with repeated DKA episodes can magnify the risk of progression to DKD. Graphical abstract: [Figure not available: see fulltext.].

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36227434 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36227434]
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Publisher
Springer Science and Business Media Deutschland GmbH
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186.

The complement system in pediatric acute kidney injury.
Stenson E.K., Kendrick J., Dixon B., Thurman J.M.
Embase
Pediatric Nephrology. (no pagination), 2022. Date of Publication: 2022.
[Review]
AN: 2019416906
The complement cascade is an important part of the innate immune system. In addition to helping the body to eliminate pathogens, however, complement activation also contributes to the pathogenesis of a wide range of kidney diseases. Recent work has revealed that uncontrolled complement activation is the key driver of several rare kidney diseases in children, including atypical hemolytic uremic syndrome and C3 glomerulopathy. In addition, a growing body of literature has implicated complement in the pathogenesis of more common kidney diseases, including acute kidney injury (AKI). Complement-targeted therapeutics are in use for a variety of diseases, and an increasing number of therapeutic agents are under development. With the implication of complement in the pathogenesis of AKI, complement-targeted therapeutics could be trialed to prevent or treat this condition. In this review, we discuss the evidence that the complement system is activated in pediatric patients with AKI, and we review the role of complement proteins as biomarkers and therapeutic targets in patients with AKI.

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36203104 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36203104]
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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
2022

187.

Acute Kidney Injury after High-Flow Regional Cerebral Perfusion in Neonatal and Infant Aortic Arch Repair.
Shikata F., Miyaji K., Kohira S., Goto H., Shinzo T., Kitamura T., Mishima T., Fukuzumi M., Fujioka S., Sasahara A., Araki H.
Embase
Interactive cardiovascular and thoracic surgery. (no pagination), 2022. Date of Publication: 19 Sep 2022.
[Article]
AN: 639060994
OBJECTIVES: We applied high-flow regional cerebral perfusion (HFRCP) for aortic arch reconstruction in neonates and infants by monitoring regional oxygen saturation of the thigh (rSO2T) using near-infrared spectroscopy to maintain peripheral perfusion. This study was designed to investigate the optimal perfusion flow of HFRCP for renal protection.
METHOD(S): From 2009 to 2021, 28 consecutive neonates and infants who underwent aortic arch reconstruction with HFRCP were enrolled. The median age of the patients was 27days; the median body weight was 3.0kg. In HFRCP, perfusion flow was targeted at approximately 80-100mL/kg/min and then lowered corresponding to brain rSO2 levels and blood gas data. Isosorbide dinitrate and chlorpromazine were administered to enhance peripheral perfusion flow. Regional oxygen saturation of the forehead and thighs were monitored. The stage of acute kidney injury (AKI) was classified based on the Kidney Disease Improving Global Outcomes criteria.
RESULT(S): No patients had neurological events and peritoneal dialysis after surgery. The incidence of AKI was 39.3% with only three patients having greater than stage 2 AKI. The maximum postoperative serum creatinine concentration was negatively associated with the lowest rSO2T during HFRCP. The rSO2T during HFRCP was a predictive factor for postoperative creatinine increase of 0.3mg/dL. The area under receiver operating characteristic curve was 0.78 with the cutoff value of 48% for rSO2T.
CONCLUSION(S): The rSO2T during HFRCP is a potential predictor of postoperative renal function. To prevent AKI, the rSO2T should be preserved more than 48% by increasing HFRCP flow.

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36124960 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36124960]
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Publisher
NLM (Medline)
Year of Publication
2022

188.

Evaluation of neonatal acute kidney injury (AKI) after emergency gastrointestinal surgery.
Cui Y., Fang X., Li J., Deng L.
Embase
Asian journal of surgery. (no pagination), 2022. Date of Publication: 08 Sep 2022.

[Article]
AN: 638999058
BACKGROUND: The overall incidence of acute kidney injury (AKI) in neonates undergoing emergency gastrointestinal surgery is yet to be determined. The study aims are to analyze our experience in emergency gastrointestinal surgery for neonates and to evaluate the incidence of AKI.
METHOD(S): We conducted a retrospective study of neonates undergoing emergency gastrointestinal surgery between June 31, 2018 and May 10, 2022 (N = 329). The primary outcome was the overall incidence of AKI. The diagnostic AKI was based on the Modified Kidney Disease: Improving Global Outcomes (KDIGO) definition of neonatal AKI. The secondary outcomes, including the postoperative length of hospital stay (PLOS), 24-h mortality, in-hospital mortality, and total in-hospital cost, were analyzed. The risk factors associated with the development of postoperative AKI were also analyzed.
RESULT(S): The incidence of postoperative AKI was 9.1% (30/329). No significant differences were detected in the 24-h mortality and in-hospital mortality between the two cohorts. In the final model, patients undergoing mechanical ventilation before surgery, vasopressor support, surgical duration, intraoperative oliguria and preoperative lowest serum creatinine (SCr), were independently associated with AKI.
CONCLUSION(S): Our study found that patients undergoing mechanical ventilation before surgery, vasopressor support, surgical duration, intraoperative oliguria and preoperative lowest SCr were independently associated with postoperative AKI in neonates who accepted emergency gastrointestinal surgeries.

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Publisher
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Year of Publication
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189.

Acute Kidney Injury in Pregnancies Complicated by Late-Onset Preeclampsia with Severe Features.
Rodriguez A.N., Nelson D.B., Spong C.Y., McIntire D.D., Reddy M.T., Cunningham F.G.
Embase
American Journal of Perinatology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2019253621
Objective Acute kidney injury (AKI)-complicating pregnancy is used as a marker of severe maternal morbidity (SMM) and frequently associated with obstetric hypertensive disorders. We examined AKI in pregnancies complicated by late-onset preeclampsia with severe features (SPE) using the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. We compared outcomes of pregnancies with and without AKI and stratified by stage of disease. We further differentiated

renal dysfunction at the time of admission and compared outcomes to those who developed AKI after admission. Study Design This was a retrospective cohort study of women with care established before 20 weeks and diagnosed with preeclampsia with severe features with delivery at >=34 weeks. Women with chronic hypertension or suspected underlying renal dysfunction were excluded. KDIGO criteria were applied to stratify staging of renal disease. Demographics and perinatal outcomes were compared using Chi-square analysis and Wilcoxon's rank-sum test with $p < 0.05$ considered significant. Results From January 2015 through December 2019, a total of 3,515 women meeting study criteria were delivered. Of these, 517 (15%) women met KDIGO criteria for AKI at delivery with 248 (48%) having AKI at the time of admission and the remaining 269 (52%) after admission. Stratified by severity, 412 (80%) had stage 1 disease, 89 (17%) had stage II, and 16 (3%) had stage III. Women with AKI had higher rates of cesarean delivery (risk ratio [RR] = 1.3; 95% confidence interval [CI]: 1.17-1.44), postpartum hemorrhage (RR = 1.46; 95% CI: 1.29-1.66), and longer lengths of stay. Other associated outcomes included NICU admission (RR = 1.72; 95% CI: 1.19-2.48), 5-minute Apgar score <= 3 (RR = 5.11; 95% CI: 1.98-13.18), and infant length of stay. Conclusion Of women with late preterm SPE, 15% were found to have AKI by KDIGO criteria. The majority (80%) of AKI was stage I disease, and approximately half of the cases were present by the time of admission. Key Points AKI was found in 15% of our cohort with 80% stage I disease. Half of the cases of AKI were present on admission. Few adverse perinatal outcomes are associated with AKI.

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Article-in-Press
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Publisher
Thieme Medical Publishers, Inc.
Year of Publication
2022

190.

The Mechanism of Hyperoxia-Induced Neonatal Renal Injury and the Possible Protective Effect of Resveratrol.
Shen Y., Yuan Y., Dong W.
Embase
American Journal of Perinatology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2019253602
With recent advances in neonatal intensive care, preterm infants are surviving into adulthood. Nonetheless, epidemiological data on the health status of these preterm infants have begun to reveal a worrying theme; prematurity and the supplemental oxygen therapy these infants receive after birth appear to be risk factors for kidney disease in adulthood, affecting their quality of life. As the incidence of chronic kidney disease and the survival time of preterm infants both increase, the management of the hyperoxia-induced renal disease is becoming increasingly relevant to neonatologists. The mechanism of this increased risk is currently unknown, but prematurity itself and hyperoxia exposure after birth may predispose to disease by altering the normal trajectory of kidney maturation. This article reviews altered renal reactivity due to hyperoxia, the possible mechanisms of renal injury due to hyperoxia, and the role of resveratrol in renal injury. Key Points

Premature infants commonly receive supplementary oxygen. Hyperoxia can cause kidney damage via signal pathways. We should reduce the occurrence of late sequelae.

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Publisher
Thieme Medical Publishers, Inc.
Year of Publication
2022

191.

Melatonin Ingestion Prevents Liver Damage and Improves Biomarkers of Renal Function Following a Maximal Exercise.
Farjallah M.A., Graja A., Ghattassi K., Ben Mahmoud L., Elleuch H., Ayadi F., Driss T., Jammoussi K., Sahnoun Z., Souissi N., Hammouda O.
Embase
Research quarterly for exercise and sport. (pp 1-11), 2022. Date of Publication: 16 May 2022.
[Article]
AN: 638015902
Background: While the promotion of the beneficial effects of melatonin (MEL) ingestion on the modulation of oxidative stress is widespread, less attention is given to the biological influence that it could exert on the results of hematology and clinical chemistry parameters. This study was undertaken to assess the effects of acute MEL ingestion on these parameters during a maximal running exercise.
Method(s): In double blind randomized design, 12 professional soccer players [age: 17.54 +/- 0.78 yrs, body mass: 70.31 +/- 3.86 kg, body height: 1.8 +/- 0.08 m; maximal aerobic speed (MAS): 16.85 +/- 0.63 km/h; mean +/- standard deviation], all males, performed a diurnal (17:00 h +/- 30 h) running exercise test (RET) at 100% of their MAS following either MEL or placebo ingestion. Blood samples were obtained at rest and following the RET.
Result(s): Compared to placebo, MEL intake decreased post-exercise biomarkers of liver damage (aspartate aminotransferase, $p<0.001$; alanine aminotransferase, $p<0.001$; gamma-glutamyltransferase; $p<0.05$) and improved post-exercise renal function markers (i.e., creatinine, $p<0.001$). However, lipid profile, glucose, lactate and leukocyte were not affected by MEL ingestion. Regarding the time to exhaustion, no difference was found between MEL (362.46 +/- 42.06 s) and PLA (374.54 +/- 57.97 s) conditions.
Conclusion(s): The results of this investigation clearly attest that MEL ingestion before a maximal running exercise might protect athletes from liver damage and perturbation in renal function biomarkers. However, this study comprises an acute MEL supplementation and no assessment on chronic effects or circadian rhythm the day before was done.
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Publisher
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Year of Publication
2022

192.

Long-Term Healthcare Cost Savings of a Pediatric Nephrotoxic Medication-Associated Acute Kidney Injury Reduction Program in a Simulated Sample.
Dynan L., Lazear D., Goldstein S.L.
Embase
Journal of Pharmacy Practice. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2015419711
Background: Nephrotoxic medication exposure is a common cause of acute kidney injury (AKI) in hospitalized children and is associated with chronic kidney disease (CKD). The pharmacist-reliant NINJA program reduced nephrotoxic medication exposure and associated AKI.
Objective(s): We assess potential healthcare cost savings from reduced CKD by preventing AKI with the NINJA program for a pediatric population through age 21.
Method(s): We simulated a cohort of 1000 hospitalized non-critically ill children. From the published literature, 310 develop AKI, 267 survive to 6 months, and 10-70% develop CKD, and NINJA implementation reduced AKI by 23.8%. Allowing for varying CKD rates, we estimated a range of NINJA's savings. We assumed an annual GFR decline of 1.2 (noHTN) ml/min/1.73 m2 for half the sample and 1.7 (HTN) ml/min/1.73 m2 for the other half to account for CKD progression without and with hypertension (HTN). We model attributable costs including CKD stage-related medications and outpatient visits/tests in 2018 dollars discounted at 3%. We subtract the cost of NINJA screening (daily serum creatinine and pharmacist time) from net savings. We exclude end-stage renal disease (ESRD) and hospitalization costs.
Result(s): No intervention estimated CKD related costs are $761,852 to $5,735,027. Post-NINJA cost decreases to $616,086 to $4,312,183 (net savings: $145,766 to $1,422 183). Total savings, accounting for NINJA screening ($256,680) are -$110,914 to $1,1 165 503. The breakeven AKI to CKD conversion rate is 13-14% with growth hormone cost included, and 64-65% without.
Conclusion(s): The NINJA program is likely cost beneficial, with greater savings into adulthood by avoiding/delaying ESRD and its costs.

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Publisher
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193.

Detection of Acute Kidney Injury in Neonates after Cardiopulmonary Bypass.
Webb T.N.
Embase
Nephron. (no pagination), 2022. Date of Publication: 2022.
[Review]
AN: 2017222988
Cardiac surgery-associated acute kidney injury (CS-AKI) in neonates has been associated with poor outcomes. Early detection and intervention of acute kidney injury (AKI) are needed in order to mitigate some of these sequalae. Currently, serum creatinine (SCr) remains the gold standard for AKI diagnosis; however, changes are not seen until days after injury thus delaying the diagnosis. Serum creatinine in neonates varies based on multiple factors such as prematurity, the presence of maternal SCr and renal tubule immaturity. Acute kidney injury biomarkers, such as neutrophil gelatinase-associated lipocalin (NGAL), are useful for early AKI diagnosis. In addition to SCr and AKI biomarkers, a risk-based assessment of neonates at risk for CS-AKI could prove useful for early AKI diagnosis and intervention.

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35220310 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35220310]
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Article-in-Press
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S. Karger AG
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194.

Effect of intraoperative theophylline use on acute kidney injury in paediatric cardiac surgery.
Yavuz Y., Isildak F.U.
Embase
Cardiology in the young. (pp 1-9), 2022. Date of Publication: 02 Feb 2022.
[Article]
AN: 637154765

BACKGROUND: This study aimed to examine the effects of theophylline use in preventing renal dysfunction in patients undergoing CHD surgery.
METHOD(S): A total of 94 patients aged 1-60 months were included in the study. Patients in the theophylline group were enrolled according to a pre-defined protocol for treatment administration, while controls were selected retrospectively from patients without theophylline treatment during the same period - who were matched according to critical baseline characteristics.
RESULT(S): The incidence of acute kidney injury was similar between the two groups ($p = 1.000$). Higher urinary output and lower fluid balance were found intraoperatively and also postoperatively in the theophylline group (all, $p < 0.050$). Postoperative decrease in urinary output and estimated glomerular filtration rate were higher in the theophylline group ($p < 0.050$). Lower postoperative urea and creatinine levels were shown in theophylline recipients ($p < 0.050$). Urea levels increased significantly in the non-theophylline group during surgery ($p < 0.001$), and no significant change was observed in theophylline group ($p = 0.136$). Postoperative increase in creatinine and lactate levels was demonstrated in theophylline group ($p < 0.050$), and lactate levels were higher in the non-theophylline group during and after cardiopulmonary bypass ($p = 0.010$). Multiple linear regression analysis revealed less reduction in estimated glomerular filtration rate with higher age and in the presence of theophylline use ($p < 0.050$).
CONCLUSION(S): Although we demonstrated a similar incidence of acute kidney injury in the both groups, we revealed an important decrease in serum creatinine, urea and lactate levels, accompanied by improved estimated glomerular filtration rate, increased urine output and decreased fluid overload, with theophylline treatment, suggesting that renal functions significantly improved with the use of theophylline.
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Publisher
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Year of Publication
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195.

Peritoneal Dialysis with Rigid Catheters in Children with Acute Kidney Injury: A Single-Centre Experience.
Garg M., Lalitha A.V., Vasudevan A.
Embase
Journal of Pediatric Intensive Care. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 636956709
Peritoneal dialysis (PD) is a simple and preferred modality of dialysis for children with acute kidney injury (AKI) in resource poor countries. The aim of the study is to evaluate the utility and safety of acute PD using rigid catheter in critically ill children admitted to pediatric intensive care unit (PICU) with emphasis on short-term patient and renal outcome and complications. In this retrospective study, outcome and complications of PD using rigid catheter were evaluated in 113 critically ill children admitted in PICU of a tertiary care hospital from 2014 to 2019. The most common causes for AKI were sepsis (39.8%), dengue infection (16.8%), and hemolytic uremic

syndrome (13.2%). In 113 patients, 122 PD catheters were inserted, and the median duration of PD was 60 (IQR: 36-89) hours. At the initiation of PD, 64 (56.6%) patients were critically ill requiring mechanical ventilation and inotropes, 26 (23%) had disseminated intravascular coagulation, and 42 (37%) had multiorgan dysfunction syndrome. PD was effective and there was a significant improvement in urea and creatinine, and one-third patients (n = 38; 33.6%) had complete renal recovery at the end of PD. Total complications were seen in 67% children but majority of them were metabolic (39.8%). Total catheter related complications were seen in 21.2% and peritonitis was seen in 4.4%. Catheter removal due to complications was required in 8.8% children. Overall, among children on PD, 53.7% survived. Acute PD with rigid catheters can be performed bedside in absence of soft catheters and significant clearance can be obtained without major life-threatening complications.

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Publisher
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196.

A systematic review of the incidence of hypersensitivity reactions and post-contrast acute kidney injury after ioversol in more than 57,000 patients: part 1-intravenous administration.
van der Molen A.J., Dekkers I.A., Bedioune I., Darmon-Kern E.
Embase
European Radiology. 32(8) (pp 5532-5545), 2022. Date of Publication: August 2022.
[Article]
AN: 2015383230
Objectives: To evaluate the incidence of adverse drug reactions (ADRs), including hypersensitivity reactions (HSRs) and post-contrast acute kidney injury (PC-AKI), after intravenous (IV) administration of ioversol.
Material(s) and Method(s): A systematic literature search (1980-2021) of studies documenting IV use of ioversol and presence or absence of ADRs, HSRs, or PC-AKI was performed. Key information including patients' characteristics, indication and dose of ioversol, safety outcome incidence, intensity and seriousness were extracted.
Result(s): Thirty-one studies (> 57,000 patients) were selected, including 4 pediatric studies. The incidence of ADRs in adults was reported in 12 studies from ioversol clinical development with a median (range) of 1.65% (0-33.3%), and 3 other studies with an incidence between 0.13 and 0.28%. The incidence of HSRs (reported in 2 studies) ranged from 0.20 to 0.66%, and acute events (4 studies) from 0.23 to 1.80%. Severe reactions were rare with a median (range) of 0 (0-4%), and none were reported among pediatric patients. The incidence of ADRs and HSRs with ioversol, especially those of severe intensity, was among the lowest in studies comparing different iodinated contrast media (ICM) of the same class. PC-AKI incidence was variable (1-42% in 5 studies); however, ioversol exposure per se did not increase the incidence.
Conclusion(s): When administered by the IV route, ioversol has a good safety profile comparable to that of other ICM within the same class, with a low incidence of severe/serious ADRs overall,

and particularly HSRs. PC-AKI incidence does not seem to be increased compared to patients who did not receive ioversol. Further well-designed studies are warranted to confirm these results. Key Points: * Ioversol has a good safety profile in adult and pediatric patients when IV administered. * ADR and HSR incidence with ioversol, especially those of severe intensity, was among the lowest compared to other ICM. * IV administration of ioversol per se did not increase PC-AKI incidence.

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197.

A systematic review of the incidence of hypersensitivity reactions and post-contrast acute kidney injury after ioversol: part 2-intra-arterial administration.
van der Molen A.J., Dekkers I.A., Bedioune I., Darmon-Kern E.
Embase
European Radiology. 32(8) (pp 5546-5558), 2022. Date of Publication: August 2022.
[Article]
AN: 2015383228
Objectives: To evaluate the incidence of adverse drug reactions (ADRs), including hypersensitivity reactions (HSRs) and post-contrast acute kidney injury (PC-AKI), after intra-arterial (IA) administration of ioversol. Methods and materials: A systematic literature search was performed (1980-2021) and studies documenting IA use of ioversol, and reporting safety outcomes were selected. Key information on study design, patients' characteristics, indication, dose, and type of safety outcome were extracted.
Result(s): Twenty-eight studies (including two pediatric studies) with 8373 patients exposed to IA ioversol were selected. Studies were highly heterogenous in terms of design, PC-AKI definition, and studied population. PC-AKI incidence after coronary angiography was 7.5-21.9% in a general population, 4.0-26.4% in diabetic patients, and 5.5-28.9% in patients with chronic kidney disease (CKD). PC-AKI requiring dialysis was rare and reported mainly in patients with severe CKD. No significant differences in PC-AKI rates were shown in studies comparing different iodinated contrast media (ICM). Based on seven studies of ioversol clinical development, the overall ADR incidence was 1.6%, comparable to that reported with other non-ionic ICM. Pediatric data were scarce with only one study reporting on PC-AKI incidence (12%), and one reporting on ADR incidence (0.09%), both after coronary angiography.
Conclusion(s): After ioversol IA administration, PC-AKI incidence was highly variable between studies, likely reflecting the heterogeneity of the included study populations, and appeared comparable to that reported with other ICM. The rate of other ADRs appears to be low. Well-designed studies are needed for a better comparison with other ICM. Key Points: * PC-AKI

incidence after IA administration of ioversol appears to be comparable to that of other ICM, despite the high variability between studies. * The need for dialysis after IA administration of ioversol is rare. * No obvious difference was found regarding the safety profile of ioversol between IA and IV administration.

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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
2022

198.

A nomogram for predicting upper urinary tract damage risk in children with neurogenic bladder.
Li Q., Cai M., Pu Q., Wu S., Liu X., Lin T., He D., Wen J., Wei G.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 1050013. Date of Publication: 07 Dec 2022.
[Article]
AN: 2020696926
Purpose: To establish a predictive model for upper urinary tract damage (UUTD) in children with neurogenic bladder (NB) and verify its efficacy.
Method(s): A retrospective study was conducted that consisted of a training cohort with 167 NB patients and a validation cohort with 100 NB children. The clinical data of the two groups were compared first, and then univariate and multivariate logistic regression analyses were performed on the training cohort to identify predictors and develop the nomogram. The accuracy and clinical usefulness of the nomogram were verified by receiver operating characteristic (ROC) curve, calibration curve and decision curve analyses.
Result(s): There were no significant differences in other parameters between the training and validation cohorts except for age (all P > 0.05). Recurrent urinary tract infection, bladder compliance, detrusor leak point pressure, overactive bladder and clean intermittent catheterization were identified as predictors and assembled into the nomogram. The nomogram showed good discrimination with the area under the ROC curve (AUC) in the training cohort (0.806, 95% CI: 0.737-0.874) and validation cohort (0.831, 95% CI: 0.753-0.0.909). The calibration curve showed that the nomograms were well calibrated, with no significant difference between the predicted and observed probabilities. Decision curve analysis indicated that the nomogram has good clinical applicability.
Conclusion(s): This study presents an effective nomogram incorporating five clinical characteristics that can be conveniently applied to assess NB children' risk of progressing to UUTD.

Status

Embase
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Publisher
Frontiers Media S.A.
Year of Publication
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199.

Kidney injury molecule type-1, interleukin-18, and insulin-like growth factor binding protein 7 levels in urine to predict acute kidney injury in pediatric sepsis.
Ganda I.J., Kasri Y., Susanti M., Hamzah F., Rauf S., Albar H., Aras J., Fikri B., Lawang S.A., Daud D., Laompo A., Massi M.N.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 1024713. Date of Publication: 05 Dec 2022.
[Article]
AN: 2020657440
Background: This study aimed to observe the role of urinary kidney injury molecule (KIM-1), interleukin (IL-18), and insulin-like growth factor-binding protein 7 (IGFBP-7) levels in predicting acute kidney injury (AKI) in children with sepsis.
Material(s) and Method(s): This prospective cohort observational study was conducted at Dr. RSUP. Wahidin Sudirohusodo, Makassar, South Sulawesi, from January to December 2021. Inclusion criteria were septic patients treated in the pediatric intensive care unit (PICU) aged 1 month to 18 years with normal serum creatinine or normal urine output (>5 ml/kg/body weight (BW)/h in 6-12 h). Patients with a history of kidney disease, prior urinary tract infection, or history of using nephrotoxic drugs were excluded.
Result(s): There was a significant difference in urinary KIM-1, IL-18, and IGFBP-7 levels between septic patients with and without AKI. The cut-off point for urinary KIM-1 level in sepsis with and without AKI was 1.666 ng/ml, with sensitivity of 82.5%, specificity of 82.2%, and a relative risk (RR) [95% confidence interval (CI)] of 6.866 (95% CI, 3.329-14.165). The cut-off point for urinary IL-18 levels was 3.868 ng/ml, with sensitivity of 92.50%, specificity of 91.78%, and RR of 20.078 (95%CI, 6.593-61.142). The cut-off point for urinary IGFBP-7 levels was >=0.906 ng/ml with a sensitivity of 75.00%, specificity of 75.34%, and RR of 4.063 (95% CI, 2.206-7.483).
Conclusion(s): Urinary KIM-1, IL-8, and IGFBP-7 levels could be used to predict AKI in septic patients. Urinary IL-8 has a higher sensitivity and specificity as a predictor of AKI in patients with sepsis.

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200.

A time-aware attention model for prediction of acute kidney injury after pediatric cardiac surgery.
Zeng X., Shi S., Sun Y., Feng Y., Tan L., Lin R., Li J., Duan H., Shu Q., Li H.
Embase
Journal of the American Medical Informatics Association : JAMIA. 30(1) (pp 94-102), 2022. Date of Publication: 13 Dec 2022.
[Article]
AN: 639374706
OBJECTIVE: Acute kidney injury (AKI) is a common complication after pediatric cardiac surgery, and the early detection of AKI may allow for timely preventive or therapeutic measures. However, current AKI prediction researches pay less attention to time information among time-series clinical data and model building strategies that meet complex clinical application scenario. This study aims to develop and validate a model for predicting postoperative AKI that operates sequentially over individual time-series clinical data. MATERIALS AND METHODS: A retrospective cohort of 3386 pediatric patients extracted from PIC database was used for training, calibrating, and testing purposes. A time-aware deep learning model was developed and evaluated from 3 clinical perspectives that use different data collection windows and prediction windows to answer different AKI prediction questions encountered in clinical practice. We compared our model with existing state-of-the-art models from 3 clinical perspectives using the area under the receiver operating characteristic curve (ROC AUC) and the area under the precision-recall curve (PR AUC).
RESULT(S): Our proposed model significantly outperformed the existing state-of-the-art models with an improved average performance for any AKI prediction from the 3 evaluation perspectives. This model predicted 91% of all AKI episodes using data collected at 24 h after surgery, resulting in a ROC AUC of 0.908 and a PR AUC of 0.898. On average, our model predicted 83% of all AKI episodes that occurred within the different time windows in the 3 evaluation perspectives. The calibration performance of the proposed model was substantially higher than the existing state-of-the-art models.
CONCLUSION(S): This study showed that a deep learning model can accurately predict postoperative AKI using perioperative time-series data. It has the potential to be integrated into real-time clinical decision support systems to support postoperative care planning.

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Publisher
NLM (Medline)
Year of Publication
2022

201.

Acute kidney injury and early fluid load in a retrospective cohort of neonatal sepsis.
Al Gharaibeh F.N., Mohan S., Santoro M.A., Slagle C.L., Goldstein S.L.
Embase
Pediatric Nephrology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2020644183
Background: Sepsis and acute kidney injury (AKI) are associated with mortality in the newborn intensive care unit (NICU). There is a paucity of studies that describe AKI and fluid overload in neonatal sepsis and their association with mortality.
Method(s): Retrospective study of neonates with culture positive sepsis admitted to the NICU between June 2020 and June 2021 was conducted. Primary outcome was in-hospital mortality according to AKI as defined by the neonatal modified Kidney Diseases Improving Outcomes criteria. Secondary outcomes were early fluid overload and vasopressor use.
Result(s): Thirty-three percent of neonates had AKI with sepsis, and 57% of cases were severe AKI. AKI was associated with mortality after adjusting for variables that were different between survivors and non-survivors (aOR 5.7 [95% CI 1.1-36], p = 0.04). Early fluid overload occurred in 27% of neonates who were at higher risk of having AKI with sepsis (OR 7.4 [95% CI 1.6-26.0], p = 0.01) and higher risk of mortality (aOR 17.8 [95% CI 2-7545], p = 0.02).
Conclusion(s): AKI and early fluid overload are associated with mortality in sepsis in our retrospective cohort. Mitigating AKI and early fluid overload in sepsis might be a fruitful strategy in reducing mortality with sepsis. Graphical Abstract: A higher resolution version of the Graphical abstract is available as Supplementary information [Figure not available: see fulltext.]

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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
2022

202.

Neonatal Acute Kidney Injury Association With Mortality-Culprit, Innocent Bystander, or Canary in the Coal Mine?.
Askenazi D.J., Griffin R.
Embase
JAMA network open. 5(12) (pp e2246339), 2022. Date of Publication: 01 Dec 2022.
[Article]
AN: 639784329
PMID
36512363 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36512363]
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Publisher
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Year of Publication
2022

203.

Use of Aminophylline to Reverse Acute Kidney Injury in Pediatric Critical Care Patients.
Radel L.J., Branstetter J., Jones T.L., Briceno-Medina M., Tadphale S.D., Onder A.M., Rayburn M.S.
Embase
Journal of Pediatric Pharmacology and Therapeutics. 27(8) (pp 739-745), 2022. Date of Publication: 2022.
[Article]
AN: 2018642484

OBJECTIVE Acute kidney injury (AKI) is a complication encountered in 18% to 51% of pediatric critical care patients admitted for treatment of other primary diagnoses and is an independent risk factor for increased morbidity and mortality. Aminophylline has shown promise as a medication to treat AKI, but published studies have shown conflicting results. Our study seeks to assess the reversal of AKI following the administration of aminophylline in critically ill pediatric patients. METHODS We performed a single-institution retrospective chart review of pediatric inpatients who were diagnosed with AKI and subsequently treated with non-continuous dose aminophylline between January 2016 and December 2018. Data were collected beginning 2 days prior to the initial dose of aminophylline through completion of the 5-day aminophylline course. RESULTS Nineteen therapies among 17 patients were included in analysis. Twelve of the therapies resulted in resolution of AKI during the study period. We observed urine output increase of 19% ($p = 0.0063$) on the day following initiation of aminophylline therapy in the subset of patients whose AKI resolved. Trends toward decreased serum creatinine and lower inotropic support were also noted. CONCLUSIONS Based on these findings, aminophylline could be considered a potentially effective medication for use as rescue therapy in critically ill children with AKI. Limitations include small study population and retrospective nature. Further research in this area with a larger study population and a randomized control trial would allow for better characterization of the efficacy of aminophylline in reversal of AKI. ABBREVIATIONS AKI, acute kidney injury; AKIN, Acute Kidney Injury Network; CRRT, continuous renal replacement therapy; ECMO, extracorporeal membrane oxygenation; ICU, intensive care unit; KDIGO, Kidney Disease: Improving Global Outcomes; pRIFLE, Pediatric Risk, Injury, Failure, Loss, End Stage; UOP, urine output; VIS, vasoactive inotrope score; VISCa, vasoactive inotrope score modified to include continuous calcium infusion.

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204.

SODIUM BICARBONATE INFUSION: TO PREVENT CARDIAC SURGERY-ASSOCIATED ACUTE KIDNEY INJURY.
Namdev H.
Embase
International Journal of Academic Medicine and Pharmacy. 4(5) (pp 27-30), 2022. Date of Publication: 2022.

[Article]
AN: 2021623615
Background: Acute kidney injury (AKI) is a frequent and severe postoperative complication in patients undergoing cardiac surgery with an incidence varying from 36.3 to 52.0%. With increasing interest, this topic has been specifically referred to as cardiac surgery-associated acute kidney injury (CSA-AKI). CSA-AKI could contribute to increased in-hospital mortality, 5-year mortality, 30-day readmission, requirement for renal replacement therapy (RRT), ICU length of stay, and total postoperative cost.
Material(s) and Method(s): Study was done in the period of February 2019 to February 2020 at Super speciality hospital GMC Nagpur. This study was a double-blind, randomized controlled trial designed to assess if the administration of sodium bicarbonate as a continuous infusion commenced prior to cardiopulmonary bypass would result in less postoperative acute renal dysfunction in patients undergoing cardiac surgery. This prospective study enrolled 70 consecutive patients who underwent on pump cardiac surgery. A Microsoft Excel-based (Microsoft Corp., Redmond, WA) random-number generator was used to create the randomization list. Allocation concealment to patients, anesthesiologists, cardiac surgeons, intensive care specialists, bedside nurses, and investigators was ensured. Treatment allocation was only revealed after the study had been completed, the database locked, and statistical analysis completed.
Result(s): No statistical difference between the groups was detected in terms of age (41.84 +/- 13.762 vs 46.77 +/- 13.249) days, P=0.331; age range, 16 year -80 years), weight (49.17 +/- 10.413vs 56.17 +/- 17.666 kg, P =0.183, and duration of CPB (93.2857 +/- 33.79913 vs 105.8429 +/- 41.68955 minutes, P=0.270) and in cross clamp time (67.1143 +/- 27.20110 vs 75.9143 +/- 37.93539 minutes, P=0.079) which is shown in Table.1, 3.
Conclusion(s): Perioperative alkalization of blood and urine using an infusion of sodium bicarbonate did not result in a decrease in the incidence of acute kidney injury in patients undergoing cardiac surgery.

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Publisher
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Year of Publication
2022

205.

Risk factors of acute kidney injury in very low birth weight infants in a tertiary neonatal intensive care unit.
Moraes L.H.A., Krebs V.L.J., Koch V.H.K., Magalhaes N.A.M., de Carvalho W.B.
Embase
Jornal de pediatria. (no pagination), 2022. Date of Publication: 05 Dec 2022.
[Article]
AN: 639734078
BACKGROUND: Acute kidney injury (AKI) in the neonatal period is associated with worst outcomes as increased mortality and increased length of hospital stay. Very low birth weight (VLBW) newborns are at higher risk for developing several other conditions that are associated

with worst outcomes. Understanding the risk factors for AKI may help to prevent this condition and improve neonatal care for this population.
METHOD(S): This retrospective cohort study included 155 very low birth weight newborns admitted between 2015 and 2017. The authors compared the newborns who developed neonatal AKI with the non-AKI group and analyzed the main risk factors for developing AKI in the population. The authors also performed an analysis of the main outcomes defined as the duration of mechanical ventilation, length of stay, and death.
RESULT(S): From the cohort, a total of 61 (39.4%) patients had AKI. The main risk factors associated with Neonatal AKI were necrotizing enterocolitis (aOR 7.61 [1.69 - 34.37]; p=0.008), neonatal sepsis (aOR 2.91 [1.17 - 7.24], p=0.021), and hemodynamic instability (aOR 2.99 [1.35 - 6.64]; p=0.007). Neonatal AKI was also associated with an increase in the duration of mechanical ventilation in 9.4 days (p=0.026) and in an increase in mortality 4 times (p=0.009), after adjusting for the other variables.
CONCLUSION(S): The present results highlight the importance of minimizing sepsis and necrotizing enterocolitis, as well as the importance of identifying hemodynamic instability, to prevent AKI and diminish the burden of morbimortality in VLBW newborns.

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Article-in-Press
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Publisher
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206.

Optimal stage of initiating continuous renal replacement therapy in the treatment of neonatal acute kidney injury.
Zhang X., Hong W., Li N., Gong X., Cai C.
Embase
Experimental and Therapeutic Medicine. 24(6) (no pagination), 2022. Article Number: 733. Date of Publication: December 2022.
[Article]
AN: 2021069788
To explore the optimal stage of initiating continuous renal replacement therapy (CRRT) in the treatment of neonatal acute kidney injury (AKI), a total of 25 AKI neonates treated with CRRT were hospitalized at the Department of Neonatology of Shanghai Children's Hospital, School of Medicine, Shanghai Jiao Tong University (Shanghai, China) from November 2016 to June 2021. According to the renal function, the AKI neonates prior to CRRT were divided into two groups as follows: AKI stage 0-1 and AKI stage 2-3. The changes noted in specific indicators including renal function, electrolyte concentra- tion, and acid-base balance index were analyzed at 0, 12, 24 and 48 h, and at the end of the CRRT treatment. Among the 25 neonates with AKI, serum potassium, urea nitrogen and creatinine levels were significantly decreased following 12 h of CRRT treatment and reached the normal range following 24 h of CRRT treatment with a significant increase in the volume of urine. The serum creatinine levels of the neonates in the AKI stage 0-1 group were significantly decreased following 24 h of CRRT treatment and urine output was significantly

increased. At 24 h and following CRRT treatment, the levels of serum creatinine of AKI stage 2-3 neonates were higher than those of AKI stage 0-1 neonates (F=3.013, 5.005; P<0.05), and at all time-points, the urine output of AKI stage 0-1 was higher than that of AKI stage 2-3 (F=13.785, 4.008, 0.965; P<0.05). A total of four cases of thrombocytopenia, two cases of obstruc- tion, and two cases of hypotension were noted in the course of CRRT treatment (the occurrence rate was 8/25). Therefore, it was concluded that CRRT could be an effective measure for the treatment of AKI neonates. Thus, ideally CRRT treatment of AKI neonates should be initiated in cases characterized as AKI stages 0-1.

Status
Embase
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207.

Acute kidney injury among preterm infants receiving nonsteroidal anti-inflammatory drugs: A pilot study.
Ting J.Y., McDougal K., De Mello A., Kwan E., Mammen C.
Embase
Pediatrics and Neonatology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2021607259
Background: Nonsteroidal anti-inflammatory drugs (NSAIDs) are a frequently prescribed class of medications in the neonatal intensive care unit (NICU). We aimed to reveal acute kidney injury (AKI) epidemiology in NSAID-exposed premature infants admitted to the NICU using a standardized definition and determine the percentage of NSAID-exposed patients with adequate serum creatinine (SCr) monitoring.
Method(s): This retrospective study compared infants born at <=34 weeks gestational age who received NSAID for intraventricular hemorrhage prophylaxis (prophylaxis group) or symptomatic treatment for patent ductus arteriosus (PDA; treatment group) between January and December 2014 at a tertiary NICU. All available SCr and 12-h urine output (UO) values were recorded from admission until day seven post-NSAID exposure. AKI incidence was determined using the neonatal modified Kidney Disease Improving Global Outcomes classification, defined as an increase in SCr (i.e., 1.5 fold rise from previous SCr measurement within seven days or 26.5 mmol/L increase within 48 h) or UO < 1 mL/kg/hour, excluding the first 24 h of life.
Result(s): We identified 70 eligible subjects; 32 received prophylactic NSAIDs, and 38 received indomethacin or ibuprofen for treating symptomatic PDA. AKI incidence for the entire cohort was 23% (16/70). The prophylaxis group had a significantly lower AKI rate than the treatment group (9% vs. 34%; p = 0.014). The treatment group had a higher proportion of infants with adequate SCr monitoring during NSAID treatment than the prophylaxis group (87% vs. 13%, p < 0.001).
Conclusion(s): NSAID-associated AKI occurred in approximately one-quarter of premature infants overall, and the AKI incidence was higher in infants treated with NSAIDs for the symptomatic treatment of PDA than in those receiving prophylactic treatment during the first day of life. Standardized protocols for monitoring daily SCr and UO after exposure should be implemented for all neonates with NSAID exposure to improve early AKI recognition and management.

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Publisher
Elsevier (Singapore) Pte Ltd
Year of Publication
2022

208.

Risk factors and outcomes of sepsis-associated acute kidney injury in intensive care units in Johannesburg, South Africa.
Mweene M.D., Richards G.A., Paget G., Banda J., Dickens C.
Embase
South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde. 112(12) (pp 919-923), 2022. Date of Publication: 01 Dec 2022.
[Article]
AN: 639723526
BACKGROUND: Sepsis-associated acute kidney injury (SA-AKI) has been shown to be a significant contributor to morbidity and mortality in both children and adults with critical illness. In sub-Saharan Africa, there is a lack of information on factors associated with development of SA-AKI and outcomes after intensive care unit (ICU) admission.
OBJECTIVE(S): To assess the rate of SA-AKI, factors associated with its development, and predictors of mortality at 90 days in critically ill patients admitted to the ICU with sepsis.
METHOD(S): This was a prospective observational study conducted at two of the biggest teaching hospitals in Johannesburg, South Africa, from 15 February 2016 to 15 February 2020. The study included consecutive patients with confirmed sepsis who were admitted to the ICU within 24 hours of admission to hospital. The primary outcome of the study was development of SA-AKI (defined according to Kidney Disease Improving Global Outcome (KDIGO) criteria), and secondary outcomes were risk factors for SA-AKI and predictors of mortality at 90 days. Multivariate logistic regression analysis was employed to determine the factors associated with SA-AKI and 90-day mortality.
RESULT(S): In total, 327 critically ill patients with sepsis admitted to the ICUs were included in the study. The median (interquartile range) age was 39 (30 - 52) years, and 185 patients (56.6%) developed SA-AKI. Of these patients, blacks and whites comprised 91.0% and 6.1%, respectively, and the prevalent comorbidities were HIV/AIDS (19.3%), hypertension (14.2%) and diabetes mellitus (10.1%). Patients with SA-AKI were likely to be older and of male gender, and to have cardiovascular disease, malignancies, hypotension and a low serum albumin level. In multivariate analysis, the predictors of SA-AKI were age >=55 years (odds ratio (OR) 2.43; 95% confidence interval (CI) 1.27 - 4.65), inotropic support (OR 3.61; 95% CI 2.18 - 5.96) and a low serum albumin level (OR 2.93; 95% CI 1.40 - 6.13). SA-AKI and need for inotropic support were respectively associated with 1.9-fold and 1.7-fold increased mortality at 90 days after ICU admission.
CONCLUSION(S): SA-AKI was found to be frequent in this study in two tertiary hospital ICUs in Johannesburg, and the need for inotropic support predicted mortality after ICU admission.
PMID

36472316 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36472316]
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Publisher
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Year of Publication
2022

209.

Risk of Acute Kidney Injury Following Contrast-enhanced CT in a Cohort of 10407 Children and Adolescents.
Calle-Toro J., Viteri B., Ballester L., Garcia-Perdomo H.A., White A., Pradhan M., Otero H.J.
Embase
Radiology. (pp 210816), 2022. Date of Publication: 06 Dec 2022.
[Article]
AN: 639723020
Background Previous studies have challenged the concept of contrast material-induced acute kidney injury (AKI) in adults; however, limited data exist for children and adolescents. Purpose To calculate the incidence and determine the risks of AKI in patients who received intravenous iodinated contrast media for CT. Materials and Methods This retrospective study was performed at a children's hospital from January 2008 to January 2018 and included patients aged 0-17 years in whom serum creatinine levels were measured within 48 hours before and after CT with or without contrast media. The incidence of AKI was measured according to the AKI Network guidelines. A subgroup analysis with propensity score matching of cases with control patients was performed. Differences before and after stratification based on estimated glomerular filtration rate (eGFR) were explored. Adjusted risk models were developed using log-binomial generalized estimating equations to estimate relative risk (RR). Results From a total of 54000 CT scans, 19377 scans from 10407 patients (median age, 8.5 years; IQR, 3-14; 5869 boys, 4538 girls) were included in the analysis. Incidence rate of AKI for the entire sample was 1.5%; it was 1.4% (123 of 8844) in the group that underwent contrast-enhanced CT and 1.6% (171 of 10533) in the group that did not (P = .18). In the contrast-enhanced CT group, AKI incidence was higher in the group with eGFR of at least 60 mL/min/1.73 m2 and in the group with eGFR lower than 60 mL/min/1.73 m2 (1.3% and 8.5%, respectively; P < .001) compared with the noncontrast group (0.1% and 2.7%, respectively; P < .001). Age was found to be a protective factor against AKI, with an RR of 0.96 (95% CI: 0.94, 0.99; P = .01), and contrast media increased risk in the subgroup analysis, with an RR of 2.19 (95% CI: 1.11, 4.35; P = .02). Conclusion The overall incidence of acute kidney injury after contrast-enhanced CT in children and adolescents was very low, and exposure to contrast media did not increase the risk consistently for acute kidney injury among different groups and analyses. © RSNA, 2022 See also the editorial by McDonald in this issue.
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210.

Usefulness of Urinary Neutrophil Gelatinase-associated Lipocalin as a Predictor of Acute Kidney Injury in Critically Ill Children.
Kapalavai S.K., Ramachandran B., Krupanandan R., Sadasivam K.
Embase
Indian Journal of Critical Care Medicine. 26(5) (pp 632-636), 2022. Date of Publication: May 2022.
[Article]
AN: 2016767379
Background: Acute kidney injury (AKI) is common among critically ill children. The current definitions of AKI rely on serum creatinine and urine output, which may not be deranged until late in the course of the illness. There has been a lot of work in search of novel biomarkers to define and predict AKI, and urinary neutrophil gelatinase-associated lipocalin (NGAL) is a promising one. We planned to study the usefulness of urinary NGAL in predicting AKI.
Patients and Methods: Children in the age group of 1 month to 18 years admitted to the pediatric intensive care unit (PICU) from September 2016 to December 2017 were enrolled. Children with preexisting kidney disease, urinary tract infection (UTI), postsurgical patients, or children with expected duration of stay <48 hours were excluded. Data regarding demographics, clinical features, and laboratory parameters were collected. Urinary NGAL was sent within 6 hours of admission. Children were classified to have AKI based upon the Pediatric Risk, Injury, Failure, Loss, End Stage Renal Disease (pRIFLE) criteria. Using receiver operating characteristic (ROC) curves, sensitivity, specificity, and area under the curve (AUC) for admission creatinine and urinary NGAL to predict AKI were deduced.
Result(s): One hundred and thirty children were included. Out of 130 children, 59 (45.4%) developed AKI. Urinary NGAL at admission to the PICU >88.5 ng/mL had a sensitivity of 81.4% and specificity of 83.6% in detecting AKI while its AUC to detect AKI was 0.842 (95% confidence interval (CI) 0.765-0.918). Urinary NGAL predicted AKI in 17 (28.8%) of 59 patients at least 24 hours earlier than serum creatinine. Mortality rates in patients with and without AKI were 18.6 and 2.8%, respectively.
Conclusion(s): Urinary NGAL has good sensitivity and specificity in detecting AKI and predicts AKI earlier than creatinine in a significant number of patients.

Status
Embase
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Publisher
Jaypee Brothers Medical Publishers (P) Ltd
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211.

Pediatric Reference Change Value Optimized for Acute Kidney Injury: Multicenter Retrospective Study in China.
Zeng J., Miao H., Jiang Z., Zhang Y., Guo X., Chen Q., Wan Y., Ji P., Xie G., Li H., Mei X., Zhou J., Xu H., Gu J., Cheng J., Chen J., Zhang A., Ge X.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. 23(12) (pp e574-e582), 2022. Date of Publication: 01 Dec 2022.
[Article]
AN: 639231198
OBJECTIVES: The standard definition of pediatric acute kidney injury (AKI) is evolving, especially for critically ill in the PICU. We sought to validate the application of the Pediatric Reference Change Value Optimized for Acute Kidney Injury in Children (pROCK) criteria in critically ill children. DESIGN: Multicenter retrospective study. SETTING: Six PICUs in mainland China. PATIENTS: One thousand six hundred seventy-eight hospitalized children admitted to the PICU with at least two creatinine values within 7 days.None. MEASUREMENTS AND MAIN RESULTS: AKI was diagnosed and staged according to the Pediatric Risk, Injury, Failure, Loss, End-Stage Renal Disease (pRIFLE), the Kidney Disease Improving Global Outcomes (KDIGO), and the pROCK criteria. Multiple clinical parameters were assessed and analyzed along with 90-day follow-up outcomes. According to the definitions of pRIFLE, KDIGO, and pROCK, the prevalence of AKI in our cohort of 1,678 cases was 52.8% (886), 39.0% (655), and 19.0% (318), respectively. The presence of AKI, as defined by pROCK, was associated with increased number of injured organs, occurrence of sepsis, use of mechanical ventilation, use of continuous renal replace therapy ($p < 0.05$), higher Pediatric Risk of Mortality III score, and higher Pediatric Logistic Organ Dysfunction-2 score ($p < 0.001$). The survival curve of 90-day outcomes showed that pROCK was associated with shorter survival time (LogRank $p < 0.001$), and pROCK definition was associated with better separation of the different stages of AKI from non-AKI ($p < 0.001$). CONCLUSION(S): In this retrospective analysis of AKI criteria in PICU admissions in China, pROCK is better correlated with severity and outcome of AKI. Hence, the pROCK criteria for AKI may have better utility in critically ill children.

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Publisher
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212.

Costs associated with acute kidney injury in critically Ill neonates with patent Ductus arteriosus: pediatric health information system (PHIS) analysis.
Steflik H.J., Brinton D.L., Corrigan C., Wagner C.L., Selewski D.T., Twombley K.E., Atz A.M.
Embase
Journal of Perinatology. 42(12) (pp 1669-1673), 2022. Date of Publication: December 2022.
[Article]
AN: 2018986920
Objective: Compare costs of hospitalization between critically-ill neonates with patent ductus arteriosus (PDA) who did and did not develop acute kidney injury (AKI). Study design: Using the Children's Hospital Association's Pediatric Health Information System (PHIS) database, we ascertained the marginal estimated total cost of hospitalization between those who did and did not develop AKI.
Result(s): Query of 49 PHIS centers yielded 14,217 neonates with PDA, 1697 with AKI and 12,520 without AKI. Predictors of cost included AKI, birth weight, ethnicity, race, length of stay (LOS), and Feudtner Complex Chronic Conditions Classification System. LOS was the strongest predictor (AKI: median 71 days [IQR 28-130]; No AKI: 28 days [10-76]; p < 0.01). Neonates with AKI had $48,416 greater costs (95% CI: $43,804-53,227) after adjusting for these predictors (AKI: $190,063, 95% CI $183,735-196,610; No AKI: $141,647, 95% CI $139,931-143,383 l; p < 0.01).
Conclusion(s): AKI is independently associated with increased hospital costs in critically-ill neonates with PDA.

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Publisher
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213.

Early and late acute kidney injury: Temporal profile in the critically ill pediatric patient.
Ruth A., Basu R.K., Gillespie S., Morgan C., Zaritsky J., Selewski D.T., Arikan A.A.
Embase
Clinical Kidney Journal. 15(2) (pp 311-319), 2022. Date of Publication: 01 Feb 2022.
[Article]
AN: 2021329673
Background: Increasing AKI diagnosis precision to refine the understanding of associated epidemiology and outcomes is a focus of recent critical care nephrology research. Timing of onset of acute kidney injury (AKI) during pediatric critical illness and impact on outcomes has not been fully explored.
Method(s): This was a secondary analysis of the Assessment of Worldwide Acute Kidney Injury, Renal Angina and Epidemiology (AWARE) database. AKI was defined as per Kidney Disease: Improving Global Outcomes criteria. Early AKI was defined as diagnosed at <=48 h after intensive care unit (ICU) admission, with any diagnosis >48 h denoted as late AKI. Transient AKI was defined as return to baseline serum creatinine <=48 h of onset, and those without recovery fell into the persistent category. A second incidence of AKI >=48 h after recovery was denoted as recurrent. Patients were subsequently sorted into distinct phenotypes as early-transient, late-transient, early-persistent, late-persistent and recurrent. Primary outcome was major adverse kidney events (MAKE) at 28 days (MAKE28) or at study exit, with secondary outcomes including AKI-free days, ICU length of stay and inpatient renal replacement therapy.
Result(s): A total of 1262 patients had AKI and were included. Overall mortality rate was 6.4% (n = 81), with 34.2% (n = 432) fulfilling at least one MAKE28 criteria. The majority of patients fell in the early-transient cohort (n = 704, 55.8%). The early-persistent phenotype had the highest odds of MAKE28 (odds ratio 7.84, 95% confidence interval 5.45-11.3), and the highest mortality rate (18.8%). Oncologic and nephrologic/urologic comorbidities at AKI diagnosis were associated with MAKE28.
Conclusion(s): Temporal nature and trajectory of AKI during a critical care course are significantly associated with patient outcomes, with several subtypes at higher risk for poorer outcomes. Stratification of pediatric critical care-associated AKI into distinct phenotypes is possible and may become an important prognostic tool.

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Publisher
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214.

Acute kidney injury, persistent kidney disease, and post-discharge morbidity and mortality in severe malaria in children: A prospective cohort study.
Namazzi R., Batte A., Opoka R.O., Bangirana P., Schwaderer A.L., Berrens Z., Datta D., Goings M., Ssenkusu J.M., Goldstein S.L., John C.C., Conroy A.L.
Embase
eClinicalMedicine. 44 (no pagination), 2022. Article Number: 101292. Date of Publication: February 2022.
[Article]
AN: 2016863892
Background: Globally, 85% of acute kidney injury (AKI) cases occur in low-and-middle-income countries. There is limited information on persistent kidney disease (acute kidney disease [AKD]) following severe malaria-associated AKI.
Method(s): Between March 28, 2014, and April 18, 2017, 598 children with severe malaria and 118 community children were enrolled in a two-site prospective cohort study in Uganda and followed up for 12 months. The Kidney Disease: Improving Global Outcomes (KDIGO) criteria were used to define AKI (primary exposure) and AKD at 1-month follow-up (primary outcome). Plasma neutrophil gelatinase-associated lipocalin (NGAL) was assessed as a structural biomarker of AKI.
Finding(s): The prevalence of AKI was 45.3% with 21.5% of children having unresolved AKI at 24 h. AKI was more common in Eastern Uganda. In-hospital mortality increased across AKI stages from 1.8% in children without AKI to 26.5% with Stage 3 AKI ($p < 0.0001$). Children with a high-risk plasma NGAL test were more likely to have unresolved AKI (OR, 7.00 95% CI 4.16 to 11.76) and die in hospital (OR, 6.02 95% CI 2.83 to 12.81). AKD prevalence was 15.6% at 1-month follow-up with most AKD occurring in Eastern Uganda. Risk factors for AKD included severe/unresolved AKI, blackwater fever, and a high-risk NGAL test (adjusted $p < 0.05$). Paracetamol use during hospitalization was associated with reduced AKD ($p < 0.0001$). Survivors with AKD post-AKI had higher post-discharge mortality (17.5%) compared with children without AKD (3.7%).
Interpretation(s): Children with severe malaria-associated AKI are at risk of AKD and post-discharge mortality.
Funding(s): This work was supported by the National Institutes of Health National Institute of Neurological Disorders and Stroke (R01NS055349 to CCJ) and the Fogarty International Center (D43 TW010928 to CCJ), and a Ralph W. and Grace M. Showalter Young Investigator Award to ALC.

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215.

Correction to: Costs associated with acute kidney injury in critically Ill neonates with patent Ductus arteriosus: pediatric health information system (PHIS) analysis (Journal of Perinatology, (2022), 42, 12, (1669-1673), 10.1038/s41372-022-01499-y).
Steflik H.J., Brinton D.L., Corrigan C., Wagner C.L., Selewski D.T., Twombley K.E., Atz A.M.
Embase
Journal of Perinatology. 42(12) (pp 1714), 2022. Date of Publication: December 2022.
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The Funding information section was missing from this article and should have read: This study was funded in part by NIH/NCATS Grant Number UL1TR001450. The original article has been corrected.

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Publisher
Springer Nature

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216.

Netrin-1 and Cyclophilin A (CypA): biomarkers of inflammation and kidney injury in Alport syndrome: a pilot study.
Zaki M., Fadel F.I., El-Toukhy S.E., Youness E.R., Selim A., El-Sonbaty M., El-Bassyouni H.T.
Embase
New Zealand Journal of Medical Laboratory Science. 76(3) (pp 136-138), 2022. Date of Publication: November 2022.
[Article]
AN: 2018506070
Background: Netrin-1 and Cyclophilin A (CypA) participate in the pathological processes of inflammation, oxidative stress and apoptosis. Our objective was to determine the level of serum Netrin-1 & Cyclophilin A (CypA) in Alport syndrome.
Material(s) and Method(s): The study included 10 Alport syndrome patients, their age ranged from 5-13 years (8.50+/-2.87) (mean age +/-SD), they were 7 females and 3 males (ratio of 1:0.43) and 10 age and sex matched healthy children. Serum Netrin-1 and Cyclophilin A (CypA) were measured using ELISA kits.
Result(s): All patients presented with haematuria, while 3 cases had mild proteinuria. The renal pathology revealed features like thin basement membrane disease. Sensorineural hearing loss was present in 8 patients and no patients had retinitis pigmentosa. The serum levels of Netrin-1 were 160.47ng/mL +/- 12.833 for controls and 141.91ng/mL +/-16.953 for patients ($p < 0.01$), for CypA was 7.55ng/mL +/-0.74 in patients compared to 6.27ng/mL +/-0.37 in controls ($p<0.001$).
Conclusion(s): To the best of our knowledge, this is the first research to investigate the levels of Netrin-1 and Cyclophilin A in Alport syndrome patients.

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Publisher
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217.

The Association of Complements, TGF- beta, and IL-6 with Disease Activity, Renal Damage, and Hematological Activity in Patients with Naive SLE.
Yuliasih Y., Rahmawati L.D., Nisa' N., Prastayudha C.
Embase
International Journal of Inflammation. 2022 (no pagination), 2022. Article Number: 7168935. Date of Publication: 2022.
[Article]
AN: 2021310414
Several key player factors, such as cytokine and complement, play an important role in the pathogenesis of systemic lupus erythematosus (SLE). The purpose of this study was to reveal the association between complement 3 (C3), complement 4 (C4), interleukin-6 (IL-6), and transforming growth factor-beta (TGF-beta) with SLE disease activity, renal damage, and hematological activity in patients with naive SLE. The Laboratory of Clinical Pathology Dr. Soetomo General Hospital in Surabaya performed all laboratory examinations on thirty women with naive SLE. The SLE diagnosis is based on ACR criteria (1998 revised criteria) from Dr. Soetomo General Hospital Surabaya, Indonesia, and the systemic lupus activity measurement (SLAM) score is used to assess the disease activity. The correlation was statistically tested using the Spearman and Pearson tests. The differences in cytokine and complement levels are between SLE severity groups using the two-way Anova and Kruskal-Wallis. The unpaired T-test and Mann-Whitney test were used to determine the differences between the relatively normal and the more severe groups of organ damage and hematological activity. All tests were two-tailed, analyzed with GraphPad Prism 9 for windows, and a p value of less than 0.05 was considered statistically significant. This study found a significant decrease in C3 (20.2, 16.4-24.2 mg/dL) and C4 (7, 6-14.3 mg/dL) and an increase in IL-6 (35.60 +/- 7.43 mg/dL) and TGF-beta (311.1 +/- 290.8 mg/dL) in the group of severe patients with SLAM scores >30. Although there is no significant relationship between SLAM and renal impairment or hematologic activity, patients with higher SLAM had a significant decrease in complement; this complement decrease was also significant in patients with higher leukocyte counts. An insignificant increase in cytokines was also observed in patients with higher SLAM. Patients with high serum creatinine levels had a significant increase in TGF-beta, whereas those with a faster ESR had a significant increase in IL-6. In conjunction with complements evaluation, assessment of the cytokine profile may become a promising marker for reliable diagnosis and treatment of SLE in the future.

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Embase
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218.

Impact of a clinical pathway on acute kidney injury in patients undergoing heart transplant.
Algaze C.A., Margetson T.D., Sutherland S.M., Kwiatkowski D.M., Maeda K., Navaratnam M., Samreth S.P., Price E.P., Zook N.B., Yang J.K., Hollander S.A.
Embase
Pediatric Transplantation. 26(2) (no pagination), 2022. Article Number: e14166. Date of Publication: March 2022.
[Article]
AN: 2014102687
Background: To evaluate the impact of a clinical pathway on the incidence and severity of acute kidney injury in patients undergoing heart transplant.
Method(s): This was a 2.5-year retrospective evaluation using 3 years of historical controls within a cardiac intensive care unit in an academic children's hospital. Patients undergoing heart transplant between May 27, 2014, and April 5, 2017 (pre-pathway) and May 1, 2017, and November 30, 2019 (pathway) were included. The clinical pathway focused on supporting renal perfusion through hemodynamic management, avoiding or delaying nephrotoxic medications, and providing pharmacoprophylaxis against AKI.
Result(s): There were 57 consecutive patients included. There was an unadjusted 20% reduction in incidence of any acute kidney injury (p =.05) and a 17% reduction in Stage 2/3 acute kidney injury (p =.09). In multivariable adjusted analysis, avoidance of Stage 2/3 acute kidney injury was independently associated with the clinical pathway era (AOR -1.3 [95% CI -2.5 to -0.2]; p =.03), achieving a central venous pressure of or less than 12 mmHg (AOR -1.3 [95% CI -2.4 to -0.2]; p =.03) and mean arterial pressure above 60 mmHg (AOR -1.6 [95% CI -3.1 to -0.01]; p =.05) in the first 48 h post-transplant, and older age at transplant (AOR - 0.2 [95% CI -0.2 to -0.06]; p =.002).
Conclusion(s): This report describes a renal protection clinical pathway associated with a reduction in perioperative acute kidney injury in patients undergoing heart transplant and highlights the importance of normalizing perioperative central venous pressure and mean arterial blood pressure to support optimal renal perfusion.

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Publisher
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219.

Acute Kidney Injury Predictors and Outcomes after Cardiac Surgery in Children with Congenital Heart Disease: An Observational Cohort Study.
Kourelis G., Kanakis M., Samanidis G., Tzannis K., Bobos D., Kousi T., Apostolopoulou S., Kakava F., Kyriakoulis K., Bounta S., Rammos S., Papagiannis J., Giannopoulos N., Orfanos S.E., Dimopoulos G.
Embase
Diagnostics. 12(10) (no pagination), 2022. Article Number: 2397. Date of Publication: October 2022.
[Article]
AN: 2019785424
Acute Kidney Injury (AKI) commonly complicates cardiac surgery in children with congenital heart disease (CHD). In this study we assessed incidence, risk factors, and outcomes of postoperative AKI, while testing the hypothesis that, depending on the underlying diagnosis, there would be significant differences in AKI incidence among different diagnostic groups. We conducted an observational cohort study of children with CHD undergoing cardiac surgery in a single tertiary center between January 2019 and August 2021 (n = 362). Kidney Disease Improving Global Outcome (KDIGO) criteria were used to determine the incidence of postoperative AKI. Diagnosis was incorporated into multivariate models using an anatomic-based CHD classification system. Overall survival was estimated using Kaplan-Meier curves. Log-rank test and adjusted Cox proportional hazard modelling were used to test for differences in survival distributions and determine AKI effect on survival function, respectively. AKI occurred in 70 (19.3%), with 21.4% in-hospital mortality for AKI group. Younger age, lower weight, longer cardiopulmonary bypass time, preoperative mechanical ventilation and diagnostic category were associated with postoperative AKI. Resolution rate was 92.7% prior to hospital discharge for survivors. AKI was associated with longer duration of mechanical ventilation, ICU and hospital length of stay. AKI patients had significantly higher probability of all-cause mortality postoperatively when compared to the non-AKI group (log-rank test, $p < 0.001$). Adjusted hazard ratio for AKI versus non-AKI group was 11.08 (95% CI 2.45-50.01; $p = 0.002$). Diagnostic category was associated with cardiac surgery-related AKI in children with CHD, a finding supporting the development of lesion specific models for risk stratification. Postoperative AKI had detrimental impact on clinical outcomes and was associated with decreased survival to hospital discharge.

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220.

Acute kidney injury in critically ill patients with COVID-19: prevalence, risk factors and mortality in eastern Morocco.
Ounci E., Boukabous S., Bkiyar H., Abda N., Bentata Y., Housni B.
Embase
Journal of Nephrology. 35(9) (pp 2383-2386), 2022. Date of Publication: December 2022.
[Article]
AN: 2018773978
Introduction: Acute kidney injury (AKI) is commonly seen in critically ill hospitalized patients with COVID-19 and its incidence reaches 60% in this setting. The aim of this work was to determine the prevalence, characteristics, risk factors and mortality of AKI in patients admitted to the intensive care unit (ICU) for COVID-19.
Patients and Methods: This observational retrospective case series was conducted between February 1, 2020 and December 31, 2020 at the ICU of the university hospital Mohammed VI of Oujda, Morocco. all COVID-19 patients hospitalized in the ICU with acute respiratory failure were included. AKI was defined and classified into three stages using the KDIGO criteria 2012. We excluded patients with end-stage kidney disease and those who were under 18 years old.
Result(s): Six hundred adult patients were included and 65.5% of them were men. Sixty patients had minimal lung damage (< 25%), 105 patients had mild lung damage (25-50%), 186 had severe lung damage (50-75%) and 193 patients had very severe lung damage (> 75%). A total of 210 patients (35%) developed AKI, of whom 78 (37.2%) had mild AKI (stage 1) and 132 (62.8%) severe AKI (stages 2 and 3). Patients in the severe and mild AKI groups had a higher rate of comorbidities, especially hypertension (mild AKI [46.2%] vs. severe AKI [36.4%] vs. no AKI [27.4%], p = 0.002) and diabetes (mild AKI [52.6%] vs. severe AKI [33.3%] vs. no AKI [26.4%], p < 0.001). During hospitalization, 23.3% of patients with AKI received kidney replacement therapy. In-hospital mortality was observed in 51.3% for mild AKI, 55.3% for severe AKI and 21% in patients who did not have AKI (p < 0.001).
Conclusion(s): Our findings revealed that not only severe AKI, but also mild AKI was correlated to in-hospital mortality. Whatever the severity of the kidney impairment, it remains a major prognostic element.

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Publisher
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Year of Publication
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221.

Association Of Liver Fatty Acid Binding Protein With Acute Kidney Injury In Paediatric Patients After Cardiac Surgery.
Khan M.B., Naseem T., Wazir H.D., Ayyub A., Saad A.B., Irshad R.
Embase
Journal of Ayub Medical College, Abbottabad : JAMC. Suppl. 34 1)(3) (pp S602-S607), 2022. Date of Publication: 01 Jul 2022.
[Article]
AN: 639601764
Background: Acute kidney injury (AKI) is a common complication after cardiac surgery. Like Creatinine level, the role of L-FABP in renal injury and its recovery had been shown by studies, so by using/measuring urinary Liver fatty acid-binding protein (uL-FABP) levels it can be a valuable biomarker for monitoring and diagnosis of various renal diseases. The study aimed to determine L-FABP as a biomarker for early diagnosis of AKI acute kidney injury in paediatric patients after cardiac surgery so that early treatment interventions can prevent AKI morbidity.
Method(s): This descriptive study was conducted in the Pathology laboratory of Sheikh Zayed Hospital, Lahore from 2015 to 2016. Selected through convenience sampling, patients' blood and urine were analysed for desired markers.
Result(s): Out of 88, 10 (11.4%) patients developed AKI after cardiac surgery. In patients with AKI, serum creatinine levels started to rise at 24-48 h after surgery whereas uL-FABP was to be high at 4h. The optimal cut-off value of uLFABP was found 269 ng/l, with this cut-off value sensitivity of marker at four hours to recognize AKI was found to be 80% and specificity was 83.3%, the positive and negative predictive values were 38.1% and 97.0% respectively with an accuracy level 83.0%.
Conclusion(s): It may be concluded from this study that uL-FABP may be considered as an early predictor of the development of AKI in paediatric patients undergoing cardiac surgery.
PMID
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Year of Publication
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222.

Kidney injury rates after unilateral nephrectomy in childhood-a systematic review and meta-analysis.
Groen In 't Woud S., Gobino A., Roeleveld N., van den Heuvel L.P.W.J., Feitz W.F.J., van der Zanden L.F.M., Schreuder M.F.
Embase
Nephrology, dialysis, transplantation : official publication of the European Dialysis and Transplant Association - European Renal Association. 37(12) (pp 2457-2473), 2022. Date of Publication: 23 Nov 2022.
[Article]
AN: 637141013
BACKGROUND: Unilateral nephrectomy is a relatively common procedure in children which results in a solitary functioning kidney (SFK). Living with an SFK predisposes to kidney injury, but it remains unknown which children are most at risk. We aimed to investigate kidney injury rates in patients who underwent unilateral nephrectomy in childhood and to investigate differences among nephrectomies performed for a congenital anomaly, malignancy or other condition.
METHOD(S): MEDLINE and EMBASE were searched for studies reporting kidney injury rates [i.e. proteinuria, hypertension and/or a decreased glomerular filtration rate (GFR)] of patients who underwent unilateral nephrectomy during childhood. Studies including five or more patients with at least 12 months of follow-up were eligible. Analyses were performed using random effects models and stratified by indication for nephrectomy. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and Meta-analysis Of Observational Studies in Epidemiology (MOOSE) guidelines were used for reporting.
RESULT(S): Over 5000 unique articles were screened, of which 53 studies reporting on >4000 patients were included in the analyses. Proteinuria, hypertension and a decreased GFR were present in 15.3, 14.5 and 11.9% of patients, respectively. Heterogeneity among the studies was large in several subgroups, impairing quantitative meta-analyses. However, none of our analyses indicated differences in injury rates between a congenital anomaly or malignancy as an indication for nephrectomy.
CONCLUSION(S): Unilateral nephrectomy during childhood results in signs of kidney injury in >10% of patients, with no clear difference between the indications for nephrectomy. Therefore, structured follow-up is necessary in all children who underwent nephrectomy, regardless of the indication.

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Publisher
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223.

Aromatase inhibition increases blood pressure and markers of renal injury in female rats.
Almutlaq R.N., Newell-Fugate A.E., Evans L.C., Fatima H., Gohar E.Y.
Embase
American Journal of Physiology - Renal Physiology. 323(3) (pp F349-F360), 2022. Date of Publication: September 2022.
[Article]
AN: 2021241622
Aromatase is a monooxygenase that catalyzes the rate-limiting step of estrogen biosynthesis from androgens. Aromatase inhibitors are widely used for the treatment of patients with hormone receptor-positive breast cancer. However, the effects of aromatase inhibitors on cardiovascular and renal health in females are understudied. Given that estrogen is protective against cardiovascular and kidney diseases, we hypothesized that aromatase inhibition elevates blood pressure and induces kidney injury in female Sprague-Dawley rats. Twelve-week-old female rats were implanted with radiotelemetry transmitters to continuously monitor blood pressure. After baseline blood pressure recording, rats were randomly assigned to treatment with the aromatase inhibitor anastrozole (ASZ) or vehicle (Veh) in drinking water. Twenty days after treatment initiation, rats were shifted from a normal-salt (NS) diet to a high-salt (HS) diet for an additional 40 days. Rats were euthanized 60 days after treatment initiation. Body weight increased in both groups over the study period, but the increase was greater in the ASZ-treated group than in the Veh-treated group. Mean arterial pressure increased in ASZ-treated rats during the NS and HS diet phases but remained unchanged in Veh-treated rats. In addition, urinary excretion of albumin and kidney injury marker-1 and plasma urea were increased in response to aromatase inhibition. Furthermore, histological assessment revealed that ASZ treatment increased morphological evidence of renal tubular injury and proximal tubular brush border loss. In conclusion, chronic aromatase inhibition in vivo with ASZ increases blood pressure and markers of renal proximal tubular injury in female Sprague-Dawley rats, suggesting an important role for aromatization in the maintenance cardiovascular and renal health in females.

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Publisher
American Physiological Society
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224.

Association of high-sensitivity C-reactive protein and anemia with acute kidney injury in neonates.
Zhang P., Tong Y., Yuan D., Li Y., Jin Y., Bai L., Gao P., Wang W., Hu J., Duan X., Liu J.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 882739. Date of Publication: 02 Nov 2022.
[Article]
AN: 2020117366
Background: The association of high-sensitivity C-reactive protein (hsCRP) and anemia with postoperative acute kidney injury (AKI) in neonates with congenital heart disease (CHD) is still unclear. The purpose of this study was to examine whether anemia-associated AKI is modulated by hsCRP in neonates.
Method(s): This study included 253 consecutive neonatal patients who underwent CHD surgery in a national tertiary hospital. We investigated the association between postoperative AKI with baseline hsCRP, anemia, and their interaction by multivariable logistic regression analyses.
Result(s): The incidence of AKI was 24.1% in the entire cohort. After being adjusted for covariates, hsCRP level was negatively correlated with AKI (P < 0.01 for 1 mg/L threshold), whereas anemia emerged as an independent risk factor of AKI (P = 0.02). In addition, there was a significant interaction between anemia and hsCRP level (P = 0.01). In neonates with hsCRP < 1 mg/L, anemia was positively associated with AKI (P = 0.03). However, no significant association was found between anemia and AKI in the context of hsCRP >= 1 mg/L. Combination of anemia and hsCRP < 1 mg/L was independently correlated with the risk of AKI (P < 0.01), while concomitant anemia and hsCRP >= 1 mg/L or hsCRP < 1 mg/L combined with non-anemia was not.
Conclusion(s): In neonates with CHD, the risk of anemia-associated AKI may be modulated by hsCRP level. Attention should be paid to neonates with preoperative anemia and baseline hsCRP < 1 mg/L to reduce the risk of postoperative AKI.

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Publisher
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Year of Publication
2022

225.

Blunt renal trauma in children: the experience of Mohammed VI University Hospital of Oujda in Morocco between 2015 and 2021.
Ammor A., Haissoufi K.E., Karrouchi M., Nasri S., Skiker I., Benhaddou H.
Embase
Pan African Medical Journal. 41 (no pagination), 2022. Article Number: 347. Date of Publication: 2022.

[Article]
AN: 2017210247
Introduction: blunt renal traumas in children are rare and their management is not suited to a very clear consensus. We sought to report our experience in managing renal injuries in children presented after blunt abdominal trauma.
Method(s): data of children aged less than 16 years with blunt renal injuries between January 2015 and April 2021 were retrospectively reviewed. Demographic characteristics, clinical course, biological results, radiological findings, associated injuries, management and follow up of included patients were described. Renal lesions were classified according to the American Association for the Surgery of Trauma (AAST).
Result(s): we included a total of 20 children, of whom 70% (n=14) were males. The mean of age was 8.50 +/- 3.42 years. Falls in 65% (n=13) and motor-vehicle accidents in 35% (n=7) were the two main mechanisms of injuries. Abdominal pain was the most common symptom and macroscopic hematuria was assessed in 55% of patients (n=11). Low-grade injuries (I-III) represented 40% of the cases (n=8), 60% of injuries were AAST grade IV (n=12) and none with AAST grade V was diagnosed. Spleen injuries in 25% (n=5) as well as traumatic brain injuries in 25% (n=5) were the most identified concomitant injuries followed by liver lesions in 15% (n=3). 75% of renal injuries (n=15) were managed conservatively and all cases that required an operative management were with AAST grade IV. No nephrectomy in our series was performed and the follow up was favorable with a median of 3 years.
Conclusion(s): our data suggest that the majority of children with blunt renal injuries can be managed conservatively regardless the grade of lesions as long as no hemodynamic instability or symptomatic urinoma are identified.

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Publisher
African Field Epidemiology Network
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226.

Vancomycin-associated acute kidney injury epidemiology in children: a systematic review.
Williams C., Hankinson C., Mcwilliam S.J., Oni L.
Embase
Archives of Disease in Childhood. (no pagination), 2022. Article Number: 323429. Date of Publication: 2022.
[Review]
AN: 2021282326
Introduction: Vancomycin is a recognised cause of drug-induced acute kidney injury (AKI).
Objective(s): The aim of this systematic review was to summarise the incidence of, and the risk factors for, vancomycin-associated AKI (v-AKI) in children.

Design(s): A systematic search was performed in November 2020 on the search engines PubMed, Web of Science and Medline, using predefined search terms.The inclusion criteria were primary paediatric studies, intervention with vancomycin and studies that included AKI as an outcome.Study quality was assessed using the relevant Critical Appraisal Skills Programme checklist.The data are reported using descriptive statistics.
Result(s): 890 studies were identified and screened with 25 studies suitable for inclusion.A cohort of 12 730 patients with v-AKI were included and the incidence of v-AKI in children was found to be 11.8% (1.6%-27.2%).The median age of the cohort was 2.5 years (range 0-23) and 57% were male patients.Risk factors that increased the likelihood of v-AKI were concomitant use of nephrotoxic medications, increased trough concentrations and, to a lesser extent, increased dose, longer duration of treatment, impaired renal function and if the patient required paediatric intensive care.
Conclusion(s): The incidence of v-AKI in children is significant and methods to reduce this risk should be considered.Further prospective interventional studies to understand the mechanisms of nephrotoxicity from vancomycin are needed and targeting risk factors may make vancomycin administration safer.

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BMJ Publishing Group
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227.

Neurodevelopmental Outcomes in Infants With Cardiac Surgery Associated Acute Kidney Injury.
Pande C.K., Noll L., Afonso N., Serrano F., Monteiro S., Guffey D., Puri K., Achuff B.-J., Akcan-Arikan A., Shekerdemian L.
Embase
Annals of Thoracic Surgery. 114(6) (pp 2347-2354), 2022. Date of Publication: December 2022.
[Article]
AN: 2018222034
Background: Infants who undergo surgery for congenital heart disease are at risk of neurodevelopmental delay. Cardiac surgery-associated acute kidney injury (CS-AKI) is common but its association with neurodevelopment has not been explored.
Method(s): This was a single-center retrospective observational study of infants who underwent cardiac surgery in the first year of life who had neurodevelopmental testing using the Bayley Scale for Infant Development, third edition. Single and recurrent episodes of stages 2 and 3 CS-AKI were determined.

Result(s): Of 203 children with median age at first surgery of 12 days, 31% had one or more episodes of severe CS-AKI; of those, 16% had recurrent CS-AKI. Median age at neurodevelopmental assessment was 20 months. The incidence of delay was similar for patients with and patients without CS-AKI but all children with recurrent CS-AKI had a delay in one or more domains and had significantly lower scores in all three domains, namely, cognitive, language, and motor.
Conclusion(s): This study has assessed the association of CS-AKI with neurodevelopmental delay after surgery for congenital heart disease in infancy. Infants who have recurrent CS-AKI in the first year of life are more likely to be delayed and have lower neurodevelopmental scores.

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228.

Inadvertent hypothermia and acute kidney injury (AKI) in neonates undergoing gastrointestinal surgeries: a retrospective study.
Cui Y., Cao R., Deng L.
Embase
Journal of Perinatology. 42(2) (pp 247-253), 2022. Date of Publication: February 2022.
[Article]
AN: 2013498052
Objective: The purpose of our study was to evaluate the association between intraoperative hypothermia and AKI in neonates undergoing gastrointestinal surgeries. Study design: This retrospective study was conducted for neonates who underwent gastrointestinal surgeries from June 2018 to August 2020. Neonates with a minimum of two documented creatinine values before and after surgical procedures within 48 h were included. According to the mean intraoperative temperature, the eligible neonates were divided into three groups. The primary outcome was the incidence of AKI (as defined by the modified KDIGO criteria). The association between variables and AKI or hospital mortality was also examined.
Result(s): A total of 295 neonates fulfilled the eligibility criteria. AKI was more common in patients with lower intraoperative temperature compared to the normothermia group. Intraoperative mean temperature was independently associated with AKI. Patients developing AKI had a higher hospital mortality. AKI and gestational age were independently associated with hospital mortality.

Conclusion(s): Inadvertent intraoperative hypothermia was associated with developing postoperative AKI.

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Clinical Trial Number
ChiCTR2000033447/ChiCTR
Year of Publication
2022

229.

Hyperchloremia and association with acute kidney injury in critically ill children.
Ginter D., Gilfoyle E., Wade A., Lethebe B.C., Gilad E.
Embase
Pediatric Nephrology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2020185497
Background: Hyperchloremia has been associated with acute kidney injury (AKI) in critically ill adult patients. Data is limited in pediatric patients. Our study sought to determine if an association exists between hyperchloremia and AKI in pediatric patients admitted to the intensive care unit (PICU).
Method(s): This is a single-center retrospective cohort study of pediatric patients admitted to the PICU for greater than 24 h and who received intravenous fluids. Patients were excluded if they had a diagnosis of kidney disease or required kidney replacement therapy (KRT) within 6 h of admission. Exposures were hyperchloremia (serum chloride >= 110 mmol/L) within the first 7 days of PICU admission. The primary outcome was the development of AKI using the Kidney Disease Improving Global Outcomes (KDIGO) criteria. Secondary outcomes included time on mechanical ventilation, new KRT, PICU length of stay, and mortality. Outcomes were analyzed using multivariate logistic regression.
Result(s): There were 407 patients included in the study, 209 in the hyperchloremic group and 198 in the non-hyperchloremic group. Univariate analysis demonstrated 108 (51.7%) patients in the hyperchloremic group vs. 54 (27.3%) in the non-hyperchloremic group (p = <.001) with AKI. On multivariate analysis, the odds ratio of AKI with hyperchloremia was 2.24 (95% CI 1.39-3.61) (p =.001). Hyperchloremia was not associated with increased odds of mortality, need for KRT, time on mechanical ventilation, or length of stay.
Conclusion(s): Hyperchloremia was associated with AKI in critically ill pediatric patients. Further pediatric clinical trials are needed to determine the benefit of a chloride restrictive vs. liberal fluid strategy. Graphical abstract: [Figure not available: see fulltext.]

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Publisher
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230.

Acute kidney injury in premature and low birth weight neonates: a systematic review and meta-analysis.
Wu Y., Wang H., Pei J., Jiang X., Tang J.
Embase
Pediatric Nephrology. 37(2) (pp 275-287), 2022. Date of Publication: February 2022.
[Review]
AN: 2013712235
Background: Acute kidney injury (AKI) is common and it is associated with poor clinical outcomes in premature and low birth weight neonates. This systematic review and meta-analysis was performed to summarize the literature and evaluate the prevalence, risk factors, and mortality of premature and low birth weight neonates with AKI.
Method(s): A systematic search in PubMed, Embase, and the Cochrane Library was performed. Studies on the prevalence, risk factors, diagnosis, and outcomes of acute kidney injury in preterm neonates and neonates with low birth weight were included and analyzed.
Result(s): Fifty articles of 10,744 patients were included in this study. The overall rate of AKI from the pooled results of all patients was 25% (95% CI 20-30%) with heterogeneity among studies (I^2 = 97%; $P < 0.01$). Patients with AKI had significantly higher rate of mortality than patients without AKI (odds ratio (OR) = 7.13; 95% CI 5.91-8.60; $P < 0.01$).
Conclusion(s): AKI was prevalent and was associated with high mortality rate among preterm and low birth weight neonates. Graphical abstract: [Figure not available: see fulltext.]

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Publisher
Springer Science and Business Media Deutschland GmbH
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231.

Improving the identification of acute kidney injury in the neonatal ICU: three centers' experiences.
Starr M.C., Chaudhry P., Brock A., Vincent K., Twombley K., Bonachea E.M., Mohamed T.H.
Embase
Journal of Perinatology. 42(2) (pp 243-246), 2022. Date of Publication: February 2022.
[Article]
AN: 2013611696
Objective: To describe three different standardized approaches to improving neonatal acute kidney injury (AKI) identification and the impact on AKI identification, incidence, and nephrology consultation and referral. Study design: A retrospective cohort study in three academic NICUs. We compared AKI identification, AKI incidence, nephrology consultation, and nephrology follow-up before and after implantation of local protocols to standardize neonatal AKI identification. Result(s): Neonatal AKI identification improved in all three NICUs following protocol implementation (26-85%, P < 0.0001). Each center also saw increases in nephrology consultation (15-83%, P < 0.0001) and nephrology follow-up (7-73%, P < 0.0001). AKI incidence decreased significantly (21-12%, P < 0.0001).
Conclusion(s): Multiple strategies can be successfully operationalized to improve neonatal AKI identification. While different in approach, each strategy resulted in increased AKI identification and nephrology involvement. This study emphasizes the importance of local standardized approaches to AKI to improve AKI identification and nephrology involvement in the NICU.

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Publisher
Springer Nature
Year of Publication
2022

232.

Serum and urinary biomarkers to predict acute kidney injury in premature infants: a systematic review and meta-analysis of diagnostic accuracy.
Kuo J., Akison L.K., Chatfield M.D., Trnka P., Moritz K.M.

Embase
Journal of Nephrology. 35(8) (pp 2001-2014), 2022. Date of Publication: November 2022.
[Review]
AN: 2015559276
Background: Premature infants are at high risk for acute kidney injury (AKI) and current diagnostic criteria are flawed. The objective of this study was to determine the diagnostic accuracy of urine and serum biomarkers not currently used in routine clinical practice to predict AKI in premature infants.
Method(s): A systematic review was performed that followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses of Diagnostic Test Accuracy Studies (PRISMA-DTA). Data were extracted on the diagnostic accuracy of AKI biomarkers using serum creatinine or urine output as the reference standard. Quality and validity were assessed using modified Standards for Reporting Diagnostic Accuracy (STARD) criteria.
Result(s): We identified 1024 articles, with 15 studies (791 infants) eligible for inclusion. Twenty-seven biomarkers were identified including serum cystatin C and urinary neutrophil gelatinase-associated lipocalin (uNGAL), osteopontin, kidney injury molecule-1, epidermal growth factor, and protein S100-P. However, many were only reported by one study each. A meta-analysis could only be conducted on uNGAL (288 infants from 6 studies) using a hierarchical, random-effects logistic-regression model. uNGAL had a summary sensitivity of 77% (95% CI 58-89%), specificity of 76% (95% CI 57-88%) and AUC-SROC of 0.83 (95% CI 0.80-0.86) for the diagnosis of AKI. By utilising uNGAL, the post-test probability of AKI increased to 52% (95% CI 37-66%) with a positive test and decreased to 9% (95% CI 5-16%) with a negative test if the pre-test probability was 25%.
Conclusion(s): uNGAL shows promise as a diagnostically accurate biomarker for AKI in premature infants. Graphical abstract: [Figure not available: see fulltext.]

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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
2022

233.

New Biomarkers in Early Diagnosis of Acute Kidney Injury in Children.
Bazargani B., Moghtaderi M.
Embase

Avicenna Journal of Medical Biotechnology. 14(4) (pp 264-269), 2022. Date of Publication: October-December 2022.
[Review]
AN: 2017309173
Acute Kidney Injury (AKI) is a common condition with a high risk of mortality and morbidity, so, early diagnosis and management of AKI is very important in clinical practice. Despite significant progress in the management of AKI, it still carries high morbidity and mortality. BUN and serum creatinine are not very sensitive nor specific for the diagnosis of AKI because they are affected by many renal and non-renal factors that are independent of kidney injury or kidney function and change significantly only after significant kidney injury and with a substantial time delay. Detection of bi-omarkers of AKI made predominantly by the injured kidney tissue are essential for the early diagnosis of AKI. An ideal biomarker should be one that could be easily measured, with no interference with other biologic variables, and be able to clarify early phases of kidney damage. The most common biomarkers studied are Neutrophil Gelatinase-Associated Lipocalin (NGAL), Interleukin-18 (IL-18), Kidney Injury Mol-ecule-1 (KIM-1), Cystatin-C, L type Fatty Acid-Binding Protein (L-FABP), N-Acetyl-beta-D Glucosaminidase (NAG), netrin-1, vanin-1, and Monocyte Chemoattractant Protein-1 (MCP-1) and calprotectin.

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Avicenna Research Institute
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234.

Acute kidney injury in pediatric hematopoietic cell transplantation: critical appraisal and consensus.
Raina R., Abu-Arja R., Sethi S., Dua R., Chakraborty R., Dibb J.T., Basu R.K., Bissler J., Felix M.B., Brophy P., Bunchman T., Alhasan K., Haffner D., Kim Y.H., Licht C., McCulloch M., Menon S., Onder A.M., Khooblall P., Khooblall A., Polishchuk V., Rangarajan H., Sultana A., Kashtan C.
Embase
Pediatric Nephrology. 37(6) (pp 1179-1203), 2022. Date of Publication: June 2022.
[Review]
AN: 2015145851
Hematopoietic cell transplantation (HCT) is a common therapy for the treatment of neoplastic and metabolic disorders, hematological diseases, and fatal immunological deficiencies. HCT can be subcategorized as autologous or allogeneic, with each modality being associated with their own benefits, risks, and post-transplant complications. One of the most common complications includes acute kidney injury (AKI). However, diagnosing HCT patients with AKI early on remains quite difficult. Therefore, this evidence-based guideline, compiled by the Pediatric Continuous Renal Replacement Therapy (PCRRT) working group, presents the various factors that contribute to AKI and recommendations regarding optimization of therapy with minimal complications in HCT patients.

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Publisher
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Year of Publication
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235.

Diagnostic accuracy of renal angina index alone or in combination with biomarkers for predicting acute kidney injury in children.
Meena J., Kumar J., Thomas C.C., Dawman L., Tiewsoh K., Yadav M., Mathew G.
Embase
Pediatric Nephrology. 37(6) (pp 1263-1275), 2022. Date of Publication: June 2022.
[Review]
AN: 2014633754
Early recognition of patients at risk for severe acute kidney injury (AKI) by renal angina index (RAI) may help in the early institution of preventive measures. Objective was to evaluate performance of RAI alone or in combination with biomarkers in predicting severe AKI (KDIGO stage 2 and 3 or equivalent) and receipt of kidney replacement therapy (KRT) in critically ill children. We searched PubMed, EMBASE, Web of Sciences, and CENTRAL for studies published till May 2021. Search terms included acute kidney injury, pediatrics, adolescent, renal angina index, and biomarker. Proceedings of relevant conferences and references of included studies were also scrutinized. Two reviewers independently assessed the study eligibility. Cohort and cross-sectional studies evaluating the diagnostic performance of RAI in predicting AKI or receipt of KRT in children were included. Eligible participants were the children less than 18 years with RAI assessment on day 0 ofadmission. We followed PRISMA-DTA guidelines and used the QUADAS-2 tool for quality assessment. A bivariate model for meta-analysis was used to calculate the summary estimates of diagnostic parameters. Major outcomes were the diagnostic accuracy of RAI (>= 8) alone or with biomarkers in predicting severe AKI and KRT receipt. Diagnostic accuracy was reported using summary sensitivity, specificity, and area under the curve (AUC). Overall, 22 studies (24 reports, 14,001 participants) were included. RAI >= 8 on day 0 has summary sensitivity, specificity, and AUC of 0.86 (95% CI, 0.77-0.92), 0.77 (0.68-0.83), and 0.88 (0.85-0.91) respectively for prediction of severe AKI on day 3. In comparison, a combination of RAI and urinary neutrophil gelatinase-associated lipocalin (NGAL) showed summary sensitivity, specificity, and AUC of 0.76 (0.62-0.85), 0.89 (0.74-0.96), and 0.87 (0.84-0.90) respectively for predicting severe AKI. The sensitivity, specificity, and AUC of RAI for predicting receipt of KRT were 0.82 (0.71-0.90), 0.74 (0.66-0.81), and 0.85 (0.81-0.88) respectively. In meta-regression, only the study setting (sepsis vs. heterogenous) was associated with heterogeneity. We observed substantial heterogeneity among eligible studies. Five studies had concerns in patient selection, and seven studies also had applicability concerns in patient selection for this review. Moderate certainty evidence showed that RAI >= 8 has good predicting ability in recognizing children at risk of severe AKI and receipt of KRT. The combination of urinary NGAL and RAI further improves the predicting ability (low-certainty evidence). Further studies are required on the context-driven assessment of novel biomarkers in the early prediction of AKI in RAI-positive children. Systematic review registration number: CRD4202122268. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information[Figure not available: see fulltext.]

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Publisher
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Year of Publication
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236.

Uncovering risk factors for kidney injury in children with a solitary functioning kidney.
Groen In 't Woud S., Roeleveld N., Westland R., Renkema K.Y., Steffens M.G., Gracchi V., Lilien M.R., van Wijk J.A.E., Feitz W.F.J., Schreuder M.F., van der Zanden L.F.M.
Embase
Kidney international. (no pagination), 2022. Date of Publication: 28 Oct 2022.
[Article]
AN: 639537098
Children with a solitary functioning kidney (SFK) have an increased risk of kidney injury. The exact risk of and risk factors for kidney injury remain unknown, which impedes personalized care. Here, we recruited a nationwide multicenter cohort of 944 patients with SFK to get more insight into this by consenting patients born in 1993-2020 and diagnosed with congenital or acquired SFK before adulthood. The median follow-up was 12.8 years and four indications of kidney injury were studied: urine protein-creatinine ratios, blood pressure, estimated glomerular filtration rate and use of anti-hypertensive/proteinuric medication. For each indicator except medication use, separate cut-off values for any injury and severe injury were used. Survival analyses indicated that at 18 years of age, any or severe kidney injury were present in 75% and 39% of patients with congenital SFK, respectively. Risk factors for kidney injury included kidney agenesis as cause of the SFK, anomalies in the SFK, and high body mass index at last follow-up. Kidney agenesis and being overweight were specifically associated with proteinuria and high blood pressure, whereas anomalies in the SFK were associated with reduced estimated glomerular filtration rates. The high prevalence of kidney injury in patients with SFK emphasizes the need for long-term follow-up, in which lifestyle is an important topic to address. More research into the etiological role of risk factors will help to translate our findings into individualized care strategies. Thus, our study shows that a significant proportion of children with SFK will develop kidney injury over time.

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Publisher
NLM (Medline)
Year of Publication
2022

237.

Can Renal Resistive Index Be Used As An Early Predictor of Acute Kidney Injury at Paediatric Intensive Care Units?.
Coban Y., Yildizdas D., Horoz O., Aslan N., Bayazit A.
Embase
Hong Kong Journal of Paediatrics. 27(4) (pp 233-240), 2022. Date of Publication: 2022.
[Article]
AN: 2018199525
The purpose of this study is to assess the predictive ability of renal resistive index (RRI) based on a comparison of RRI measurement values with the Kidney Disease: Improving Global Outcomes (KDIGO) stages in critically ill children. This prospective study included 56 paediatric intensive care patients at high risk of kidney injury, and was conducted between June 2018 and September 2019. The mean age of the 56 study patients was 4.8+/-5.4 years, with an F/M ratio of 23/33. There were 12 patients in the group without kidney injury based on the KDIGO criteria, and 24 patients with KDIGO stage I, 12 patients with stage II and eight patients with stage III. The mean left kidney resistive index (RI) was 0.68+/-0.006 in the group without kidney injury according to the KDIGO criteria, 0.59+/-0.15 in the stage I group, 0.58+/-0.27 in the stage II group and 0.65+/-0.06 in the stage III group, while the mean right kidney RI was 0.68+/-0.10, 0.58+/-0.13, 0.57+/-0.02 and 0.65+/-0.07, respectively. A cut-off point of <0.66 for the left kidney RI had a sensitivity of 92%, a specificity of 72%, and a positive likelihood ratio of 3.4 in detecting all kidney injuries according to KDIGO. A cut-off point of <0.68 for the right kidney RI had a sensitivity of 83%, a specificity of 82% and a positive likelihood ratio of 4.58. The present study found RRI to be highly predictive in the early detection of KDIGO stages I and II in critically ill children.

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Year of Publication
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238.

Assessment of early kidney injury caused by asymptomatic bacteriuria in children with type 1 diabetes.
Bebars G.M., Mostafa A.N., Moness H.M., Aziz R.A.A.
Embase
BMC Pediatrics. 22(1) (no pagination), 2022. Article Number: 643. Date of Publication: December 2022.
[Article]
AN: 2019977800
Introduction: Infection is one of the most frequent causes of morbidity and mortality in diabetic patients. Some microorganisms become more virulent in a high glucose concentration. Diabetics are more likely to have asymptomatic and symptomatic bacteriuria. NGAL is secreted in high concentrations into the blood and urine within two hours of AKI.
Objective(s): The aim of the study is early detection of UTI in type1diabetic children through screening of their urine samples, and measurement of NGAL urinary levels in cases with asymptomatic bacteriuria for early detection of AKI to prevent serious complications.
Patients and Methods: One thousand twenty-two known diabetic children on regular follow up in endocrine outpatient clinic at Minia Children University hospital were screened for UTI. From them only 52 diabetic children were diagnosed as asymptomatic bacteriuria (group I), 52 diabetic children with normal urine analysis (group II) and 52 apparently healthy children, age and sex matched, served as controls (group III). CBC, Renal function test, HbA1c, hs- CRP, Albumin/creatinine ratio, urine examination, urine culture, GFR and urinary NGAL were done to all children.
Result(s): Thirty-seven females (71.2%) had asymptomatic bacteriuria, Hs CRP and urinary NGAL were significantly higher, while GFR was significantly lower in diabetic children with bacteriuria than the other two groups. For diabetic children with bacteriuria, (AUC) for NGAL was 1 with optimal cutoff value of > 44.1 (Sensitivity 100% and Specificity 100%) while AUC for hsCRP was 0.887 with optimal cutoff value of > 1 (Sensitivity 82.69% and Specificity 90.38%).
Conclusion(s): Routine urine analysis should be done for all diabetic children even if they are asymptomatic. NGAL and hsCRP are non-invasive methods that could detect early renal injury in these patients thus, early, and proper management of UTI should be started to prevent renal injury.

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BioMed Central Ltd
Year of Publication
2022

239.

Extracorporeal Life Support Organization Guidelines for Fluid Overload, Acute Kidney Injury, and Electrolyte Management.
Bridges B.C., Dhar A., Ramanathan K., Steflik H.J., Schmidt M., Shekar K.
Embase
ASAIO Journal. 68(5) (pp 611-618), 2022. Date of Publication: 01 May 2022.
[Article]
AN: 2018105695
Disclaimer: This guideline for extracorporeal membrane oxygenation (ECMO) fluid and electrolyte management for all patient populations is intended for educational use to build the knowledge of physicians and other health professionals in assessing the conditions and managing the treatment of patients undergoing extracorporeal life support (ECLS)/ECMO and describe what are believed to be useful and safe practice for ECLS/ECMO, but these are not necessarily consensus recommendations. The aim of clinical guidelines is to help clinicians to make informed decisions about their patients. However, adherence to a guideline does not guarantee a successful outcome. Ultimately, healthcare professionals must make their own treatment decisions about care on a case-by-case basis, after consultation with their patients, using their clinical judgment, knowledge, and expertise. These guidelines do not take the place of physicians' and other health professionals' judgment in diagnosing and treatment of particular patients. These guidelines are not intended to and should not be interpreted as setting a standard of care or be deemed inclusive of all proper methods of care nor exclusive of other methods of care reasonably directed to obtaining the same results. The ultimate judgment must be made by the physician and other health professionals and the patient in light of all the circumstances presented by the individual patient, and the known variability and biologic behavior of the clinical condition. These guidelines reflect the data at the time the guidelines were prepared; the results of subsequent studies or other information may cause revisions to the recommendations in these guidelines to be prudent to reflect new data, but Extracorporeal Life Support Organization (ELSO) is under no obligation to provide updates. In no event will ELSO be liable for any decision made or action taken in reliance upon the information provided through these guidelines.

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35348527 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35348527]
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Publisher
Lippincott Williams and Wilkins
Year of Publication
2022

240.

Current view on molecular pathways of kidney damage in diabetic nephropathy.
Io M., Iv K., Ie B.A.
Embase
Current Pediatric Research. 26(7) (pp 1289-1293), 2022. Date of Publication: 2022.
[Article]
AN: 2020649972
Due to the imperfection of early detection of diabetic nephropathy in children, there is a need to create panels of potential biomarkers of glomerular and tubular dysfunction or interstitial kidney damage. The lesion of the tubulo-interstitial department precedes the lesion of the glomerular aparniate of the kidneys, so the relevant markers require more detailed study and analysis. The latter can be detected before the onset of micro albuminuria, allow monitoring of the disease, show a close relationship with the progression of diabetic nephropathy, decreased glomerular filtration rate. The search for early markers of kidney damage in type I diabetes is important and undeniably promising in terms of early clinical diagnosis of this severe progressive complication.

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Embase
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Publisher
Allied Academies
Year of Publication
2022

241.

Mild acute kidney injury after pediatric surgery is not-associated with long-term renal dysfunction: A retrospective cohort study.
Onal O., Chhabada S., Pu X., Liu L., Shimada T., Ruetzler K., Turan A.
Embase
Journal of Clinical Anesthesia. 83 (no pagination), 2022. Article Number: 110985. Date of Publication: December 2022.
[Article]
AN: 2020896650
Background and study objective: Acute kidney injury (AKI) is a sudden deterioration in renal function and is common in pediatric patients undergoing cardiac and non-cardiac surgery. Few studies have investigated the association of postoperative AKI with kidney dysfunction seen long-term and other adverse outcomes in pediatric patients. The study aimed to determine the association between postoperative AKI (mild AKI vs. no AKI and mild AKI vs. moderate-severe AKI) and chronic kidney dysfunction (CKD) seen long-term in pediatric patients undergoing cardiac and non-cardiac major surgery.
Design(s): Restrospective, cohort study.
Setting(s): Tertiary care hospital.
Patient(s): This retrospective cohort study included patients aged 2-18 years who underwent cardiac and non-cardiac major surgery lasting >2 h at the Cleveland Clinic Main Campus between June 2005 and December 2020. Measurements: Postoperative AKI and CKD seen in long-term were defined and staged according to the Kidney Disease: Improving Global Outcomes criteria.

Main Result(s): Among 10,597 children who had cardiac and non-cardiac major surgery, 1,302 were eligible. A total of 682 patients were excluded for missing variables and baseline kidney dysfunction and 620 patients were included. The mean age was 11 years, and 307 (49.5%) were female. Postoperative mild AKI was detected in 5.8% of the patients, while moderate-severe AKI was detected in 2.4%. There was no significant difference in CKD seen in long-term between patients with and without postoperative AKI, p = 0.83. The CKD seen in long-term developed in 27.7% of patients with postoperative mild AKI and 33.3% of patients with postoperative moderate and severe AKI. Patients without postoperative AKI had an estimated 1.09 times higher odds of having CKD seen in long-term compared with patients who have postoperative mild AKI (odds ratio [95% CI] 1.09 [0.48,2.52]).
Conclusion(s): In contrast to adult patients, the authors did not find any association between postoperative AKI and CKD seen in long-term in pediatric patients.

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36332365 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36332365]
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Publisher
Elsevier Inc.
Year of Publication
2022

242.

Urinary Calprotectin as A Biomarker of Early Diagnosis of Intrinsic Acute Kidney Injury in Critically Ill Children.
Ibrahim H.E., Khalifa N.A., Afifi R.A.G., Mowafy A.H.
Embase
NeuroQuantology. 20(12) (pp 712-723), 2022. Date of Publication: 2022.
[Article]
AN: 2014411093
Background:Acute kidney injury (AKI) is a common and potentially life-threatening condition. AKI is defined by an increase of serum creatinine by >=0.3 mg/dL/1 in 48 h or an increase by >=1.5-fold from a known or assumed baseline or by a decrease of urinary output to less than 0.5 mL /kg/1 hfor 6 h.The objectives of this study were to assess the specificity and sensitivity of urinary calprotactin in early detection of intrinsic AKI and to compare between Urinary Calprotectin and serum creatinine for early detection of intrinsic AKI.

Method(s):This was a cross sectional study that was conducted on 100 children in Pediatric intensive care unit in the department of Pediatrics, Zagazig university hospitals.
Result(s):About (52%) of our cases were males and the other (48%) were females. In this study, 39% of our cases diagnosed with AKI. Our study showed that, regarding kidney function on first day of admission, the median of each UOP was 2 (1.5-3) (ml/kg/hr), Creatinine was 0.4 (0.23-0.6) and BUN was 16.5 (10-25). Kidney function on third day of admission, the median of each UOP was 3 (1.5-3) (ml/kg/hr), Creatinine was 0.5 (0.3-1.08) and BUN was 20 (12-28). The current study revealed that, only (5%) needed dialysis. There was statistically significant differences between the studied groups as regard Need of dialysis as (12.8%) of cases with AKI needed dialysis. Our study showed that, there were no statistically significant differences between the studied groups as regard age and sex. In this study, there were statistically significant differences between the studied groups as regard Creatinine on the third day of admission where the higher mean values were cases with AKI. The current study showed that, regarding urinary calprotectin on first day of admission, the median was 214 (60-505). Regarding urinary calprotectin on third day of admission, the median was 416.5 (88-1267). There was statistically significant increase in calprotein level when comparing first and third Day levels p value less than 0.001. The present study showed that, regarding validity of U. calprotectin, the value of Sensitivity was (76.9%), specificity= (76.9%), PPV = (81.1%), NPV = (81.1%), and (79.5%) accuracy.
Conclusion(s):Urinary calprotectin has higher sensitivity and specificity than serum creatinine levels for detecting early stages of intrinsic AKI. It's early rising in urine allows us to commence our treatments at earlier stages preventing serious kidney tissue damages in children.

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Publisher
Anka Publishers
Year of Publication
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243.

Prediction of renal damage in children with IgA vasculitis based on machine learning.
Wang J., Chu H., Pan Y.
Embase
Medicine (United States). 101(42) (pp E31135), 2022. Date of Publication: 21 Oct 2022.
[Article]
AN: 2020913290
This article is objected to explore the value of machine learning algorithm in predicting the risk of renal damage in children with IgA vasculitis by constructing a predictive model and analyzing the related risk factors of IgA vasculitis Nephritis in children. Case data of 288 hospitalized children with IgA vasculitis from November 2018 to October 2021 were collected. The data included 42 indicators such as demographic characteristics, clinical symptoms and laboratory tests, etc. Univariate feature selection was used for feature extraction, and logistic regression, support vector machine (SVM), decision tree and random forest (RF) algorithms were used separately for classification prediction. Lastly, the performance of four algorithms is compared using accuracy rate, recall rate and AUC. The accuracy rate, recall rate and AUC of the established RF model were 0.83, 0.86 and 0.91 respectively, which were higher than 0.74, 0.80 and 0.89 of the logistic regression model; higher than 0.70, 0.80 and 0.89 of SVM model; higher than 0.74, 0.80 and 0.81 of the decision tree model. The top 10 important features provided by RF model are: Persistent

purpura >=4 weeks, Cr, Clinic time, ALB, WBC, TC, Relapse, TG, Recurrent purpura and EB-DNA. The model based on RF algorithm has better performance in the prediction of children with IgA vasculitis renal damage, indicated by better classification accuracy, better classification effect and better generalization performance.

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36281102 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36281102]
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Publisher
Lippincott Williams and Wilkins
Year of Publication
2022

244.

Subphenotypes of acute kidney injury in children.
Gist K.M., Fuhrman D., Stanski N., Menon S., Soranno D.E.
Embase
Current opinion in critical care. 28(6) (pp 590-598), 2022. Date of Publication: 01 Dec 2022. [Review]
AN: 638894749
PURPOSE OF REVIEW: The purpose of this review is to describe acute kidney injury (AKI) phenotypes in children. RECENT FINDINGS: AKI is a heterogenous disease that imposes significant morbidity and mortality on critically ill and noncritically ill patients across the age spectrum. As our understanding of AKI and its association with outcomes has improved, it is becoming increasingly apparent that there are distinct AKI subphenotypes that vary by cause or associated conditions. We have also learned that severity, duration, and repeated episodes of AKI impact outcomes, and that integration of novel urinary biomarkers of tubular injury can also reveal unique subphenotypes of AKI that may not be otherwise readily apparent. SUMMARY: Studies that further delineate these unique AKI subphenotypes are needed to better understand the impact of AKI in children. Further delineation of these phenotypes has both prognostic and therapeutic implications.

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36044290 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36044290]
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Publisher
NLM (Medline)
Year of Publication

2022

245.

Acute Kidney Injury Interacts With Coma, Acidosis, and Impaired Perfusion to Significantly Increase Risk of Death in Children With Severe Malaria.
Namazzi R., Opoka R., Datta D., Bangirana P., Batte A., Berrens Z., Goings M.J., Schwaderer A.L., Conroy A.L., John C.C.
Embase
Clinical infectious diseases : an official publication of the Infectious Diseases Society of America. 75(9) (pp 1511-1519), 2022. Date of Publication: 29 Oct 2022.
[Article]
AN: 637644626
BACKGROUND: Mortality in severe malaria remains high in children treated with intravenous artesunate. Acute kidney injury (AKI) is a common complication of severe malaria, but the interactions between AKI and other complications on the risk of mortality in severe malaria are not well characterized.
METHOD(S): Between 2014 and 2017, 600 children aged 6-48 months to 4 years hospitalized with severe malaria were enrolled in a prospective clinical cohort study evaluating clinical predictors of mortality in children with severe malaria.
RESULT(S): The mean age of children in this cohort was 2.1 years (standard deviation, 0.9 years) and 338 children (56.3%) were male. Mortality was 7.3%, and 52.3% of deaths occurred within 12 hours of admission. Coma, acidosis, impaired perfusion, AKI, elevated blood urea nitrogen (BUN), and hyperkalemia were associated with increased mortality (all P < .001). AKI interacted with each risk factor to increase mortality (P < .001 for interaction). Children with clinical indications for dialysis (14.4% of all children) had an increased risk of death compared with those with no indications for dialysis (odds ratio, 6.56; 95% confidence interval, 3.41-12.59).
CONCLUSION(S): AKI interacts with coma, acidosis, or impaired perfusion to significantly increase the risk of death in severe malaria. Among children with AKI, those who have hyperkalemia or elevated BUN have a higher risk of death. A better understanding of the causes of these complications of severe malaria, and development and implementation of measures to prevent and treat them, such as dialysis, are needed to reduce mortality in severe malaria.

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Publisher
NLM (Medline)

Year of Publication
2022

246.

Risk factors for acute kidney injury at presentation among children with CNS malaria: a case control study.
Tembo D., Mwanza S., Mwaba C., Dallah I., wa Somwe S., Seydel K.B., Birbeck G.L.
Embase
Malaria Journal. 21(1) (no pagination), 2022. Article Number: 310. Date of Publication: December 2022.
[Article]
AN: 2019936280
Background: Recent research has established that acute kidney injury (AKI) is a common problem in severe paediatric malaria. Limited access to kidney diagnostic studies in the low resources settings where malaria is common has constrained research on this important problem.
Method(s): Enrolment data from an ongoing clinical trial of antipyretics in children with central nervous system (CNS) malaria, CNS malaria being malaria with seizures or coma, was used to identify risk factors for AKI at presentation. Children 2-11 years old with CNS malaria underwent screening and enrollment assessments which included demographic and anthropomorphic data, clinical details regarding the acute illness, and laboratory studies including creatinine (Cr), quantitative parasite count (qPC), quantitative histidine rich protein 2 (HRP2), lactate, and bilirubin levels. Children with a screening Cr > 106 micromol/l were excluded from the study due to the potential nephrotoxic effects of the study drug. To identify risk factors for AKI at the time of admission, children who were enrolled in the study were categorized as having AKI using estimates of their baseline (i.e. before this acute illness) kidney function and creatinine at enrollment applying the Kidney Disease: Improving Global Outcome (KDIGO) 2012 guidelines. Logistic regressions and a multivariate model were used to identify clinical and demographic risk factors for AKI at presentation among those children enrolled in the study.
Result(s): 465 children were screened, 377 were age-appropriate with CNS malaria, 22 (5.8%) were excluded due to Cr > 106 micromol/l, and 209 were enrolled. Among the 209, AKI using KDIGO criteria was observed in 134 (64.1%). One child required dialysis during recovery. Risk factors for AKI in both the logistic regression and multivariate models included: hyperpyrexia (OR 3.36; 95% CI 1.39-8.12) and age with older children being less likely to have AKI (OR 0.72; 95% CI 0.62-0.84).
Conclusion(s): AKI is extremely common among children presenting with CNS malaria. Hyperpyrexia with associated dehydration may contribute to the AKI or may simply be a marker for a more inflammatory systemic response that is also affecting the kidney. Appropriate fluid management in children with CNS malaria and AKI may be challenging since generous hydration to support kidney recovery could worsen malaria-induced cerebral oedema in this critically ill population. Trial registrationhttps://clinicaltrials.gov/ct2/show/NCT03399318.

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36316704 [https://www.ncbi.nlm.nih.gov/pubmed/?term=36316704]
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Publisher
BioMed Central Ltd
Year of Publication
2022

247.

Pregnancy-related Acute Kidney Injury in Public Hospital in South India: Changing Trends.
Sahay M., Priyashree, Dogra L., Ismal K., Vali S.
Embase
The Journal of the Association of Physicians of India. 70(8) (pp 11-12), 2022. Date of Publication: 01 Aug 2022.
[Article]
AN: 638984075
BACKGROUND: Pregnancy-related acute kidney injury (PRAKI) is a common problem in the developing world. MATERIALS AND METHODS: In this retrospective observational study at a tertiary care hospital in South India we evaluated records for the maternal, fetal, and renal outcomes in women with PRAKI.
RESULT(S): Over a 10-year period, 395 patients of PRAKI were seen constituting 8.1% of all acute kidney injury (AKI). The mean age of patients was 27 +/- 3 years. A total of 176 (44.5%) had pre-eclampsia, 132 (33.4%) had puerperal sepsis, 76 (19.2%) had antepartum hemorrhage or postpartum hemorrhage (APH 30/PPH 46), nine (2.2%) had hemolytic uremic syndrome (HUS). Obstruction was seen in two patients. Eleven had underlying glomerulonephritis out of three had lupus nephritis. Forty-five of 395 (11.39%) had hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome, that is, 25.5% of those with pre-eclampsia. Sixteen (4.0%) had placental abruption. A total of 288 (72.9%) presented postpartum. Renal biopsy done in 103 (26%) showed patchy cortical necrosis (PCN) in 25 (22.3%), diffuse cortical necrosis (DCN) in 23 (20.3%), acute tubular necrosis (ATN) in 20 (19.4%), acute interstitial nephritis (AIN) in 10 (9.7%), while nine (8.7%) had thrombotic microangiopathy (TMA). Glomerular disease was seen in 11. Cortical necrosis (CN) was seen in 48 patients of which 10 (20.83%) had abruption placenta, 25 (52%) had puerperal sepsis, 11 (22.9%) had postpartum hemorrhage (PPH), and two (4.1%) had TMA. A total of 290 (73.4%) required dialysis. About 76% improved while 8.3% progressed to end-stage renal disease (ESRD). Maternal mortality (MM) was 5%. There were 42 intrauterine deaths and 30 deaths in the neonatal period. DISCUSSION: Pregnancy-related acute kidney injury in developing countries is more common as compared to the West. Only 49% patients had booked pregnancy, that is, received regular antenatal care. Apart from pre-eclampsia which is also the major cause in the West and was the etiology in 44% of patients with PRAKI in our study, sepsis (33%) and maternal hemorrhage (19%) were also significant. Immediate recovery from PRAKI was 75% however about 8% develop end-stage kidney disease (ESKD) while in the west ESKD occurred in only about 2%.
CONCLUSION(S): Pregnancy-related acute kidney injury is an important cause of maternal and fetal morbidity and mortality. Pre-eclampsia emerged as the most common cause of PRAKI and CN was the most common histological lesion. Proper antenatal care and management may improve pregnancy outcomes.

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Publisher
NLM (Medline)
Year of Publication
2022

248.

The Causes of Acute Kidney Injury in Critically Ill Children Who Needs Renal Replacement Therapy.
Pokrajac D., Hadzimuratovic A., Mustajbegovic-Pripoljac A., Misanovic V., Anic D., Uzicanin S.
Embase
Medical archives (Sarajevo, Bosnia and Herzegovina). 76(2) (pp 90-95), 2022. Date of Publication: 01 Apr 2022.
[Article]
AN: 638377560
Background: Acute kidney injury (AKI) is the result of various causes and is associated with significant morbidity and mortality as well as long-term renal sequelae in pediatric patients.
Objective(s): The aim of the study is to determine the causes of AKI in pediatric patients who needed renal replacement therapy (RRT) and were admitted to the Pediatric and Neonatal Intensive Care Unit (PICU and NICU) at the Pediatric Clinic, University Clinical Center Sarajevo (UCCS).
Method(s): Our research included 81 children with AKI who needed RRT. We used the Kidney Disease: Improving Global Outcomes (KDIGO) criteria to define AKI. Severe acute kidney injury was defined as stage 2 or 3 of AKI when plasma creatinine level >=2 times the baseline level or urine output <0.5 ml per kilogram of body weight per hour for >=12 hours. Other laboratory findings and imaging tests were made depending on their primary disease that led to the AKI and its complications.
Result(s): Our research analyzed 81 children with AKI who needed RRT 38 girls and 43 boys ages from birth to 18 years. Mean age of presentation was 6.28 years. Male female ratio in this study was 1.1:1. Non-olyguric AKI was diagnosed in 12 (14.8%) of children with AKI, while the rest 69 (85.2%) had the olyguric type. Patients with AKI were analyzed after a rough division on prerenal in 57 (70.4%) children, intrarenal in 23 (28.4%) and post-renal in 1 (1.2%) patient.
Conclusion(s): As the AKI plays a key role in the mortality and morbidity in pediatric patients, especially in infants, it is important to recognise and treatment on time different etiologies of this serious condition. Some causes of AKI in our country can be prevented by better organization of primary and secondary health care, which would also reduce mortality and morbidity from AKI.

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Publisher
NLM (Medline)
Year of Publication
2022

249.

Urinary biomarkers indicate pediatric renal injury among rural farming communities in Sri Lanka.
Gunasekara T.D.K.S.C., De Silva P.M.C.S., Ekanayake E.M.D.V., Thakshila W.A.K.G., Pinipa R.A.I., Sandamini P.M.M.A., Gunarathna S.D., Chandana E.P.S., Jayasinghe S.S., Herath C., Siribaddana S., Jayasundara N.
Embase
Scientific reports. 12(1) (pp 8040), 2022. Date of Publication: 16 May 2022.
[Article]
AN: 638018008
Pediatric renal injury is an emerging health concern in communities affected by chronic kidney disease of uncertain etiology (CKDu). Early detection of susceptibilities through highly sensitive and specific biomarkers can lead to effective therapeutic and preventive interventions against renal diseases. Here, we aimed to investigate the utility of kidney injury molecule (KIM-1) and neutrophil gelatinase-associated lipocalin (NGAL) in early detection of renal abnormalities in selected pediatric communities in Sri Lanka. The study areas were stratified as CKDu endemic, emerging, and non-endemic based on the prevalence of CKDu, and a total of 804 school students (10-18 years of age) participated in the study. The median (IQR) urinary KIM-1 levels of the participants were 0.193 (0.026-0.338), 0.082 (0.001-0.220) and 0.040 (0.003-0.242) ng/mgCr for CKDu endemic, emerging and non-endemic regions respectively. Participants from CKDu endemic regions reported elevated ($p<0.0001$) urinary KIM-1 expression compared to those from the other regions. The median (IQR) NGAL levels in participants from CKDu endemic (2.969; 1.833-5.641), emerging (3.374; 1.766-6.103), and non-endemic (3.345; 1.742-5.128 ng/mgCr) regions showed no significant difference. Also, urinary albumin-creatinine ratio (UACR) showed no significant differences across gender or residency. The prevalence of albuminuria was 1-2% in the locations irrespective of CKDu burden. Albuminuric participants reported higher ($p<0.05$) urinary KIM-1 levels in comparison to normoalbuminuric participants. Significantly elevated urinary KIM-1 expression in a pediatric population from CKDu affected regions, especially in the presence of albuminuria, may indicate low-grade early renal damage supporting the utility of KIM-1 as a quantifiable biomarker.

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35577796 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35577796]
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Publisher
NLM (Medline)
Year of Publication

2022

250.

Corrigendum to "Risk factors for in-hospital mortality and acute kidney injury in neonatal-pediatric patients receiving extracorporeal membrane oxygenation" [Journal of the Formosan Medical Association 120 (2021) 1758 - 1767](S0929664621001091)(10.1016/j.jfma.2021.03.004).
Liao M.-T., Tsai I.-J., Lin F.-H., Tseng L.-J., Huang S.-C., Chen Y.-S., Wu E.-T., Tsau Y.-K.
Embase
Journal of the Formosan Medical Association. Part 2. 121(1) (pp 446), 2022. Date of Publication: January 2022.
[Erratum]
AN: 2015986590
The authors regret the wrong IRB number were written in this article. The IRB number approved by the Institutional Review Board of National Taiwan University. Hospital were 9561707007 and 201612055RINA. The authors would like to apologise for any inconvenience caused.

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Publisher
Elsevier B.V.
Year of Publication
2022

251.

Motor Vehicle Collision and Acute Kidney Injury in Children.
Kuok C.I., Chan W.K.Y.
Embase
Pediatric Emergency Care. 38(10) (pp 545-549), 2022. Date of Publication: 01 Oct 2022.
[Article]
AN: 2020554824
Objective Our study aimed to determine the prevalence of acute kidney injury (AKI) in pediatric patients who sustained trauma due to motor vehicle collision (MVC) and identify factors

associated with its development. Methods We retrospectively reviewed the clinical information and laboratory tests of pediatric patients who were admitted because of MVC from January 2014 to April 2021. The occurrence of AKI was our primary outcome, which was defined by the Kidney Disease Improving Global Outcomes criteria. A serum creatine kinase (CK) level of 1000 IU/L or greater was defined as rhabdomyolysis. Results Sixty-four patients (median age, 9.6 years) were included in the study. Twenty three of the patients (35.9%) developed AKI: stage 1 AKI in 18 (78.3%) and stage 2 AKI in 5 (21.7%) patients. Acute kidney injury patients had higher injury severity scores (no AKI: 5.0; stage 1 AKI: 10.5; stage 2 AKI: 26.0). Rhabdomyolysis was present in 21.1% of the patients and was associated with the overall AKI risk (odds ratio [OR], 7.3; 95% confidence interval [CI], 1.6-32.6) and stage 2 AKI (OR, 15.0; 95% CI, 1.4-163.2). Blood tests from AKI patients showed lower serum bicarbonate and base excess, higher leukocyte and CK levels on admission, and a higher peak CK in the first 72 hours of admission. Intubation in emergency department (OR, 11.1; 95% CI, 1.2-102.1) and surgical interventions (OR, 3.2; 95% CI, 1.0-9.8) were associated with AKI. Acute kidney injury patients required longer stay in pediatric intensive care unit (median 1.0 vs 2.3 days, P < 0.001) and hospital (median 4.1 vs 7.0 days, P = 0.010). Conclusions Approximately one third of pediatric patients who sustained trauma from MVC developed AKI. Initial blood results, including higher CK and leukocyte count, and lower bicarbonate and base excess, were associated with the development of AKI. Rhabdomyolysis occurred in approximately one fifth of the patients and was significantly associated with AKI.

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252.

Development and validation of a nomogram for predicting overall survival in cirrhotic patients with acute kidney injury.
Wan Y.-P., Wang A.-J., Zhang W., Zhang H., Peng G.-H., Zhu X.
Embase
World Journal of Gastroenterology. 28(30) (pp 4133-4151), 2022. Date of Publication: 14 Aug 2022.
[Article]
AN: 2019749700
BACKGROUND Acute kidney injury (AKI) is a common and severe complication in patients with cirrhosis, and is associated with poor prognosis. Therefore, identifying cirrhotic patients with AKI who are at high risk of mortality is very important and may be helpful for providing timely medical interventions to improve the prognosis of these patients. However, studies focused on investigating the risk factors for the mortality of cirrhotic patients with AKI were scarce. AIM To identify risk factors for mortality and establish a nomogram for predicting the prognosis of these patients. METHODS Two hundred fifty consecutive patients with cirrhosis and AKI were recruited and randomly divided into training cohort (n = 173) and validation cohort (n = 77). In the training cohort, potential risk factors for death were identified by performing a Cox regression analysis, and a nomogram was established. The predictive performance of the nomogram was internally

and externally validated by calculating the area under the receiver operating characteristic curve (AUROC), constructing a calibration curve and performing decision curve analysis. RESULTS The serum sodium level, international normalized ratio, peak serum creatinine level > 1.5 mg/dL, the presence of hepatic encephalopathy and diabetes were potential risk factors for mortality of cirrhotic patients with AKI in the training dataset. A prognostic nomogram incorporating these variables was established for predicting the overall survival of these patients. Compared with Child-Turcotte-Pugh, the model for end-stage liver disease (MELD) and the MELD-Na scores, the nomogram in predicting 90- and 180-d mortality exhibited better discriminatory power with AUROCs of 0.792 and 0.801 for the training dataset and 0.817 and 0.862 for the validation dataset, respectively. With a nomogram score of 98, patients were divided into low- and high-risk groups, and high-risk patients had a higher mortality rate. CONCLUSION A prognostic nomogram displayed good performance for predicting the overall survival of cirrhotic patients with AKI, and will assist clinicians in evaluating the prognosis of these patients.

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253.

Incidence of acute kidney injury and assessment of its associated risk factors in patients undergoing transarterial chemoembolisation for hepatocellular carcinoma.
Saeed K.M., Aftab A., Abu Bakar M., Iqbal J.
Embase
Journal of the Pakistan Medical Association. 72(6) (pp 1057-1060), 2022. Date of Publication: June 2022.
[Article]
AN: 2018479742
Objectives: To determine the incidence of acute kidney injury in intermediate stage hepatocellular carcinoma patients undergoing trans-arterial chemoembolisation, and to analyse various causative factors.
Method(s): The retrospective study was conducted at the Shaukat Khanum Cancer Memorial Hospital, Lahore, Pakistan,, and comprised data from January 2012 to December 2015 of adult patients of either gender with intermediate stage hepatocellular carcinoma and undergoing trans-

arterial chemoembolisation with Child-Pugh score A. Outcomes were measured in the form of development of acute kidney injury, and its causative factors. Data was analysed using SPSS 20.
Result(s): Of the 133 patients, 90(67.6%) were male. The overall mean age of the sample was 59+/-8.4 years (range: 26-86 years). Of these, 19(14%) developed acute kidney injury. Higher alpha-fetoprotein levels and lower albumin levels were found to be the significant causative factors ($p<0.05$).
Conclusion(s): The incidence of trans-arterial chemoembolisation-related acute kidney injury was 14%. Higher baseline alpha-fetoprotein and lower baseline albumin levels were found to be the significant risk factors.

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Publisher
Pakistan Medical Association
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254.

Changing paradigms of management of isolated blunt renal trauma.
Choudhury S., Ray P., Pal D.K.
Embase
Trauma (United Kingdom). 24(1) (pp 36-42), 2022. Date of Publication: January 2022.
[Article]
AN: 2007171827
Introduction: The last thirty years has seen a change in management of renal trauma with progression more towards nonoperative management; however there is lack of guidelines of many practical aspects for conservative management of renal trauma. Here we are sharing our experience of managing isolated renal trauma over a period of five years.
Material(s) and Method(s): The study was conducted in a tertiary care centre of eastern part of India from April 2015-March 2020. It was a retro-prospective study and included cases of isolated blunt renal trauma managed in our hospital.
Result(s): A total of 61 cases of isolated blunt renal trauma were treated in the mentioned time period. Seventeen (28%) cases were of AAST Grade IV and five (8%) Grade V injury. Blood transfusion was required in eighteen (29%) cases during management. In eight (47%) cases of Grade IV injury and two (40%) cases of Grade V injury angioembolization was done. In two (11.7%) cases of Grade IV injury ureteral stenting was performed. Delayed surgical exploration and nephrectomy was required in one case of Grade V injury because of failed angioembolization and one Grade IV injury due to sepsis. One death was encountered in Grade V injury who had delayed presentation with haemorrhagic shock and underwent immediate surgical exploration. On follow up four patients (23%) of Grade IV injury and one patient of Grade III injury and two patients (40%) of Grade IV injury developed hypertension. The remaining patients were found to be normal.
Conclusion(s): Conservative management of renal trauma is the norm nowadays. Angioembolisation was found to be one of the strongest armamentarium when patient needs

intervention. Surgery is rarely contemplated, mostly in hemodynamically unstable high grade trauma patients.

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SAGE Publications Ltd
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255.

Longitudinal changes in oxidative stress and early renal injury in children exposed to DEHP and melamine in the 2011 Taiwan food scandal.
Tsai H.-J., Wu C.-F., Hsiung C.A., Lee C.-H., Wang S.-L., Chen M.-L., Chen C.-C., Huang P.-C., Wang Y.-H., Chen Y.-A., Chen B.-H., Chuang Y.-S., Hsieh H.-M., Wu M.-T.
Embase
Environment International. 158 (no pagination), 2022. Article Number: 107018. Date of Publication: January 2022.
[Article]
AN: 2015814553
In 2011, phthalates, mainly di-(2-ethylhexyl) phthalate (DEHP), were found to have been added to a variety of foods in Taiwan, increasing the risk of microalbuminuria in children. Exposure to melamine perhaps modifies that risk. This prospective cohort study investigates whether renal injury resulting from exposure to DEHP-tainted foods from the 2011 Taiwan Food Scandal is reversed over time. The temporal and interactive effects of past daily DEHP intake, current daily DEHP intake, and urinary melamine levels on oxidative stress and renal injury were also examined. Two hundred possibly DEHP-affected children (aged < 18 years) were enrolled in the first survey wave (August 2012-January 2013), with 170 and 159 children in the second (July 2014-February 2015) and third waves (May 2016-October 2016), respectively. The first wave comprised questionnaires that were used to collect information about possible past daily DEHP intake from DEHP-tainted foods. One-spot first morning urine samples were collected to measure melamine levels, phthalate metabolites, and markers indicating oxidative stress (malondialdehyde and 8-oxo-2'-deoxyguanosine), and renal injury (albumin/creatinine ratio (ACR) and N-acetyl-beta-D-glucosaminidase) in all three waves. Generalized estimating equation (GEE) modeling revealed that both past daily DEHP intake and time might affect urinary ACR. However, most interactions were negative and significant correlation was observed only during the second wave (P for interaction = 0.014) in the group with the highest past daily DEHP intake (>50 mug/kg/day). Urinary melamine levels were found to correlate significantly with both urinary ACR and oxidative stress markers. The highest impact associated with exposure to DEHP-tainted foods in increasing urinary ACR of children was observed during the first wave, and the effect may partially diminish over time. These results suggest that continuous monitoring of renal health and other long-term health consequences is required in individuals who were affected by the scandal in 2011.

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256.

Consensus-Based Recommendations on Priority Activities to Address Acute Kidney Injury in Children: A Modified Delphi Consensus Statement.
Goldstein S.L., Akcan-Arikan A., Alobaidi R., Askenazi D.J., Bagshaw S.M., Barhight M., Barreto E., Bayrakci B., Bignall O.N.R., Bjornstad E., Brophy P.D., Chanchlani R., Charlton J.R., Conroy A.L., Deep A., Devarajan P., Dolan K., Fuhrman D.Y., Gist K.M., Gorga S.M., Greenberg J.H., Hasson D., Ulrich E.H., Iyengar A., Jetton J.G., Krawczeski C., Meigs L., Menon S., Morgan J., Morgan C.J., Mottes T., Neumayr T.M., Ricci Z., Selewski D., Soranno D.E., Starr M., Stanski N.L., Sutherland S.M., Symons J., Tavares M.S., Vega M.W., Zappitelli M., Ronco C., Mehta R.L., Kellum J., Ostermann M., Basu R.K.
Embase
JAMA Network Open. 5(9) (pp E2229442), 2022. Date of Publication: 30 Sep 2022.
[Review]
AN: 639139291
Importance: Increasing evidence indicates that acute kidney injury (AKI) occurs frequently in children and young adults and is associated with poor short-term and long-term outcomes. Guidance is required to focus efforts related to expansion of pediatric AKI knowledge.

Objective(s): To develop expert-driven pediatric specific recommendations on needed AKI research, education, practice, and advocacy. Evidence Review: At the 26th Acute Disease Quality Initiative meeting conducted in November 2021 by 47 multiprofessional international experts in general pediatrics, nephrology, and critical care, the panel focused on 6 areas: (1) epidemiology; (2) diagnostics; (3) fluid overload; (4) kidney support therapies; (5) biology, pharmacology, and nutrition; and (6) education and advocacy. An objective scientific review and distillation of literature through September 2021 was performed of (1) epidemiology, (2) risk assessment and diagnosis, (3) fluid assessment, (4) kidney support and extracorporeal therapies, (5) pathobiology, nutrition, and pharmacology, and (6) education and advocacy. Using an established modified Delphi process based on existing data, workgroups derived consensus statements with recommendations.
Finding(s): The meeting developed 12 consensus statements and 29 research recommendations. Principal suggestions were to address gaps of knowledge by including data from varying socioeconomic groups, broadening definition of AKI phenotypes, adjudicating fluid balance by disease severity, integrating biopathology of child growth and development, and partnering with families and communities in AKI advocacy.
Conclusions and Relevance: Existing evidence across observational study supports further efforts to increase knowledge related to AKI in childhood. Significant gaps of knowledge may be addressed by focused efforts..

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Publisher
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257.

The concomitant use of vancomycin and piperacillin-tazobactam is associated with acute kidney injury (AKI) in extremely low birth weight infants (ELBW).
Al-Jebawi Y., Karalic K., Shekhawat P., Mhanna M.J.
Embase
Journal of Neonatal-Perinatal Medicine. 15(2) (pp 303-309), 2022. Date of Publication: 2022.
[Article]
AN: 637871599
BACKGROUND: Late-onset sepsis is common in extremely low birth weight (ELBW) infants, and it leads to the use of antibiotics to cover resistant organisms, which can be nephrotoxic. Here we have investigated the role of vancomycin plus piperacillin-tazobactam on the rate of acute kidney injury (AKI).
METHOD(S): In a retrospective case-control study, medical records of all ELBW infants who were admitted to our Neonatal Intensive Care Unit (NICU) with late onset sepsis who were prescribed vancomycin plus piperacillin-tazobactam were reviewed for demographics, clinical characteristics, use of potential nephrotoxic medications and outcomes.
RESULT(S): During the study period, 264 patients were admitted, of whom 28.4%(75/264) received vancomycin plus piperacillin-tazobactam and were matched with 64 controls. There were no differences in gestational age or birth weight between cases and controls [688+/-160 vs. 689+/-162 grams (p = 0.99), and 24.7+/-1.8 vs. 24.7+/-1.6 weeks (p = 0.99) respectively]. There was no difference in the rate of sepsis between cases and controls [76%(55/72) vs. 64%(41/64) respectively, p = 0.11]. Infants exposed to vancomycin plus piperacillin-tazobactam had a higher percentage of concomitant use of vasopressors and amphotericin. To adjust for confounders, a logistic regression analysis was conducted with AKI as the dependent variable. Use of vasopressors and vancomycin plus piperacillin-tazobactam were the only risk factors associated with AKI with an adjusted OR (95%CI) of 4.08 (1.90-8.74), p < 0.001; and 2.87 (1.26-6.53), p = 0.01 respectively.
CONCLUSION(S): The use of vancomycin plus piperacillin-tazobactam in ELBW infants is associated with an increased risk for AKI.

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258.

Calpain Inhibitor Calpeptin Alleviates Ischemia/Reperfusion-Induced Acute Kidney Injury via Suppressing AIM2 Inflammasome and Upregulating Klotho Protein.
Wu Y., Yang H., Cheng M., Shi J., Zhang W., Liu S., Zhang M.
Embase
Frontiers in Medicine. 9 (no pagination), 2022. Article Number: 811980. Date of Publication: 28 Jan 2022.
[Article]
AN: 637213276
Renal ischemia/reperfusion injury is a major contributor of acute kidney injury (AKI), leading to renal cell necrosis, apoptosis, and inflammation. Calpains, a family of Ca2+-dependent cysteine proteases, play a pivotal role in the pathogenesis of renal diseases. Several studies have reported calpain inhibitors showing remarkable reno-protective effects against proteinuria and alpha-klotho deficiency-induced renal aging symptoms, particularly against glomerulus injury. However, little is known about the role of the calpain inhibitor calpeptin in acute kidney injury. The present study aims to investigate the potential mechanism of downregulation of Calpain 1 and 2 activity by calpeptin in the ischemia/reperfusion (IR)-induced AKI model. Firstly, we observed that the contents of Calpain 1 and 2 were significantly increased in the renal biopsy of clinical AKI patients, especially in the diseased tubules space. To investigate the impacts of calpain activity inhibition, we further pretreated with calpeptin in both the IR mouse model and in the HK-2 cells hypoxia model. We found that the calpain inhibitor calpeptin improved renal functional deterioration, attenuated pathological structure damage, and decreased tubular cell apoptosis in the IR injury-induced AKI mice model. Mechanistically, calpeptin significantly suppressed the AIM2 (absent in melanoma 2) and NLRP3 (NOD-like receptor protein 3) inflammasome signaling pathways and increased Klotho protein levels. Furthermore, immunofluorescence assays demonstrated that the application of calpeptin effectively inhibited Calpain 1 activation and gasdermin D (GSDMD) cleavage in the renal tubules of IR mice. Taken together, our both in vivo and in vitro experiments suggest that calpeptin conveyed reno-protection in AKI might be mediated by the inhibition of AIM2 inflammasome activation and upregulation of Klotho protein. As such, we provide new evidence that Calpain 1 and 2 activation may be closely associated with the pathogenesis of clinical AKI. The calpain-mediated AIM2 inflammasome signaling pathway and distinct interaction between calpain and Klotho may provide a potential novel preventative and therapeutic target for acute kidney injury.

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Publisher

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259.

Transient and persistent acute kidney injury phenotypes following the Norwood operation: a retrospective study.
Gist K.M., Borasino S., Soohoo M., Soranno D.E., Mack E., Hock K.M., Rahman A.K.M.F., Brinton J.T., Basu R.K., Alten J.A.
Embase
Cardiology in the Young. 32(4) (pp 564-571), 2022. Date of Publication: 08 Apr 2022.
[Article]
AN: 635451576
Background: Acute kidney injury is a common complication following the Norwood operation. Most neonatal studies report acute kidney injury peaking within the first 48 hours after cardiac surgery. The aim of this study was to evaluate if persistent acute kidney injury (>48 postoperative hours) after the Norwood operation was associated with clinically relevant outcomes.
Method(s): Two-centre retrospective study among neonates undergoing the Norwood operation. Acute kidney injury was initially identified as developing within the first 48 hours after cardiac surgery and stratified into transient (<=48 hours) and persistent (>48 hours) using the neonatal modification of the Kidney Disease: Improving Global Outcomes serum creatinine criteria. Severe was defined as stage >=2. Primary and secondary outcomes were mortality and duration of ventilation and hospital length of stay.
Result(s): One hundred sixty-eight patients were included. Transient and persistent acute kidney injuries occurred in 24 and 17%, respectively. Cardiopulmonary bypass and aortic cross clamp duration, and incidence of cardiac arrest were greater among those with persistent kidney injury. Mortality was four times higher (41 versus 12%, $p < 0.001$) and mechanical ventilation duration 50 hours longer in persistent acute kidney injury patients (158 versus 107 hours; $p < 0.001$). In multivariable analysis, persistent acute kidney injury was not associated with mortality, duration of ventilation or length of stay. Severe persistent acute kidney injury was associated with a 59% increase in expected ventilation duration (aIRR:1.59, 95% CI:1.16, 2.18; $p = 0.004$).
Conclusion(s): Future large studies are needed to determine if risk factors and outcomes change by delineating acute kidney injury into discrete timing phenotypes.

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Publisher
Cambridge University Press
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260.

Early post-operative P V-A CO 2 /C A-V O 2 predicts subsequent acute kidney injury after complete repair of tetralogy of Fallot.
Xu Y., Zhu X., Xu L., Li Z.
Embase
Cardiology in the Young. 32(4) (pp 558-563), 2022. Date of Publication: 02 Apr 2022.
[Article]
AN: 635438651
Background: Acute kidney injury is a severe complication following complete repair of tetralogy of Fallot. Anaerobic metabolism is believed to contribute to the development of acute kidney injury. The ratio of central venous to arterial carbon dioxide tension to arterio-venous oxygen content (PV-ACO2/CA-VO2) has been proposed as a surrogate for respiratory quotient and an indicator of tissue oxygenation. We hypothesised that a small increase of PV-ACO2/CA-VO2 might have superior discrimination ability in subsequent acute kidney injury prediction.
Method(s): This study is retrospective and single-centre design study. The study population consisted of 61 children with tetralogy of Fallot that underwent a complete surgical repair between July 2017 and January 2021. Baseline characteristics and intra-operative parameters were collected through a retrospective chart review. PV-ACO2/CA-VO2 was collected within 12 hours of surgical completion. Acute kidney injury was defined according to the criteria established by the Kidney Disease: Improving Global Outcomes group. Univariate and logistic regression analyses were performed to determine risk factors for acute kidney injury.
Result(s): Of the 61 patients, 20 (32.8%) developed acute kidney injury. Multivariate logistic analyses showed that age, height, haematocrit, and Pv-aCO2/Ca-vO2 were independently associated with the development of acute kidney injury. The addition of Pv-aCO2/Ca-vO2 to the model significantly increased model discrimination [AUROC 0.939 (95% CI 0.894-0.984) and AUROC 0.922 (95% CI 0.869-0.975), respectively].
Conclusion(s): The increase of PV-ACO2/CA-VO2 could improve the predictive ability for subsequent development of acute kidney injury in children with tetralogy of Fallot.

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Publisher
Cambridge University Press
Year of Publication
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261.

A meta-analysis of pharmacological treatments for preventing acute renal injury after juvenile heart surgery.
Saeed H., Abdelrahim M.E.A.
Embase
Progress in Pediatric Cardiology. 67 (no pagination), 2022. Article Number: 101573. Date of Publication: December 2022.
[Review]
AN: 2020853388
Background: Children who have had heart surgery frequently develop an acute renal injury, which complicates postoperative care and is associated with a high mortality rate. Several pharmacological interventions are introduced for preventing postoperative renal dysfunction. Aim of review: The current meta-analysis aims to evaluate the effectiveness of pharmacological interventions in preventing postoperative renal dysfunction after congenital heart surgery in pediatric subjects. Key scientific concepts of review: A systematic literature search up to July 2021 was performed and 20 studies included 2612 subjects with congenital heart surgery at the start of the study; 1527 of them were administered pharmacological interventions and 1070 were placebo. The odds ratio (OR) with 95 % confidence intervals (CIs) was calculated to assess the effects of pharmacological interventions compared to placebo on preventing postoperative renal dysfunction after congenital heart surgery in pediatric subjects using the dichotomous method with a random or fixed-effect model. Pharmacological interventions had significantly lower postoperative renal dysfunction after congenital heart surgery in pediatric subjects when using dexmedetomidine (OR, 0.44; 95 % CI, 0.28-0.68, p < 0.001), and compared to placebo. However, pharmacological interventions had no significant effect on postoperative renal dysfunction after congenital heart surgery in pediatric subjects when using corticosteroids (OR, 0.86; 95 % CI, 0.60-1.25, p = 0.44), fenoldopam (OR, 0.47; 95 % CI, 0.22-1.02, p = 0.06), and aminophylline (OR, 0.72; 95 % CI, 0.22-2.33, p = 0.58) compared to placebo. Dexmedetomidine may reduce postoperative renal impairment after congenital heart surgery in children compared to placebo. Pediatric corticosteroids, fenoldopam, and aminophylline did not affect postoperative renal impairment after congenital heart surgery compared to placebo. Additional research is needed to confirm these results.

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262.

INCIDENCE AND OUTCOME OF ACUTE KIDNEY INJURY IN CHILDREN ADMITTED IN PEDIATRIC INTENSIVE CARE UNIT.
Harsha, Mevundi G.N.
Embase

International Journal of Academic Medicine and Pharmacy. 4(4) (pp 296-299), 2022. Date of Publication: 2022.
[Article]
AN: 2020755582
Background: An acute decline in renal function is often secondary to an injury that causes functional or structural changes in the kidneys. The objective is to determine the incidence and outcome of AKI in children admitted in PICU.
Material(s) and Method(s): This study was carried in patients age of 1 month to 18 years admitted in the PICU tertiary care.
Result(s): rate of new pts of AKI was 6.9%. There was no difference of age among AKI and Non-AKI study participants (P>0.05). But more cases are reported in the lower age. 63.8% cases were observed in 3rd stage, followed by the 2nd stage 14(20.3%) and 15.9% cases were seen 1st stage. There was no statistical significant difference of common etiology of pneumonia among AKI and Non-AKI groups. (P<0.05) The study reveal that higher the stages the percentage of improvement was lower and mortality was higher. The case fatality rate of AKI was 34.8%.
Conclusion(s): The mean +/- SD of age of boys and girls were 4.56 +/- 3.84 and 4.49 +/- 4.01 respectively. Maximum number of AKI patients were in Stage 3 (p < 0.001). The higher the stages of AKI, the higher were the risk of mortality (p < 0.001).

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Publisher
Necati Ozpinar
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263.

Prevalence and risk factors of trimethoprim/sulfamethoxazole-related acute kidney injury in pediatric patients: an observational study from a public database.
Ju M., Zheng M., Yuan J., Lin D., Qian Y.
Embase
Translational Pediatrics. 11(8) (pp 1285-1291), 2022. Date of Publication: August 2022.
[Article]
AN: 2020555386
Background: Trimethoprim/sulfamethoxazole (TMP/SMZ) is widely used in various clinical settings. Studies have revealed that it may cause acute kidney injury (AKI) in adults. However, the correlation between the use of TMP/SMZ and renal injury in pediatric patients is still unclear. This study aimed to identify the impact of TMP/SMZ on the occurrence of AKI in children.
Method(s): A retrospective observational study was conducted using data of patients treated with TMP/SMZ from the Paediatric Intensive Care clinical database. A newly developed criterion was used for the diagnosis of AKI, and univariate and multiple logistic regression analyses were performed to identify the risk factors of TMP/SMZ-related renal injury.
Result(s): A total of 113 patients were included. The prevalence of AKI was 21.2% (24/113). Univariate analysis indicated that the AKI group showed significantly higher baseline serum creatinine level (46.00 vs. 37.00 mumol/L; P=0.034) and in-hospital mortality rate [29.2% (7/24) vs. 9.0% (8/89); P=0.01] than that of the non-AKI group. Multivariate analysis revealed that the

occurrence of AKI was significantly associated with increased baseline serum creatinine level [odds ratio (OR) =1.029; 95% CI: 1.006-1.053; P=0.014] and concurrent use of vancomycin (OR =5.349; 95% CI: 1.381-20.714; P=0.015). A proportion of 79.2% of patients (19/24) developed AKI within the first 10 days of TMP/SMZ use.
Conclusion(s): Elevated baseline serum creatinine level (>=40.25 mumol/L) and concurrent use of vancomycin were associated with the development of AKI in young patients. Further large multi-center prospective studies are necessary to confirm these relationships and validate their clinical significance.

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Publisher
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264.

Neutrophil gelatinase-associated lipocalin (NGAL) in kidney injury - A systematic review.
Marakala V.
Embase
Clinica Chimica Acta. 536 (pp 135-141), 2022. Date of Publication: 01 Nov 2022.
[Review]
AN: 2020435410
Background: Neutrophil Gelatinase Associated Lipocalin (NGAL) is a secretory protein of neutrophils that can be found both in plasma and urine. Previous works have demonstrated a valuable marker for the early detection of acute kidney injury. In this systematic review, we aimed to assess whether NGAL could be helpful in the diagnosis and prognosis of systemic diseases with kidney involvement.
Method(s): MEDLINE, PubMed, and EMBASE databases were searched for NGAL, described as a human biomarker for diseases (total: 1690). Specifically, included studies describing the use of NGAL for determining kidney injury outcomes and other conditions associated with kidney dysfunction, including cardiovascular diseases, cardiac surgery, and critically ill systemic disorders.
Result(s): A total of 24 validated studies were included in the systemic review after applying the exclusion criteria. In all these studies, NGAL appeared to have a predictive value irrespective of age, from newborn to 78 years. The results indicate that NGAL levels can accurately predict the outcome and severity of acute kidney injury occur in several disease processes, including contrast-induced AKI during cardiac surgery, kidney transplant rejection, chronic heart failure, and systemic inflammation in critically ill patients, even though the significance of NGAL is highly variable across studies. Very high plasma NGAL levels were observed in the patients before the acute rejection of the kidney, indicating the prognostic potential of the NGAL. Specifically, the assays conducted before 72 hrs provided a significant predictive value.

Conclusion(s): Urinary and serum NGAL appears to be an independent predictor of not only kidney complications but also cardiovascular and liver-related diseases. The kidney is also involved in pathogenesis.

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Publisher
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Year of Publication
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265.

Choline supplementation attenuates experimental sepsis-associated acute kidney injury.
Hasson D.C., Watanabe-Chailland M., Romick-Rosendale L., Koterba A., Miner D.S., Lahni P., Ma Q., Goldstein S.L., Devarajan P., Standage S.W.
Embase
American Journal of Physiology - Renal Physiology. 323(3) (pp F255-F271), 2022. Date of Publication: September 2022.
[Article]
AN: 2020425181
Acute kidney injury (AKI) is common in critically ill patients, and sepsis is its leading cause. Sepsis-associated AKI (SA-AKI) causes greater morbidity and mortality than other AKI etiologies, yet the underlying mechanisms are incompletely understood. Metabolomic technologies can characterize cellular energy derangements, but few discovery analyses have evaluated the metabolomic profile of SA-AKI. To identify metabolic derangements amenable to therapeutic intervention, we assessed plasma and urine metabolites in septic mice and critically ill children and compared them by AKI status. Metabolites related to choline and central carbon metabolism were differentially abundant in SA-AKI in both mice and humans. Gene expression of enzymes related to choline metabolism was altered in the kidneys and liver of mice with SA-AKI. Treatment with intraperitoneal choline improved renal function in septic mice. Because pediatric patients with sepsis displayed similar metabolomic profiles to septic mice, choline supplementation may attenuate pediatric septic AKI. NEW & NOTEWORTHY Altered choline metabolism plays a role in both human and murine sepsis-associated acute kidney injury (SA-AKI), and choline administration in experimental SA-AKI improved renal function. These findings indicate that 1) mouse models can help interrogate clinically relevant mechanisms and 2) choline supplementation may ameliorate human SA-AKI. Future research will investigate clinically the impact of choline supplementation on human renal function in sepsis and, using model systems, how choline mediates its effects.

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Publisher
American Physiological Society
Year of Publication
2022

266.

Outcome of Peritoneal Dialysis in Children with Acute Kidney Injury.
Zakai F.A., Khan M., Naeem B., Ashfaq M., Shaikh M., Bai S.
Embase
Medical Forum Monthly. 33(7) (pp 2-6), 2022. Date of Publication: July 2022.
[Article]
AN: 2020378701
Objective: To analyze the outcomes of PD in AKI cases among the pediatric population at a public sector tertiary care institute in Karachi, Pakistan.
Study Design: Longitudinal study Place and Duration of Study: This study was conducted at the National Institute of Child Health, Karachi from May 2021 to March 2022.
Material(s) and Method(s): Acute kidney injury was considered when creatinine clearance was decreased by 50% based on the modified pediatric RIFLE. During the study period, patients were observed for the development of catheter-related complications and mortality.
Result(s): A total of 160 patients with AKI underwent PD during the study. The mean age of patients was 14 (7 - 48) months and the majority of the patients were males (56.3%) at baseline mean serum creatinine, phosphate, calcium and sodium levels were 5.2 +/- 0.23 mg/dL, 5.7 +/- 1.9 mg/dL, 7.5+/-1.8mg/dL and 130+/-18.5 respectively. The most frequent cause of AKI was sepsis (26.9%). During the hospital stay, 97(60.6%) patients developed complications. The most frequent complication was peritonitis (23.8%) followed by catheter displacement (13.1%), catheter obstruction (10%), bleeding (8.1%), catheter leakage (4.4%), and exit site cellulitis (1.3%). In-hospital mortality was seen in 68(42.5%) patients. Frequency of PCKD (p=0.020), shock sign (p<0.001), febrile patients (p=0.021), sepsis (p=0.002), development of complications (p=0.004), peritonitis (p<0.001) and inotrope support (p<0.001) was significantly different among survivors and non-survivors. Serum creatinine (p=0.021) and phosphate (p=0.016) were significantly raised among non-survivors.
Conclusion(s): The present study demonstrated that the modality of peritoneal dialysis can be adopted in resource-limited settings. However, a multidisciplinary care model should be adopted for the prevention of complications associated with peritoneal dialysis catheters.

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Publisher
Medical Forum Monthly

Year of Publication
2022

267.

Incidence and Risk Factors for Acute Kidney Injury in Critically ill Neonates Admitted in Neonatal Intensive Care Unit.
Zakai F.A., Khan M., Shaikh M., Hanif M., Ashfaq M., Ahmed S.H.
Embase
Medical Forum Monthly. 33(6) (pp 38-41), 2022. Date of Publication: June 2022.
[Article]
AN: 2020378685
Objective: To find the incidence and risk factors of AKI among the critically ill neonates in a public sector tertiary care hospital in Karachi.
Study Design: prospective study Place and Duration of Study: This study was conducted at the public sector Hospital National Institute of Child Health, Karachi, Pakistan from January, 2022 to April, 2022.
Material(s) and Method(s): 300 neonates admitted to NICU were carefully monitored for morbidities that can lead to AKI. 95% confidence interval was calculated, considering a p-value <=0.05 as significant.
Result(s): Out of 300 neonates, 80 (26.66%) developed AKI. 59% were full term. Mean age with and without AKI at presentation was 7+3.83 and 4+/-1.99 days which was statistically significant (p=0.001). The BW ranged from 1200 to 3300 grams with a mean +/-SD of 2120 +/- 420 grams. The most common risk factors were sepsis (67.5%), nephrotoxic drugs (55%), and mechanical ventilation (51.3 %) followed by perinatal asphyxia (47.5%). The mortality rate was higher in patients with mechanical ventilation (P< 0.001), sepsis (P=0.008), nephrotoxic agent use (P=0.008) and birth asphyxia (p=0.001).
Conclusion(s): This study suggested that early recognition and better management of risk factors like sepsis, tetanus, nephrotoxic drugs, mechanical ventilation and birth asphyxia can improve the outcomes.

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Publisher
Medical Forum Monthly
Year of Publication
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268.

Association between nitric oxide synthase 3 genetic variant and acute kidney injury following pediatric cardiac surgery.
Kikano S., Breeyear J., Aka I., Edwards T.L., Van Driest S.L., Kannankeril P.J.

Embase
American Heart Journal. 254 (pp 57-65), 2022. Date of Publication: December 2022.
[Article]
AN: 2020102310
Background: Acute kidney injury (AKI) complicates 30% to 50% of cardiac surgeries in pediatric patients. Genetic variants that affect renal blood flow and inflammation have been associated with AKI after cardiac surgery in diverse populations of adults but have not been studied in children. The objective of this study is to test the hypothesis that common candidate genetic variants are associated with AKI following pediatric cardiac surgery.
Method(s): This is a retrospective cohort study at a single tertiary referral children's hospital of 2,062 individual patients undergoing surgery for congenital heart disease from September 2007 to July 2020. Pre-specified variants in candidate genes (AGTR1, APOE, IL6, NOS3, and TNF) were chosen. AKI was defined using Kidney Disease: Improving Global Outcomes serum creatinine criteria in the first week following surgery. Outcomes were analyzed by univariate and multivariable analysis of demographic, clinical, and genetic factors.
Result(s): The study population had median age of 6 (interquartile range [IQR], 1-53) months, 759 (37%) of whom met criteria for postoperative AKI. In unadjusted analyses of each genetic variant, only NOS3 (rs2070744) was associated with lower risk for AKI (OR 0.75, 95% CI 0.62-0.9, P =.002). In logistic regression analyses adjusting for body surface area, previously identified genetic syndrome, Society of Thoracic Surgeons-European Association for Cardio-Thoracic Surgery (STAT) score, cardiopulmonary bypass time, and nephrotoxic medication exposure, the NOS3 variant remained protective against AKI (OR 0.7, 95% CI 0.58-0.85, P<.001).
Conclusion(s): A common variant in NOS3 is associated with decreased incidence of AKI in children undergoing cardiac surgery. Further analysis of the genetic contributions to postoperative AKI may help identify individual risk in the pediatric population.

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Publisher
Elsevier Inc.
Year of Publication
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269.

Urine leaks in children sustaining blunt renal trauma.
Ghani M.O.A., Snyder E., Xu M.C., McKay K.G., Foster J., Tong C., Clayton D.B., Greeno A., Azam B., Zhao S., Hernanz-Schulman M., Lovvorn H.N.
Embase
Journal of Trauma and Acute Care Surgery. 93(3) (pp 376-384), 2022. Date of Publication: 01 Sep 2022.
[Article]
AN: 2019938401

BACKGROUND Few consensus statements exist to guide the timely diagnosis and management of urine leaks in children sustaining blunt renal trauma (BRT). The aims of this study were to characterize kidney injuries among children who sustain BRT, evaluate risk factors for urine leaks, and describe the negative impact of urinoma on patient outcomes and resource consumption. METHODS A retrospective review was performed of 347 patients, younger than 19 years, who presented with BRT to a single American College of Surgeons-verified Level I Pediatric Trauma Center between 2005 and 2020. Frequency of and risk factors for urine leak after BRT were evaluated, and impact on patient outcomes and resource utilization were analyzed. RESULTS In total, 44 (12.7%) patients developed urine leaks, which exclusively presented among injury Grade 3 (n = 5; 11.4%), Grade 4 (n = 27; 61.4%), and Grade 5 (n = 12; 27.3%). A minority of urine leaks (n = 20; 45.5%) were discovered on presenting CT scan but all within 3 days. Kidney-specific operative procedures (nephrectomy, cystoscopy with J/ureteral stent, percutaneous nephrostomy) were more common among urine leak patients (n = 17; 38.6%) compared with patients without urine leaks (n = 3; 1.0%; p = 0.001). Patients with urine leak had more frequent febrile episodes during hospital stay (n = 24; 54.5%; p = 0.001) and showed increased overall 90-day readmission rates (n = 14; 33.3%; p < 0.001). Independent risk factors that associated with urine leak were higher grade (odds ratio [OR], 7.9; 95% confidence interval [CI], 2.6-24.3; p < 0.001), upper-lateral quadrant injuries (OR, 2.9; 95% CI, 1.2-7.1; p = 0.02), and isolated BRT (OR, 2.6; 95% CI, 1.0-6.5; p = 0.04). CONCLUSION In a large cohort of children sustaining BRT, urine leaks result in considerable morbidity, including more febrile episodes, greater 90-day readmission rates, and increased operative or image-guided procedures. This study is the first to examine the relationship between kidney quadrant injury and urine leaks. Higher grade (Grade 4-5) injury, upper lateral quadrant location, and isolated BRT were independently predictive of urine leaks. LEVEL OF EVIDENCE Therapeutic/Care Management; Level III.

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Publisher
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270.

Acute Kidney Injury With a Miniaturized Extracorporeal Circuit for Neonatal Cardiopulmonary Bypass.
Boettcher W., O'Brien B., Photiadis J., Habazettl H., Eggert-Doktor D.
Embase
Journal of Cardiothoracic and Vascular Anesthesia. 36(11) (pp 4045-4053), 2022. Date of Publication: November 2022.
[Article]

AN: 2019879575
Objectives: The objectives of this study were to evaluate the incidence and to identify risk factors for acute kidney injury (AKI) in neonates undergoing cardiopulmonary bypass (CPB) with a miniaturized bloodless primed extracorporeal circuit.
Design(s): A retrospective cohort study.
Setting(s): A single-center, tertiary academic hospital.
Participant(s): Data of 462 patients were analyzed.
Intervention(s): With a retrospective analysis of neonates undergoing CPB with bloodless priming between May 2007 and August 2019, the incidence of AKI was determined according to the neonatal Kidney Disease: Improving Global Outcomes classification. Multivariate logistic regression analyses were performed to determine risk factors for AKI.
Measurements and Main Results: The incidence of AKI was 41.1% (190 of 462); 30.3% (n = 140) had mild stage 1, 6.5% (n = 30) reached stage 2, and 4.3% (n = 20) reached stage 3. Multivariate logistic regression showed that degree of hypothermia (p = 0.05), duration of CPB (p = 0.03), and lower baseline serum creatinine (p < 0.001) were associated independently with AKI. In the authors' patient population, patients without transfusion of donor-derived erythrocytes had a lower incidence of AKI (p = 0.003). AKI stages 2 and 3 were associated with longer duration of mechanical ventilation (p = 0.008) and increased length of stay in the intensive care unit (p = 0.03).
Conclusion(s): With a miniaturized CPB circuit and bloodless priming, the AKI incidence was well within the range consistent with previously reported studies from other institutions.

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Publisher
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271.

Diagnostic Performance of the Acute Kidney Injury Baseline Creatinine Equations in Children and Adolescents with Type 1 Diabetes Mellitus Onset.
Palma P.L., Guarino S., Di Sessa A., Rivetti G., Barlaba A., Scaglione F., Capalbo D., Papparella A., Miraglia del Giudice E., Marzuillo P.
Embase
Diagnostics. 12(10) (no pagination), 2022. Article Number: 2268. Date of Publication: October 2022.
[Article]
AN: 2019785071

Three new equations for calculating the estimated basal serum creatinine (ebSCr) in hospitalized children have been developed: the simplified acute kidney injury (AKI) baseline creatinine (ABC) equation which considered only age in the formula; the equation including age and minimum creatinine (Crmin) within the initial 72 h from hospitalization (ABC-cr); and the equation including Crmin and height, weight, and age as squared values (ABC-advanced). We aimed to test the diagnostic performance of the ABC, ABC-cr and ABC-advanced equations in diagnosing AKI in 163 prospectively enrolled children with type 1 diabetes mellitus (T1DM) onset. We considered measured basal serum creatinine (mbSCr), the creatinine measured 14 days after T1DM onset. AKI was defined by the highest/basal serum creatine (HC/BC) ratio > 1.5. On the basis of the mbSCr, the AKI was diagnosed in 66/163 (40.5%) patients. This prevalence was lower than the prevalence of AKI diagnosed on the basis of ABC ebSCr (122/163 patients; 74.8%) ($p < 0.001$) and similar to the prevalence of AKI diagnosed on the basis of ABC-cr ebSCr (72/163 patients; 44.2%) ($p = 0.5$) and to the prevalence of AKI diagnosed on the basis of ABC-advanced ebSCr (69/163; 42.3%) ($p = 0.73$). AKI determined using ABC ebSCr, ABC-cr ebSCr and ABC-advanced ebSCr showed, respectively, 63.5% (kappa = 0.35; $p < 0.001$), 87.7% (kappa = 0.75; $p < 0.001$), and 87.1% (kappa = 0.74; $p < 0.001$) agreement with AKI determined using mbSCr. Using the HC/BC ratio calculated on the basis of mbSCr as gold standard, for Bland-Altman plots the HC/BC ratio calculated on the basis of ABC formula presented higher bias and wider limits of agreement compared with the HC/BC ratio calculated on the basis of ABC-cr and ABC-advanced formulas. In the receiver-operating characteristics (ROC) curve analysis the HC/BC ratio calculated on the basis of ABC ebSCr presented lower area under the ROC curve (AUROC) (AUROC = 0.89; 95%CI: 0.85-0.95; $p < 0.001$) compared with HC/BC ratio calculated on the basis of ABC-cr (AUROC = 0.94; 95%CI: 0.91-0.98; $p < 0.001$) or ABC-advanced ebSCr (AUROC = 0.914; 95%CI: 0.91-0.97; $p < 0.001$). In both Bland-Altman plots and ROC curve analysis, the ABC-cr and ABC-advanced formulas performed similarly. In conclusion, the ABC-cr and ABC-advanced formulas present very good diagnostic performance toward AKI identification in a population of children with T1DM onset.

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272.

Clinical application of regional citrate anticoagulation for continuous renal replacement therapy in children with liver injury.
Hu F., Sun Y., Bai K., Liu C.
Embase

Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 847443. Date of Publication: 11 Oct 2022.
[Article]
AN: 2019731551
Background: Regional citrate anticoagulation (RCA) is increasingly used for continuous renal replacement therapy (CRRT) in children, but it is rarely used in children with liver injury, especially liver failure (LF). We analyze this issue through the following research.
Method(s): We retrospectively analyzed 75 children with liver injury who underwent RCA-CRRT in the Pediatric Intensive Care Unit (PICU) of Children's Hospital of Chongqing Medical University. The patients were divided into the LF group and liver dysfunction (LD) group. The two groups were compared to evaluate the clinical safety and efficacy of RCA-CRRT in children with liver injury and to explore RCA-CRRT management strategies, in terms of the following indicators: the incidence of bleeding, clotting, citrate accumulation (CA), acid-base imbalance, and electrolyte disturbance, as well as filter lifespans, changes in biochemical indicators, and CRRT parameters adjustment.
Result(s): The total incidence of CA (TCA) and persistent CA (PCA) in the LF group were significantly higher than those in the LD group (38.6 vs. 16.2%, $p < 0.001$; 8.4 vs. 1.5%, $p < 0.001$); and the CA incidence was significantly reduced after adjustment both in the LF (38.6 vs. 8.4%, $p < 0.001$) and LD groups (16.2 vs. 1.5%, $p < 0.001$). The incidence of hypocalcemia was significantly higher in the LF group than in the LD group either before (34.9 vs. 8.8%, $p < 0.001$) or after treatment (12.0 vs. 0%, $p < 0.001$). The speed of the blood and citrate pumps after adjustment was lower than the initial setting values in both the LF and LD groups. The dialysis speed plus replacement speed were higher than the initial settings parameters.
Conclusion(s): For children undergoing RCA-CRRT, the risks of CA and hypocalcemia are significantly higher in children with liver failure than those with liver dysfunction, but through the proper adjustment of the protocol, RCA-CRRT can still be safely and effectively approached for children with LD and even LF.

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Publisher
Frontiers Media S.A.
Year of Publication
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273.

The value of urinary interleukin-18 in predicting acute kidney injury: a systematic review and meta-analysis.
Qin Z., Li H., Jiao P., Jiang L., Geng J., Yang Q., Liao R., Su B.
Embase
Renal Failure. 44(1) (pp 1717-1731), 2022. Date of Publication: 2022.
[Article]
AN: 2019658396
Aims: The aim of this study was to systematically review relevant studies to evaluate the value of urinary interleukin-18 (uIL-18) in predicting acute kidney injury (AKI).

Method(s): A comprehensive search of PubMed, Medline, Embase, and Cochrane Library was conducted for literature published up to 1 August 2022. Quality Assessment Tool for Diagnostic Accuracy Studies-2 (QUADAS-2) was applied to assess the literature quality. Then, relevant data were extracted from each eligible study and a random-effects regression model was utilized to pool sensitivity, specificity, and construct summary receiver operating characteristic (SROC) and area under curve (AUC).
Result(s): Twenty-six studies with 7183 patients were enrolled and relevant information was extracted. The estimated sensitivity and specificity of uIL-18 in the diagnosis of AKI were 0.64 (95% confidence interval (CI): 0.54-0.73) and 0.77 (95%CI: 0.71-0.83), respectively. The pooled diagnostic odds ratio (DOR) was 6.08 (95%CI: 3.63-10.18), and the AUC of uIL-18 in predicting AKI was 0.78 (95%CI: 0.74-0.81). Subgroup analysis showed that uIL-18 in pediatric patients was more effective in predicting AKI than in adults (DOR: 7.33 versus 5.75; AUC: 0.81 versus 0.77).
Conclusion(s): Urinary IL-18 could be a relatively good biomarker with moderate predictive value for AKI, especially in pediatric patients. However, further research and clinical settings are still needed to validate our findings.

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Year of Publication
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274.

Drug-induced kidney injury in Chinese critically ill pediatric patients.
Hu B., Ye L., Li T., Feng Z., Huang L., He L., Tan W., Yang G., Li Z., Guo C.
Embase
Frontiers in Pharmacology. 13 (no pagination), 2022. Article Number: 993923. Date of Publication: 26 Sep 2022.
[Article]
AN: 2019463813
Background: Drug-induced acute kidney injury (DIKI) is a common adverse drug reaction event but is less known in pediatric patients. The study explored the DIKI in Chinese pediatric patients using the Pediatric Intensive Care database (PIC).
Method(s): We screened pediatric patients with acute kidney injury (AKI) using the KDIGO criteria from the PIC and then assessed the relationship between their drugs and DIKI using the Naranjo scale. For the fifteen frequently used DIKI-suspected drugs, we divided patients into drug-exposed and non-exposed groups, using the outcome of whether DIKI was presented or not. Propensity score matching (PSM) was used to control for the effects of four confounders, age,

gender, length of hospital stay, and major diagnosis. Unconditional logistic regression was used to identify statistically significant differences between the two groups.
Result(s): A total of 238 drugs were used 1,863 times by the 81 patients with DIKI during their hospital stay. After screening the Naranjo scale to identify the top 15 suspected DIKI drugs with a high frequency of use, we found that furosemide injection (p = 0.001), midazolam injection (p = 0.001), 20% albumin prepared from human plasma injection (p = 0.004), fentanyl citrate injection (p = 0.001), compound glycyrrhizin injection (p = 0.026), vancomycin hydrochloride for intravenous (p = 0.010), and milrinone lactate injection (p = 0.009) were associated with DIKI.
Conclusion(s): In critically ill pediatric patients, DIKI is more likely to occur after using furosemide injection, midazolam injection, 20% albumin prepared from human plasma injection, fentanyl citrate injection, compound glycyrrhizin injection, vancomycin hydrochloride for intravenous, milrinone lactate injection.

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Publisher
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Year of Publication
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275.

Detection of pediatric drug-induced kidney injury signals using a hospital electronic medical record database.
Yu Y., Nie X., Zhao Y., Cao W., Xie Y., Peng X., Wang X.
Embase
Frontiers in Pharmacology. 13 (no pagination), 2022. Article Number: 957980. Date of Publication: 23 Sep 2022.
[Article]
AN: 2019431519
Background: Drug-induced kidney injury (DIKI) is one of the most common complications in clinical practice. Detection signals through post-marketing approaches are of great value in preventing DIKI in pediatric patients. This study aimed to propose a quantitative algorithm to detect DIKI signals in children using an electronic health record (EHR) database.
Method(s): In this study, 12 years of medical data collected from a constructed data warehouse were analyzed, which contained 575,965 records of inpatients from 1 January 2009 to 31 December 2020. Eligible participants included inpatients aged 28 days to 18 years old. A two-stage procedure was adopted to detect DIKI signals: 1) stage 1: the suspected drugs potentially associated with DIKI were screened by calculating the crude incidence of DIKI events; and 2) stage 2: the associations between suspected drugs and DIKI were identified in the propensity

score-matched retrospective cohorts. Unconditional logistic regression was used to analyze the difference in the incidence of DIKI events and to estimate the odds ratio (OR) and 95% confidence interval (CI). Potentially new signals were distinguished from already known associations concerning DIKI by manually reviewing the published literature and drug instructions.
Result(s): Nine suspected drugs were initially screened from a total of 652 drugs. Six drugs, including diazepam (OR = 1.61, 95%CI: 1.43-1.80), omeprazole (OR = 1.35, 95%CI: 1.17-1.54), ondansetron (OR = 1.49, 95%CI: 1.36-1.63), methotrexate (OR = 1.36, 95%CI: 1.25-1.47), creatine phosphate sodium (OR = 1.13, 95%CI: 1.05-1.22), and cytarabine (OR = 1.17, 95%CI: 1.06-1.28), were demonstrated to be associated with DIKI as positive signals. The remaining three drugs, including vitamin K1 (OR = 1.06, 95%CI: 0.89-1.27), cefamandole (OR = 1.07, 95%CI: 0.94-1.21), and ibuprofen (OR = 1.01, 95%CI: 0.94-1.09), were found not to be associated with DIKI. Of these, creatine phosphate sodium was considered to be a possible new DIKI signal as it had not been reported in both adults and children previously. Moreover, three other drugs, namely, diazepam, omeprazole, and ondansetron, were shown to be new potential signals in pediatrics.
Conclusion(s): A two-step quantitative procedure to actively explore DIKI signals using real-world data (RWD) was developed. Our findings highlight the potential of EHRs to complement traditional spontaneous reporting systems (SRS) for drug safety signal detection in a pediatric setting.

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276.

Olfactomedin 4 as a novel loop of Henle-specific acute kidney injury biomarker.
Hasson D.C., Krallman K., VanDenHeuvel K., Menon S., Piraino G., Devarajan P., Goldstein S.L., Alder M.
Embase
Physiological Reports. 10(18) (no pagination), 2022. Article Number: e15453. Date of Publication: September 2022.
[Article]
AN: 2019281891
Acute kidney injury (AKI) is associated with morbidity and mortality. Urinary biomarkers may disentangle its clinical heterogeneity. Olfactomedin 4 (OLFM4) is a secreted glycoprotein expressed in stressed neutrophils and epithelial cells. In septic mice, OLFM4 expression localized to the kidney's loop of Henle (LOH) and was detectable in the urine. We hypothesized that urine OLFM4 (uOLFM4) will be increased in patients with AKI and sepsis. Urine from critically ill

pediatric patients was obtained from a prospective study based on AKI and sepsis status. uOLFM4 was quantified with a Luminex immunoassay. AKI was defined by KDIGO severe criteria. Sepsis status was extracted from the medical record based on admission diagnosis. Immunofluorescence on pediatric kidney biopsies was performed with NKCC2, uromodulin and OLFM4 specific antibodies. Eight patients had no sepsis, no AKI; 7 had no sepsis but did have AKI; 10 had sepsis, no AKI; 11 had sepsis and AKI. Patients with AKI had increased uOLFM4 compared to no/stage 1 AKI (p = 0.044). Those with sepsis had increased uOLFM4 compared to no sepsis (p = 0.026). uOLFM4 and NGAL were correlated (r2 0.59, 95% CI 0.304-0.773, p = 0.002), but some patients had high uOLFM4 and low NGAL, and vice versa. Immunofluorescence on kidney biopsies demonstrated OLFM4 colocalization with NKCC2 and uromodulin, suggesting expression in the thick ascending LOH (TALH). We conclude that AKI and sepsis are associated with increased uOLFM4. uOLFM4 and NGAL correlated in many patients, but was poor in others, suggesting these markers may differentiate AKI subgroups. Given OLFM4 colocalization to human TALH, we propose OLFM4 may be a LOH-specific AKI biomarker.

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American Physiological Society
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277.

Urinary NGAL, IGFBP-7, and TIMP-2: novel biomarkers to predict contrast medium-induced acute kidney injury in children.
Sun Q., Kang Z., Li Z., Xun M.
Embase
Renal Failure. 44(1) (pp 1201-1206), 2022. Date of Publication: 2022.
[Article]
AN: 2019147047
Background: Serum creatinine (SCr) is unreliable in detecting acute changes in kidney function. Early recognition of contrast-induced acute kidney injury (CI-AKI) can provide better opportunities for preventive interventions. Therefore, the purpose of this study is to examine the value of the combined detection of urinary neutrophil gelatinase-associated lipocalin (NGAL), insulin-like

growth factor binding protein-7 (IGFBP-7), and tissue inhibitor of metalloproteinase-2 (TIMP-2) in the early diagnosis of children with CI-AKI.
Method(s): A prospective, single-center clinical trial was performed and included 172 children aged 0-18 years. The dynamic changes of urinary NGAL, IGFBP-7, and TIMP-2 levels in children with intravascular injection of contrast medium were investigated to determine whether they can diagnose CI-AKI early.
Result(s): CI-AKI occurred in 20 of 137 enrolled patients, and the incidence was 14.59%. In the CI-AKI group, urinary levels of NGAL, IGFBP-7, TIMP-2, and [IGFBP-7]*[TIMP-2] were significantly increased 2 h after angiography and remained at high levels at 6 h. Using a cutoff value of 36.274 ng/mL, the specificity was 70.0%, and the sensitivity was 68.4% for the prediction of CI-AKI, which was excellent for urinary NGAL. When both urinary IGFBP-7 and TIMP-2 were used together, urinary [IGFBP-7]*[TIMP-2] at 0.417(ng/mL)2/1000 was regarded as the cutoff value. The specificity was 80.0%, and the sensitivity was 81.2%.
Conclusion(s): NGAL, IGFBP-7, and TIMP-2 concentrations in the urine of children after receiving injections of contrast medium increased faster than SCr and had good clinical value for the early diagnosis of CI-AKI in children. The combination of IGFBP-7 and TIMP-2 was better than either analyte alone.

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Publisher
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Year of Publication
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278.

Perspectives: Neonatal acute kidney injury (AKI) in low and middle income countries (LMIC).
McCulloch M.I., Adabayeri V.M., Goka S., Khumalo T.S., Lala N., Leahy S., Ngubane-Mwandla N., Nourse P.J., Nyann B.I., Petersen K.L., Levy C.S.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 870497. Date of Publication: 31 Aug 2022.
[Article]
AN: 2019076086
Neonatal AKI (NAKI) remains a challenge in low- and middle-income countries (LMICs). In this perspective, we address issues of diagnosis and risk factors particular to less well-resourced regions. The conservative management pre-kidney replacement therapy (pre-KRT) is prioritized and challenges of KRT are described with improvised dialysis techniques also included. Special emphasis is placed on ethical and palliation principles.

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Publisher
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Year of Publication
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279.

Histomorphological patterns of various kidney lesions in nephrectomy specimens in a tertiary care hospital.
Bansal M., Sharma R., Kumar N., Rathore R.K.
Embase
European Journal of Molecular and Clinical Medicine. 9(3) (pp 10722-10727), 2022. Date of Publication: December 2022.
[Article]
AN: 2019002378
Introduction: Kidneys are one of the major organs of the human body that serve several essential functions. Kidneys are affected by various nonneoplastic and neoplastic pathological processes. Nephrectomy is a surgical procedure done for wide variety of conditions like chronic pyelonephritis, calculi, malignancy, injury etc.
Aim(s): To study the histomorphological pattern of various kidney lesions in nephrectomy specimens received in the department of pathology in our institute.
Material(s) and Method(s): This was a retrospective study carried out in department of pathology in TSM medical college Lucknow from March 2018 to April 2020. A total of 45 nephrectomy specimens received during the period were included in the study. Paraffin blocks and slides along with case records were retrieved and studied.
Result(s): Out of 45cases, 34 cases (75.5%) were benign and 11 cases (24.5) were malignant. Age ranged from 3 years to 75 years. Maximum number of cases was seen in 51-60 years of age (22%). Majority of cases were of chronic pyelonephritis (31%). Renal cell carcinoma constituted 8 cases (17.8%). Commonest variant was clear cell carcinoma. Wilms tumour was the commonest renal tumour in children.
Conclusion(s): Benign lesions of kidney outnumber the malignant lesions. Chronic pyelonephritis was the most common histopathological diagnosis. Renal Cell Carcinoma was the most common malignant lesion in adults. Clear cell variant was the commonest. Wilms tumor was the commonest renal tumor in children.

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280.

Dexmedetomidine and acute kidney injury following cardiac surgery in pediatric patients-An updated systematic review and meta-analysis.
Wang H., Zhang C., Li Y., Jia Y., Yuan S., Wang J., Yan F.
Embase
Frontiers in Cardiovascular Medicine. 9 (no pagination), 2022. Article Number: 938790. Date of Publication: 24 Aug 2022.
[Review]
AN: 2018952546
Background: Acute kidney injury (AKI) is a common postoperative complication in pediatric patients undergoing cardiac surgery and associated with poor outcomes. Dexmedetomidine has the pharmacological features of organ protection in cardiac surgery patients. The aim of this meta-analysis is to investigate the effect of dexmedetomidine infusion on the incidence of AKI after cardiac surgery in pediatric patients.
Method(s): The databases of Pubmed, Embase, and Cochrane Library were searched until April 24, 2022 following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. RevMan 5.3 was used to perform statistical analyses.
Result(s): Five relevant trials with a total of 630 patients were included. The pooled result using fixed-effects model with OR demonstrated significant difference in the incidence of AKI between patients with dexmedetomidine and placebo (OR = 0.49, 95% CI: [0.33, 0.73], I2 = 0%, p for effect = 0.0004). Subgroup analyses were performed based on congenital heart disease (CHD) types and dexmedetomidine intervention time. Pooled results did not demonstrate considerable difference in the incidence of AKI in pediatric patients receiving intraoperative (OR = 0.53, 95% CI: [0.29, 0.99], I2 = 0%, p for effect = 0.05) or postoperative dexmedetomidine infusion (OR = 0.56, 95% CI: [0.31, 1.04], p for effect = 0.07), but a significant difference in patients receiving combination of intra- and postoperative dexmedetomidine infusion (OR = 0.27, 95% CI: [0.09, 0.77], p for effect = 0.01). Besides, there was no significant difference in duration of mechanical ventilation (SMD: -0.19, 95% CI: -0.46 to 0.08, p for effect = 0.16; SMD: -0.16, 95% CI: -0.37 to 0.06, p for effect = 0.15), length of ICU (SMD: 0.02, 95% CI: -0.41 to 0.44, p for effect = 0.93) and hospital stay (SMD: 0.2, 95% CI: -0.13 to 0.54, p for effect = 0.23), and in-hospital mortality (OR = 1.26, 95% CI: 0.33-4.84, p for effect = 0.73) after surgery according to the pooled results of the secondary outcomes.
Conclusion(s): Compared to placebo, dexmedetomidine could significantly reduce the postoperative incidence of AKI in pediatric patients undergoing cardiac surgery with cardiopulmonary bypass (CPB), but the considerable difference was reflected in the pediatric patients receiving combination of intra- and postoperative dexmedetomidine infusion. Besides, there was no significant difference in duration of mechanical ventilation, length of ICU and hospital stay, or in-hospital mortality after surgery.

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Publisher
Frontiers Media S.A.

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281.

Delivering optimal renal replacement therapy to critically ill patients with acute kidney injury.
Wald R., Beaubien-Souligny W., Chanchlani R., Clark E.G., Neyra J.A., Ostermann M., Silver S.A., Vaara S., Zarbock A., Bagshaw S.M.
Embase
Intensive Care Medicine. 48(10) (pp 1368-1381), 2022. Date of Publication: October 2022. [Review]
AN: 2018947866
Critical illness is often complicated by acute kidney injury (AKI). In patients with severe AKI, renal replacement therapy (RRT) is deployed to address metabolic dysfunction and volume excess until kidney function recovers. This review is intended to provide a comprehensive update on key aspects of RRT prescription and delivery to critically ill patients. Recently completed trials have enhanced the evidence base regarding several RRT practices, most notably the timing of RRT initiation and anticoagulation for continuous therapies. Better evidence is still needed to clarify several aspects of care including optimal targets for ultrafiltration and effective strategies for RRT weaning and discontinuation.

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Clinical Trial Number
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282.

Risk assessment and prediction model of renal damage in childhood immunoglobulin A vasculitis.
Fu R., Yang M., Li Z., Kang Z., Xun M., Wang Y., Wang M., Wang X.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 967249. Date of Publication: 17 Aug 2022.
[Article]
AN: 2018867151
Objectives: To explore the risk factors for renal damage in childhood immunoglobulin A vasculitis (IgAV) within 6 months and construct a clinical model for individual risk prediction.
Method(s): We retrospectively analyzed the clinical data of 1,007 children in our hospital and 287 children in other hospitals who were diagnosed with IgAV. Approximately 70% of the cases in our hospital were randomly selected using statistical product service soltions (SPSS) software for modeling. The remaining 30% of the cases were selected for internal verification, and the other hospital's cases were reviewed for external verification. A clinical prediction model for renal damage in children with IgAV was constructed by analyzing the modeling data through single-factor and multiple-factor logistic regression analyses. Then, we assessed and verified the degree of discrimination, calibration and clinical usefulness of the model. Finally, the prediction model was rendered in the form of a nomogram.
Result(s): Age, persistent cutaneous purpura, erythrocyte distribution width, complement C3, immunoglobulin G and triglycerides were independent influencing factors of renal damage in IgAV. Based on these factors, the area under the curve (AUC) for the prediction model was 0.772; the calibration curve did not significantly deviate from the ideal curve; and the clinical decision curve was higher than two extreme lines when the prediction probability was ~15-82%. When the internal and external verification datasets were applied to the prediction model, the AUC was 0.729 and 0.750, respectively, and the Z test was compared with the modeling AUC, P > 0.05. The calibration curves fluctuated around the ideal curve, and the clinical decision curve was higher than two extreme lines when the prediction probability was 25~84% and 14~73%, respectively.
Conclusion(s): The prediction model has a good degree of discrimination, calibration and clinical usefulness. Either the internal or external verification has better clinical efficacy, indicating that the model has repeatability and portability. Clinical trial registration: www.chictr.org.cn, identifier ChiCTR2000033435.

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283.

Determinants of acute kidney injury in children with new onset type 1 diabetes: A cohort study of children aged <15 years: Auckland, New Zealand (2006-2016).
Pittman F., Di Somma H., Wong W., Prestidge C., Reed P., Gunn A.J., Jefferies C.
Embase
Endocrinology, Diabetes and Metabolism. 5(5) (no pagination), 2022. Article Number: e362. Date of Publication: September 2022.
[Article]
AN: 2018429136
Objective: Acute kidney injury (AKI) may contribute to the risk of diabetic kidney disease, however, there have been limited studies of the incidence of AKI in well-defined populations of children with type 1 diabetes. The aim was to quantify AKI in children presenting with new onset type 1 diabetes from the regional paediatric diabetes service, Auckland, New Zealand. Research Design and Methods: A retrospective analysis of a prospectively identified cohort study of children and adolescents presenting from 2006 to 2016 with type 1 diabetes aged <15 years. AKI was defined using Kidney Disease/Improving Global Outcomes serum creatinine criteria. Result(s): There were 586 subjects: 52% male, with mean (SD) age 8.9 (3.8) years, with 151(25.8%) in diabetic ketoacidosis (DKA). AKI was present in 47%, 278/586, AKI was increased in those with DKA (125/151 (83%) DKA vs. 153/435 (35%) no-DKA). Univariable analysis showed that increased HbA1c, higher glucose levels, lower BMI SDS, lower bicarbonate and pH levels were all associated with AKI (p <.001). In multivariable analysis, AKI was associated with DKA and higher glucose levels independently. The majority of cases were stage 1 (203/278 [73%]), or stage 2 AKI 62/278 (22%). 13/278 (5%) had severe, Stage 3 AKI, and all presented in DKA (13/151 (8%) vs. 0/435 (0%) without DKA, p <.001).
Conclusion(s): In this regional paediatric, cohort AKI is a common complication of children presenting with new onset type 1 diabetes. AKI is independently associated with higher glucose levels and DKA, and all cases of Stage 3 AKI were associated with DKA.

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Publisher
John Wiley and Sons Inc
Year of Publication
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284.

Frequency of Acute Kidney Injury in Children Treated with Acyclovir at a Tertiary Care Center.
Yamin R., Moorani K.N., Shaikh I., Dilawar S., Yamin S.
Embase
Pakistan Paediatric Journal. 46(3) (pp 287-292), 2022. Date of Publication: September 2022.
[Article]
AN: 2018182321
Objectives: The objective of the study was to determine the frequency of Acute Kidney Injury (AKI) in patients treated with intravenous acyclovir for presumed viral infections.
Study Design: Cross-sectional study. Place and Duration of Study: Department of Pediatric Medicine, NICH, Karachi, Pakistan for 6 months from January 1, 2021 to June 30, 2021.
Material(s) and Method(s): This study comprises of children aged 6 months to twelve years who received intravenous acyclovir for presumed viral infections from January-June 2021. Patients with known kidney diseases were excluded. Patients were diagnosed as AKI by applying pediatric Risk, Injury, Failure, Loss, and End-stage Kidney (pRIFLE) criteria. Demographic and clinical data was collected and analyzed using descriptive statistics.
Result(s): Among 100 patients, 62 were males. The mean age was 5.75 +/- 4.39 years. The primary diagnosis was presumed viral meningoencephalitis (57%), encephalitis (29%), and meningitis (14%). The AKI was diagnosed in 11% of children on acyclovir. Sixty-four patients were admitted in Pediatric Intensive Care (p 0.004) for ventilatory support (p 0.000) and 73% received inotropes (p0.002). AKI-patients received lower maintenance fluid compared to non-AKI (109.33 +/- 34.35 vs. 140.91 +/- 30.15; p0.004). Contributing factors for AKI were PICU admission, ventilatory and inotrope support, nephrotoxic agents use and lower maintenance fluid.
Conclusion(s): We found AKI in 11% of cases treated with acyclovir. PICU admission, inotropic and ventilation, nephrotoxic drugs and inadequate hydration were important contributing factors. Adequate hydration, avoiding nephrotoxic drugs and monitoring renal function may decrease AKI.

Status
Embase
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285.

A real-world prospective study on dialysis-requiring acute kidney injury.
Gomes C.L.R., Yamane T.L.C., Ruzany F., Suassuna J.H.R.
Embase
PLoS ONE. 17(5 May) (no pagination), 2022. Article Number: e0267712. Date of Publication: May 2022.
[Article]

AN: 2018058832
Background Current information about acute kidney injury (AKI) epidemiology in developing nations derives mainly from isolated centers, with few quality multicentric epidemiological studies. Our objective was to describe a large cohort of patients with dialysis-requiring AKI derived from ordinary clinical practice within a large metropolitan area of an emerging country, assessing the impact of age and several clinical predictors on patient survival across the spectrum of human life. Methods We analyzed registries drawn from 170 hospitals and medical facilities in Rio de Janeiro, Brazil, in an eleven-year period (2002-2012). The study cohort was comprised of 17,158 pediatric and adult patients. Data were analyzed through hierarchical logistic regression models and mixed-effects Cox regression for survival comparison across age strata. Results Severe AKI was mainly hospital-acquired (72.6%), occurred predominantly in the intensive care unit (ICU) (84.9%), and was associated with multiple organ failure (median SOFA score, 11; IQR, 6-13). The median age was 75 years (IQR, 59-83; range, 0-106 years). Community-acquired pneumonia was the most frequent admission diagnosis (23.8%), and sepsis was the overwhelming precipitating cause (72.1%). Mortality was 71.6% and was higher at the age extremes. Poor outcomes were driven by age, mechanical ventilation, vasopressor support, liver dysfunction, type 1 cardiorenal syndrome, the number of failing organs, sepsis at admission, later sepsis, the Charlson score, and ICU admission. Community-acquired AKI, male gender, and pre-existing chronic kidney disease were associated with better outcomes. Conclusions Our study adds robust information about the real-world epidemiology of dialysis-requiring AKI with considerable clinical detail. AKI is a heterogeneous syndrome with variable clinical presentations and outcomes, including differences in the age of presentation, comorbidities, frailty state, precipitation causes, and associated diseases. In the cohort studied, AKI characteristics bore more similarities to upper-income countries as opposed to the pattern traditionally associated with resource-limited economies.

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286.

Trajectory of kidney recovery in pediatric patients requiring continuous kidney replacement therapy for acute kidney injury.
Tsuboi K., Tsuboi N., Nishi K., Ninagawa J., Suzuki Y., Nakagawa S.
Embase
Clinical and Experimental Nephrology. 26(11) (pp 1130-1136), 2022. Date of Publication: November 2022.
[Article]
AN: 2018020893

Background: Acute kidney injury (AKI) is commonly seen in the PICU and is associated with poor short-term and long-term outcomes, especially in patients who required continuous kidney replacement therapy (CKRT). However, as the trajectory of kidney recovery in these patients remain uncertain, determination of the timing to convert to permanent kidney replacement therapy (KRT) remains a major challenge. We aimed to examine the frequency and timing of kidney recovery in pediatric AKI survivors that required CKRT.
Method(s): We performed a retrospective study of patients under 18 years old who received CKRT for AKI in a tertiary-care PICU over 6 years. Primary outcomes were the rate of KRT withdrawal due to kidney recovery and KRT-dependent days for those who survived to hospital discharge. Secondary outcomes were all-cause mortality, dialysis dependence, and occurrences of estimated glomerular filtration rate (eGFR) < 90 mL/min/1.73m2 and eGFR < 60 mL/min/1.73m2 one year after initiation of the index CKRT in survivors.
Result(s): Thirty-nine patients were included. Of the 28 children who survived to hospital discharge, 26 (93%) withdrew from dialysis due to kidney recovery, all within 30 days. Twenty-three patients were followed up. One had died, five had an eGFR of 60 mL/min/1.73m2 or more but less than 90 mL/min/1.73m2, and two had an eGFR < 60 mL/min/1.73m2, of which one required peritoneal dialysis.
Conclusion(s): Over 90% of the survivors withdrew CKRT within 30 days. However, the frequency of abnormal eGFR one year after initiation of CKRT in survivors exceeded 30% and supports the recommendation of post-AKI follow-up.

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Publisher
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Year of Publication
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287.

Risk factors of Acute Kidney Injury and outcome of children affected with AKI.
Arer R., Chukkanakal J.L., Patil J., Venkatesh G.
Embase
European Journal of Molecular and Clinical Medicine. 9(3) (pp 3096-3104), 2022. Date of Publication: December 2022.
[Article]
AN: 2018016962
Background: The etiology of AKI in children varies in developed and developing countries. in the former, AKI follows major surgeries, complications associated with malignancies, and the use of nephrotoxic drugs.
Objective(s): to identify the risk factors of AKI and to see the outcome of children affected with AKI.

Material(s) and Method(s): This Prospective, observational study was conducted among 250 children aged between 1 month-12 years, admitted in the Pediatric Intensive Care Unit in Government General Hospital; Siddhartha Medical College; Vijayawada Results: The minimum age at enrollment was one month to 12 years of age. The comparison between the two groups based on gender was not significant (P=0.1873). None of the patients in the non-AKI group required dialysis, but in the AKI group, of the 44cases, nine case needed dialysis. The number of dialysis is highly significant, with P<0.001. CNS involvement of AKI is not significant. The hepatic pathology as cause or effect was less prevalent and was reported in only three patients of both AKI and non-AKI groups. Shock is one of the known causative factors for the development of AKI. Conclusion(s): In most of the children with Acute kidney injury, the underlying cause is an extrarenal pathology like sepsis, shock, multi organ dysfunction.

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288.

Iatrogenic bladder injury at pediatric laparoscopic appendicectomy: avoiding the triangle of danger.
Rae J., Subramanian T., Marven S.
Embase
Journal of Pediatric Endoscopic Surgery. 4(3) (pp 113-116), 2022. Date of Publication: September 2022.
[Article]
AN: 2017809085
Purpose: Iatrogenic bladder injury is reported to occur from 0.02 to 8% of laparoscopic surgery in adults. There is no reported incidence rate in children. Historically in our institution, laparoscopic appendicectomy port placement includes a periumbilical port, a port in the left iliac fossa and a suprapubic port avoiding the bladder. The aim of this study is to report a series of bladder injuries related to port placement at laparoscopic appendicectomy over a 5-year period and identify associated risk factors.
Method(s): We conducted a retrospective review of patients who sustained a bladder injury at the time of laparoscopic appendicectomy from January 2017 to January 2022. Risk factors assessed included age, weight, sex, insertion of urethral catheter, complexity of appendicitis and previous abdominal surgery. Fisher's exact test was used for categorical and student's t test for continuous variables. $p < 0.05$ was considered statistically significant.
Result(s): A total of 544 appendicectomies were performed during the study period. Four patients sustained a bladder injury (0.73%). Only insertion of urethral catheter was found to be a significant factor ($p = 0.04$).
Conclusion(s): We suggest insertion of the suprapubic port lateral to the medical umbilical ligament. If a catheter is deemed necessary, it should be inserted after port placement if possible. Urethral catheterization does not reduce the risk of iatrogenic bladder injury.

Status
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Publisher
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289.

The Use of Renal Biomarkers in Pediatric Cardiac Patients With Acute Kidney Injury.
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Embase
Journal of Pediatric Pharmacology and Therapeutics. 27(6) (pp 506-516), 2022. Date of Publication: 2022.
[Article]
AN: 2017768931
Acute kidney injury (AKI) is a common and serious condition that occurs in approximately 30% to 50% of pediatric patients that undergo cardiac surgery. Currently used parameters to measure kidney function (serum creatinine and urine output) are often unreliable and delay the prediction of AKI, despite their adoption into clinical guidelines. Emerging evidence suggests that biomarkers such as neutrophil gelatinase-associated lipocalin, cystatin C, interleukin-18, kidney injury molecule 1, and liver-type fatty acid- binding protein may be useful in the identification and location of pediatric renal injury. Ontogeny-related changes in tubular function and nephrogenesis result in reference values that differ based on age and sex. In addition, changes in endogenous concentrations may result from factors such as cardiopulmonary bypass. The use of urine samples to measure renal biomarkers offers a significant advantage compared with routine blood sampling, especially in the neonatal patient population. Future research is warranted to determine age-dependent changes in AKI biomarkers and the relationship with pharmacokinetic clearance of commonly used medications in the postoperative cardiac patient.

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290.

Impact of indirect bilirubin and uric acid on outcomes of sepsis-associated acute kidney injury (sAKI).

Efat A., Shoeib S., Ebrahim E., Kassemy Z., Bedair H.M., Abozenah M.
Embase
International Urology and Nephrology. 54(11) (pp 3009-3016), 2022. Date of Publication: November 2022.
[Article]
AN: 2017713494
Background: Acute kidney injury (AKI) is one of the most frequent pathophysiologic disorders encountered in hospitalized patients, with sepsis frequently implicated in pathogenesis. Reactive oxygen species (ROS) seem to have a significant contribution to sepsis-induced AKI. Proposed mechanisms include induction of cell membrane lipid peroxidation, protein denaturing, and direct DNA damage, all of which have deleterious effect. These changes constitute oxidative injury to the kidneys.
Objective(s): To evaluate the antioxidant actions of indirect bilirubin and uric acid on outcomes of sepsis-associated AKI.
Method(s): Ninety-eight patients admitted to the intensive care unit (ICU), at a large tertiary center, with sepsis and AKI were evaluated for serum levels of uric acid, bilirubin (primarily indirect), and procalcitonin. The primary endpoints studied were the need for hemodialysis and death.
Result(s): Thirty-two (33%) patients developed AKI requiring hemodialysis (HD). These patients had higher SOFA scores ($p < 0.001$) and lower levels of indirect bilirubin ($p < 0.001$) compared to those not requiring HD. There was no statistically significant difference in serum uric acid levels. Logistic regression analysis identified creatinine level, total and indirect bilirubin levels, and leukocyte count as significant predictors of patient death.
Conclusion(s): Higher leukocyte counts and creatinine levels were independently associated with poor outcomes in ICU patients with sepsis. Additionally, lower indirect bilirubin levels were also noted to be associated with similar outcomes. The latter provides insights into oxidative stress as a major player in the pathogenesis of sepsis-induced AKI, with a potential protective role of indirect bilirubin.

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Publisher
Springer Science and Business Media B.V.
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291.

Role of urinary NGAL and microalbuminuria in the detection of subclinical acute kidney injury in pediatric intensive care unit and diabetic children.
Ishak S.K.I., El Aguizy F., Elsebaie E.H., Youssef M.R.L., Ismail M.M., Abdelraouf F.H., Abdel Ghaffar H.A., Riad N.M.
Embase
Pediatria Medica e Chirurgica. 44(2) (no pagination), 2022. Article Number: 285. Date of Publication: 15 Jul 2022.
[Article]
AN: 2017529057
Subclinical Acute Kidney Injury (AKI) describes patients who did not fulfill the classical criteria for AKI diagnosis but showed elevated levels of new biomarkers reflecting tubular injury. One of these biomarkers is Neutrophil Gelatinase-Associated Lipocalin (NGAL). The aim of this study is to investigate the role of urinary NGAL and microalbuminuria as non-invasive biomarkers in the detection of subclinical AKI. Analysis of urinary NGAL and microalbuminuria in 91 subjects [30 pediatric intensive care unit (PICU) patients, 31 diabetic patients and 30 healthy controls] recruited from Cairo University Pediatric Hospital was done. Our study revealed that urinary NGAL was significantly higher in the PICU group followed by the diabetic group and lowest in the controls group (p=0.022). A positive correlation was found between urinary NGAL and microalbuminuria in the PICU group (Rvalue= 0.585, p-value=0.001). In diabetic group, a positive correlation was found between urinary NGAL and fasting blood glucose, 2 hours post prandial and HbA1C (R-value=0.421; pvalue= 0.021; R-value=0.426; p-value=0.019; R-value=0.438; pvalue= 0.018 respectively). Urinary NGAL may be a potential biomarker to detect subclinical AKI before actual functional renal damage leading to early intervention and reduction of mortality.

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292.

Human Stem Cell and Organoid Models to Advance Acute Kidney Injury Diagnostics and Therapeutics.
Pode-Shakked N., Devarajan P.
Embase
International Journal of Molecular Sciences. 23(13) (no pagination), 2022. Article Number: 7211. Date of Publication: July-1 2022.
[Review]
AN: 2017262646
Acute kidney injury (AKI) is an increasingly common problem afflicting all ages, occurring in over 20% of non-critically ill hospitalized patients and >30% of children and >50% of adults in critical care units. AKI is associated with serious short-term and long-term consequences, and current

therapeutic options are unsatisfactory. Large gaps remain in our understanding of human AKI pathobiology, which have hindered the discovery of novel diagnostics and therapeutics. Although animal models of AKI have been extensively studied, these differ significantly from human AKI in terms of molecular and cellular responses. In addition, animal models suffer from interspecies differences, high costs and ethical considerations. Static two-dimensional cell culture models of AKI also have limited utility since they have focused almost exclusively on hypoxic or cytotoxic injury to proximal tubules alone. An optimal AKI model would encompass several of the diverse specific cell types in the kidney that could be targets of injury. Second, it would resemble the human physiological milieu as closely as possible. Third, it would yield sensitive and measurable readouts that are directly applicable to the human condition. In this regard, the past two decades have seen a dramatic shift towards newer personalized human-based models to study human AKI. In this review, we provide recent developments using human stem cells, organoids, and in silico approaches to advance personalized AKI diagnostics and therapeutics.

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Publisher
MDPI
Year of Publication
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293.

A study of acute kidney injury in cirrhosis of liver.
Vaidya M., Sarate N., Kawale J., Pai V.
Embase
European Journal of Molecular and Clinical Medicine. 9(2) (pp 26-34), 2022. Date of Publication: December 2022.
[Article]
AN: 2016998387
Background: The prevalence of renal dysfunction has been reported to vary from 14-50% in patients with cirrhosis. The prevalence is estimated to be approximately 50% among patients with cirrhosis and ascites and 20% of patients with advanced cirrhosis admitted to the hospital 3,4. The wide range in prevalence is likely due to different study populations and varying definitions of renal dysfunction. Patients with HRS who fail to respond to medical therapy or those with severe renal failure of other etiology may require renal replacement therapy. Simultaneous liver kidney transplant (SLK) is needed in many of these patients to improve their post-transplant outcomes. However, the criteria to select patients who would benefit from SLK transplantation are based on consensus and lack strong evidence to support them. Heath care system has evolved over the last decade and newer drugs are available for the management of complication of cirrhosis. We attempt to study its impact on course and outcome of acute kidney injury. Also few of the patients could possibly be on the antiviral drugs for hepatitis B and hepatitis C. If these patients are admitted they will be included in study and we would study the effect of the effect of this drug on acute kidney injury and vice versa. Hence, the present study was conducted to study clinical profile of patients with acute kidney injury in liver cirrhosis. Aims and Objectives: To study clinical

profile, etiological factors, comparison of the course of acute kidney injury in cirrhosis with different etiologies and to study the association of acute kidney injury and liver cirrhosis with respect to hospital stay and mortality.
Material(s) and Method(s): A total of 86 patients selected by simple random sampling with liver cirrhosis with AKI were included in the study.
Result(s): The difference observed between AKI due to PRA vs. HRS and PRA vs. ATN was statistically significant but the difference between HRS and ATN was not significant.
Conclusion(s): The occurrence of AKI in patients with liver cirrhosis is a common event associated with a worsening of the prognosis. This warrants special attention in the monitoring of the renal function in these patients.

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Publisher
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294.

Risk factors and outcomes of neonates with acute kidney injury needing peritoneal dialysis: Results from the prospective TINKER (The Indian PCRRT-ICONIC Neonatal Kidney Educational Registry) study.
Sethi S.K., Wazir S., Sahoo J., Agrawal G., Bajaj N., Gupta N.P., Mirgunde S., Balachandran B., Afzal K., Shrivastava A., Bagla J., Krishnegowda S., Konapur A., Sultana A., Soni K., Nair N., Sharma D., Khooblall P., Pandey A., Alhasan K., McCulloch M., Bunchman T., Tibrewal A., Raina R.
Embase
Peritoneal Dialysis International. 42(5) (pp 460-469), 2022. Date of Publication: September 2022. [Article]
AN: 2016913540
Background: Acute kidney injury (AKI) is common in neonates admitted to neonatal intensive care units (NICUs). There is a need to have prospective data on the risk factors and outcomes of acute peritoneal dialysis (PD) in neonates. The use of kidney replacement therapy in this population compared to older populations has been associated with worse outcomes (mortality rates 17-24%) along with a longer stay in the NICU and/or hospital.
Method(s): The following multicentre, prospective study was derived from the TINKER (The Indian PCRRT-ICONIC Neonatal Kidney Educational Registry) database, assessing all admitted neonates <=28 days who received intravenous fluids for at least 48 h. The following neonates were excluded: death within 48 h, presence of any lethal chromosomal anomaly, requirement of congenital heart surgery within the first 7 days of life and those receiving only routine care in nursery. Demographic data (maternal and neonatal) and daily clinical and laboratory parameters were recorded. AKI was defined according to the Neonatal Kidney Disease: Improving Global Outcomes criteria.
Result(s): Of the included 1600 neonates, a total of 491 (30.7%) had AKI. Of these 491 neonates with AKI, 44 (9%) required PD. Among neonates with AKI, the odds of needing PD was significantly higher among those with significant cardiac disease (odds ratio (95% confidence interval): 4.95 (2.39-10.27); p < 0.001), inotropes usage (4.77 (1.98-11.51); p < 0.001), severe peripartum event (4.37 (1.31-14.57); p = 0.02), requirement of respiratory support in NICU (4.17

(1.00-17.59); p = 0.04), necrotising enterocolitis (3.96 (1.21-13.02); p = 0.03), any grade of intraventricular haemorrhage (3.71 (1.63-8.45); p = 0.001), evidence of fluid overload during the first 12 h in NICU (3.69 (1.27-10.70); p = 0.02) and requirement of resuscitation in the delivery room (2.72 (1.45-5.12); p = 0.001). AKI neonates with PD as compared to those without PD had a significantly lower median (interquartile range) duration of stay in NICU (7 (4-14) vs. 11 (6-21) days; p = 0.004), but significantly higher mortality (31 (70.5%) vs. 50 (3.2%); p < 0.001). This discrepancy is likely attributable to the critical state of the neonates with AKI.
Conclusion(s): This is the largest prospective, multicentre study specifically looking at neonatal AKI and need for dialysis in neonates. AKI was seen in 30.7% of neonates (with the need for acute PD in 9% of the AKI group). The odds of needing acute PD were significantly higher among those with significant cardiac disease, inotropes usage, severe peripartum event, requirement of respiratory support in NICU, necrotising enterocolitis, any grade of intraventricular haemorrhage, evidence of fluid overload more than 10% during the first 12 h in NICU and requirement of resuscitation in the delivery room. AKI neonates with PD as compared to AKI neonates without PD had a significantly higher mortality. There is a need to keep a vigilant watch in neonates with risk factors for the development of AKI and need for PD.

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295.

Epidemiology of Neonatal Acute Kidney Injury After Cardiac Surgery Without Cardiopulmonary Bypass.
Sasaki J., Rodriguez Z., Alten J.A., Rahman A.F., Reichle G., Lin P., Banerjee M., Selewski D., Gaies M., Hock K.M., Borasino S., Gist K.M., Prodhan P., Garcia X., Ramer S., Sherman M., Ghbeis M.B., Clarke S.A., Lukacs M., Zanaboni D., Sanchez de Toledo J., Domnina Y.A., Saenz L., Baust T., Kluck J., Duncan L., Koch J.D., Diddle J.W., Freytag J., Harris A., Abraha H., Butcher J., Tadphale S.D., Krawczeski C.D., Kwiatkowski D.M., Raymond T.T., Burton G.L., Das A., Shan T., Buckley J.R., Schroeder L., Raees A., Guidry B., Sosa L.J., Bailly D.K., Valentine K.M., Bhat P.N., Neumayr T.M., Afonso N.S., O'Neal E.R., Lasa J.J., Huskey J.L., Phillips P.A., Ardisana A., Gonzalez K., Columb E., Domar T., Viers S.
Embase
Annals of Thoracic Surgery. 114(5) (pp 1786-1792), 2022. Date of Publication: November 2022.
[Conference Paper]
AN: 2016353034
Background: The purpose of this Neonatal and Pediatric Heart and Renal Outcomes Network study was to describe the epidemiology and outcomes of cardiac surgery-associated acute kidney injury (CS-AKI) after cardiac surgery without cardiopulmonary bypass (non-CPB).
Method(s): We performed a retrospective study of neonates (<=30 days) who underwent non-CPB cardiac surgery at 22 centers affiliated with the Pediatric Cardiac Critical Care Consortium. CS-AKI was defined using the modified Kidney Disease: Improving Global Outcomes serum creatinine and urine output criteria from postoperative days 0 to 6. CS-AKI defined by serum creatinine was further subclassified into transient (resolved by postoperative day 3) and persistent/late (>=3 days). Multivariable regression analyses were used to determine risk factors for CS-AKI and associations with outcomes of ventilation hours and cardiac intensive care unit length of stay.
Result(s): Five hundred eighty-two neonates (median age at surgery, 9 days [interquartile range, 5-15], 25% functional single ventricle] were included. CS-AKI occurred in 38.3%: Rate and severity varied across centers. Aggregate daily CS-AKI prevalence peaked on postoperative day 1 (17.1%). No stage of CS-AKI was associated with ventilation hours or length of stay. Persistent/late CS-AKI occurred in 48 patients (8%). Prostaglandin use and single-ventricle surgery were associated with persistent/late CS-AKI. Higher baseline serum creatinine but not persistent/late CS-AKI was associated with longer ventilation duration and intensive care unit length of stay after adjusting for confounders.
Conclusion(s): Kidney Disease: Improving Global Outcomes-defined CS-AKI occurred commonly in neonates undergoing non-CPB cardiac surgery. However most CS-AKI was transient, and no CS-AKI classification was associated with worse outcomes. Further work is needed to determine the CS-AKI definition that best associates with outcomes in this cohort.

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296.

Patterns of acute kidney and hepatic injury and association with adverse outcomes in infants undergoing therapeutic hypothermia for hypoxic ischemic encephalopathy.
Modisett A.K., Patel R.M., Jernigan S.M., Figueroa J., Sewell E.K., Hamrick S.E.G.
Embase
Journal of Perinatology. 42(10) (pp 1361-1367), 2022. Date of Publication: October 2022.
[Article]
AN: 2015631818
Objective: To describe patterns of renal and hepatic injury in infants with hypoxic ischemic encephalopathy (HIE). Study design: Retrospective cohort of infants receiving therapeutic hypothermia for HIE was classified into groups based on organ injury: neither acute kidney injury (AKI) nor acute hepatic injury (AHI), isolated AKI, isolated AHI, or both AKI/AHI. Biomarkers and outcomes were described and analyzed.
Result(s): Among 188 infants, 55% had no AKI nor AHI, 7% had only AKI, 22% had only AHI and 16% had both AKI and AHI. Infants with both AKI/AHI had the highest mortality (47%) and worse outcomes, compared to other injury groups, although AKI/AHI was not significantly associated with mortality (hazard ratio 2.5; 95% CI 0.9-6.9), after accounting for severity of HIE. For surviving infants, biomarkers of organ injury, on average, normalized by discharge.
Conclusion(s): Infants with HIE with both AKI/AHI have worse outcomes than infants with AKI or AHI alone.

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297.

Association between acute kidney injury and brain injury on term-equivalent age brain magnetic resonance imaging in very preterm infants.
Al-Mouqdad M.M., Jamjoom D.Z., Abdalgader A.T., Ameen W.S., Khalil T.M., Asfour Y.S., Al-Anazi M.R., Asfour S.S.
Embase
Pediatric Nephrology. 37(12) (pp 3235-3242), 2022. Date of Publication: December 2022.
[Article]
AN: 2015452289
Background: This study aimed to investigate the relationship between acute kidney injury (AKI) in the first 2 weeks of life and brain injury on term-equivalent age magnetic resonance imaging in very preterm infants.
Method(s): We included 116 infants with a birth weight of < 1500 g who were born at the King Saud Medical City at <= 32 gestational weeks. They were admitted to the neonatal intensive care unit and underwent term-equivalent age and pre-discharge brain magnetic resonance imaging. A negative binomial with generalized linear models and a robust variance estimator (Huber-White) was applied for univariate relative risk analysis. The Kidokoro score was then used to determine the effect of AKI on brain morphology and growth at term-equivalent age.
Result(s): Sixty-eight (64.2%) infants had developed an AKI in the first 2 weeks of life. AKI was significantly associated with cerebellum signal abnormalities, cerebellar volume reduction, and a high total cerebellum score (P = 0.04, P < 0.001, P < 0.001, respectively).
Conclusion(s): AKI in the first 2 weeks of life is associated with brain insult, especially in the cerebellum. More well-designed studies are required to investigate the association and impact of AKI on the central nervous system. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information [Figure not available: see fulltext.]

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298.

Structural Lesions on Kidney Biopsy in Youth-Onset and Adult-Onset Type 2 Diabetes.
Looker H.C., Pyle L., Vigers T., Severn C., Saulnier P.J., Najafian B., Mauer M., Nelson R.G., Bjornstad P.
Embase
Diabetes Care. 45(2) (pp 436-443), 2022. Date of Publication: February 2022.
[Article]
AN: 2015396011
OBJECTIVE Type 2 diabetes (T2D) is a leading cause of end-stage kidney disease worldwide. Recent studies suggest a more aggressive clinical course of diabetic kidney disease in youth-onset compared with adult-onset T2D. We compared kidney structural lesions in youth-and adult-onset T2D to determine if youth onset was associated with greater early tissue injury. RESEARCH DESIGN AND METHODS Quantitative microscopy was performed on kidney tissue obtained from research kidney biopsies in 161 Pima Indians (117 women, 44 men) with T2D. Onset of T2D was established by serial oral glucose tolerance testing, and participants were stratified as youth onset (age <25 years) or adult onset (age ++25 years). Associations between clinical and morphometric parameters and age at onset were tested using linear models. RESULTS At biopsy, the 52 participants with youth-onset T2D were younger than the 109 with adult-onset T2D (39.1 +/- 9.9 vs. 51.4 +/- 10.2 years; P < 0.0001), but their diabetes duration was similar (19.3 +/- 8.1 vs. 17.0 +/- 7.8 years; P 5 0.09). Median urine albumin-to-creatinine ratio was higher in the youth-onset group (58 [25th-75th percentile 17-470] vs. 27 [13-73] mg/g; P 5 0.02). Youth-onset participants had greater glomerular basement membrane (GBM) width (552 +/- 128 vs. 490 +/- 114 nm; P 5 0.002) and mesangial fractional volume (0.31 +/- 0.10 vs. 0.27 +/- 0.08; P 5 0.001) than adult-onset participants. Glomerular sclerosis percentage, glomerular volume, mesangial fractional volume, and GBM width were also inversely associated with age at diabetes onset as a continuous variable. CONCLUSIONS Younger age at T2D onset strongly associates with more severe kidney structural lesions. Studies are underway to elucidate the pathways underlying these associations.

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299.

Early diagnosis of kidney injury in a paediatric population: a prospective cohort study (E-DRIP STUDY).
Singh T., Mahajan V., Kaur J., D'Cruz S., Randev S., Guglani V., Singla S.
Embase
Pediatric Nephrology. 37(11) (pp 2771-2779), 2022. Date of Publication: November 2022.
[Article]
AN: 2015253658
Background: Renal Angina Index (RAI) is a bedside tool for risk stratification of patients to predict acute kidney injury (AKI). Kidney biomarkers are better indicators of real-time injury and give us lead time for diagnosing impending AKI.
Method(s): We enrolled consecutive children aged 2 months-14 years admitted to a tertiary hospital in northern India over 2 years. RAI was calculated on day 0 (D0) and urinary (u) and plasma (p) neutrophil gelatinase-associated lipocalin (NGAL) were measured within 6 h of admission. Children were followed for the development of severe AKI on day 3 (D3) using Kidney Disease Improving Global Outcomes criteria to define and stage AKI.
Result(s): Of the 253 children enrolled and analysed, 44 (17.4%) developed D3-AKI (stage 1 in 52.2%, stage 2 in 20.5% and stage 3 in 27.3%). Renal angina (RAI >= 8) on D0 was present in 66.7% children who developed stage 2/3 D3-AKI vs. 43.5% in children who did not develop D3-AKI /stage 1 AKI (p = 0.065). Area under ROC (AUROC) curve for D0-RAI to predict D3-severe-AKI was 0.66 (95% CI, 0.55-0.77). AUROC curve for uNGAL and pNGAL to predict D3-severe-AKI was 0.62 (95% CI, 0.50-0.74) and 0.48 (95% CI, 0.35-0.61), respectively. The severe AKI group had greater requirement of ventilation and inotropic support with mortality being thrice higher compared to the non-AKI group.
Conclusion(s): RAI >= 8 and uNGAL had a high negative predictive value but low sensitivity for predicting D3-severe-AKI. pNGAL had a poor predictive value for D3-severe-AKI. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information[Figure not available: see fulltext.]

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300.

Acute kidney injury and childhood acute myeloid leukemia.
Limratchapong C., Sophark P., Vachvanichsanong P., McNeil E.B., Chotsampancharoen T.
Embase
Pediatric Nephrology. 37(11) (pp 2765-2770), 2022. Date of Publication: November 2022.
[Article]
AN: 2015237919
Background: Acute kidney injury (AKI) appears to be particularly common in children with acute myeloid leukemia (AML), although the epidemiology data on this patient population is sparse. The objective of this study was to assess the prevalence and factors associated with AKI in childhood AML during chemotherapy treatment.
Method(s): The medical records of 112 children aged under 15 years diagnosed with AML who received chemotherapy in a major tertiary-care referral center in southern Thailand were reviewed. Logistic regression was used to identify factors associated with AKI.
Result(s): Fifty-six (50%) children had AKI events. The median time from AML diagnosis to the first AKI was 29.5 days (interquartile range: 11.0-92.8) and the median follow-up time was 10.9 months (interquartile range: 3.6-31.1). Age at diagnosis >= 10 years (OR 2.75, 95% CI 1.09-6.93), glomerular filtration rate < 90 mL/min/1.73 m2 at AML diagnosis (OR 7.58, 95% CI 1.89-30.5), and septic shock (OR 22.0, 95% CI 4.63-104.3) were independently associated with AKI.
Conclusion(s): Childhood AML has a high rate of kidney injury with 50% having AKI. Age >= 10 years at diagnosis, impaired kidney function before treatment, and septic shock were strongly associated with AKI. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information. [Figure not available: see fulltext.]

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301.

Association of early hyponatremia and the development of acute kidney injury in critically ill children.
Formeck C.L., Siripong N., Joyce E.L., Ayus J.C., Kellum J.A., Moritz M.L.
Embase
Pediatric Nephrology. 37(11) (pp 2755-2763), 2022. Date of Publication: November 2022.
[Article]
AN: 2015138269
Background: Hyponatremia is an independent prognostic factor for mortality; however, the reason for this remains unclear. An observed relationship between hyponatremia and the development of acute kidney injury (AKI) has been reported in certain disease states, but hyponatremia has not been evaluated as a predictor of AKI in critically ill patients or children.

Method(s): This is a single-center retrospective cohort study of critically ill children admitted to a tertiary care center. We performed regression analysis to assess the association between hyponatremia at ICU admission and the development of new or worsening stage 2 or 3 (severe) AKI on days 2-3 following ICU admission.
Result(s): Among the 5057 children included in the study, early hyponatremia was present in 13.3% of children. Severe AKI occurred in 9.2% of children with hyponatremia compared to 4.5% of children with normonatremia. Following covariate adjustment, hyponatremia at ICU admission was associated with a 75% increase in the odds of developing severe AKI when compared to critically ill children with normonatremia (aOR 1.75, 95% CI 1.28-2.39). Evaluating sodium levels continuously, for every 1 mEq/L decrease in serum sodium level, there was a 0.05% increase in the odds of developing severe AKI (aOR 1.05, 95% CI 1.02-1.08). Hyponatremic children who developed severe AKI had a higher frequency of kidney replacement therapy, AKI or acute kidney disease at hospital discharge, and hospital mortality when compared to those without.
Conclusion(s): Hyponatremia at ICU admission is associated with the development of new or worsening AKI in critically ill children. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information[Figure not available: see fulltext.]

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302.

Evaluation of acute kidney injury by urinary tissue inhibitor metalloproteinases-2 and insulin-like growth factor-binding protein 7 after pediatric cardiac surgery.
Tao Y., Heskia F., Zhang M., Qin R., Kang B., Chen L., Wu F., Huang J., Brengel-Pesce K., Chen H., Mo X., Liang J., Wang W., Xu Z.
Embase
Pediatric Nephrology. 37(11) (pp 2743-2753), 2022. Date of Publication: November 2022.
[Article]
AN: 2015138267
Background: With adult patients, the measurement of [TIMP-2]*[IGFBP7] can predict the risk of moderate to severe AKI within 12 h of testing. In pediatrics, however, the performance of [TIMP-2]*[IGFBP7] as a predictor of AKI was less studied and yet to be widely utilized in clinical practice.

This study was conducted to validate the utility of [TIMP-2]*[IGFBP7] as an earlier biomarker for AKI prediction in Chinese infants and small children.
Method(s): We measured urinary [TIMP-2]*[IGFBP7] using NEPHROCHECK at eight perioperative time points in 230 patients undergoing complex cardiac surgery and evaluated the performance of [TIMP-2]*[IGFBP7] for predicting severe AKI within 72 h of surgery.
Result(s): A total of 50 (22%) of 230 developed AKI stages 2-3 within 72 h after CPB initiation. In the AKI stage 2-3 patients, two patterns of serum creatinine (SCr) elevations were observed. The patients with only a transient increase in SCr within 24 h (< 24 h, early AKI 2-3) did not experience a worse outcome than patients in AKI stage 0-1. AKI stage 2-3 patients with SCr elevation after 24 h (24-72 h, late AKI 2-3), as well as AKI dialysis patients (together designated severe AKI), did experience worse outcomes. Compared to AKI stages 0-1, significant elevations of [TIMP-2]*[IGFBP7] values were observed in severe AKI patients at hours T2, T4, T12, and T24 following CPB initiation. The AUC for predicting severe AKI with [TIMP-2]*[IGFBP7] at T2 (AUC = 0.76) and maximum T2/T24 (AUC = 0.80) are higher than other time points. The addition of the NEPHROCHECK test to the postoperative parameters improved the risk assessment of severe AKI.
Conclusion(s): Multiple AKI phenotypes (early versus late AKI) were identified after pediatric complex cardiac surgery according to SCr-based AKI definition. Urinary [TIMP-2]*[IGFBP7] predicts late severe AKI (but not early AKI) as early as 2 h following CPB initiation. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information [Figure not available: see fulltext.]

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303.

Colistin induced acute kidney injury in critically ill children: a prospective study utilizing RIFLE criteria.
Meysam S., Khosravi Z., Rashti R., Qorbani M., Assadi F., Hayatshahi A., Parin T., Faghihi T.
Embase

DARU, Journal of Pharmaceutical Sciences. 30(1) (pp 11-15), 2022. Date of Publication: June 2022.
[Article]
AN: 2014277542
Background: Colistin is one of the last resort antibiotic options for resistant gram-negative pathogens. Renal injury is the most common side effect of colistin. Characteristics of nephrotoxicity are well described in adults. However, this data is sparse in children.
Objective(s): In this study we evaluated the incidence, severity, time course and risk factors of colistin nephrotoxicity in a pediatric population.
Method(s): In a prospective study over a 9-month period, children who received intravenous colistin for at least 48 h were evaluated for renal side effect by utilizing Risk-Injury-Failure-Loss-End Stage Kidney Disease (RIFLE) criteria. Children receiving renal replacement therapy (RRT) or received a repeated course of colistin were excluded.
Result(s): Thirty-seven children were included. Median age of participants was 4.5 months. Overall, 48.6% of the cases developed AKI and consisted 56% in the Risk, 33% in the Injury and 11% in the Failure categories of RIFLE criteria. AKI was reversible while colistin continued and no one required RRT. Mean +/- SD time to AKI development was 10.94 +/- 7.51 days. Multivariate logistic regression analysis demonstrated that total cumulative dose of colistin was an independent predictor of nephrotoxicity (standardized s = 1.024, P = 0.034).
Conclusion(s): AKI is a common side effect of colistin therapy in critically ill children developing in nearly half of recipients. However, with the dosage range utilized in this study, in the majority of children, renal injury seemed to be mild to moderate in nature. Given the limited treatment options available in critically ill children with resistant gram-negative pathogens, colistin remains a marvelous therapeutic option. Further studies are required to fully elucidate the risk factors and clinical pictures of colistin-induced nephrotoxicity. Graphical abstract: [Figure not available: see fulltext.]

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304.

Prediction of acute kidney injury, sepsis and mortality in children with urinary CXCL10.
Huang H., Zhou H., Wang W., Dai X., Li W., Chen J., Bai Z., Pan J., Li X., Wang J., Li Y.
Embase
Pediatric Research. 92(2) (pp 541-548), 2022. Date of Publication: August 2022.
[Article]
AN: 2014091531
Background: To determine the associations of urinary CXC motif chemokine 10 (uCXCL10) with AKI, sepsis and pediatric intensive care unit (PICU) mortality in critically ill children, as well as its predictive value for the aforementioned issues.
Method(s): Urinary CXCL10 levels were serially measured in 342 critically ill children during the first week after PICU admission. AKI diagnosis was based on the criteria of KDIGO. Sepsis was diagnosed according to the surviving sepsis campaign's international guidelines for children.
Result(s): Fifty-two (15.2%) children developed AKI, 132 (38.6%) were diagnosed with sepsis, and 30 (12.3%) died during the PICU stay. Both the initial and peak values of uCXCL10 remained independently associated with AKI, sepsis, septic AKI and PICU mortality. The AUCs of the initial uCXCL10 for predicting AKI, sepsis, septic AKI and PICU mortality were 0.63 (0.53-0.72), 0.62 (0.56-0.68), 0.75 (0.64-0.87) and 0.77 (0.68-0.86), respectively. The AUCs for prediction by using peak uCXCL10 were as follows: AKI 0.65 (0.56-0.75), sepsis 0.63 (0.57-0.69), septic AKI 0.76 (0.65-0.87) and PICU mortality 0.84 (0.76-0.91).
Conclusion(s): Urinary CXCL10 is independently associated with AKI and sepsis and may be a potential indicator of septic AKI and PICU mortality in critically ill children. Impact: Urinary CXC motif chemokine 10 (uCXCL10), as an inflammatory mediator, has been proposed to be a biomarker for AKI in a specific setting. AKI biomarkers are often susceptible to confounding factors, limiting their utility as a specific biomarker, especially in heterogeneous population.This study revealed that uCXCL10 levels are independently associated with increased risk for AKI, sepsis, septic AKI and PICU mortality.A higher uCXCL10 may be predictive of septic AKI and PICU mortality in critically ill children.

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305.

Anticoagulation in patients with acute kidney injury undergoing kidney replacement therapy.
Raina R., Chakraborty R., Davenport A., Brophy P., Sethi S., McCulloch M., Bunchman T., Yap H.K.
Embase
Pediatric Nephrology. 37(10) (pp 2303-2330), 2022. Date of Publication: October 2022.
[Article]
AN: 2013974384
Kidney replacement therapy (KRT) is used to provide supportive therapy for critically ill patients with severe acute kidney injury and various other non-renal indications. Modalities of KRT include continuous KRT (CKRT), intermittent hemodialysis (HD), and sustained low efficiency daily dialysis (SLED). However, circuit clotting is a major complication that has been investigated extensively. Extracorporeal circuit clotting can cause reduction in solute clearances and can cause blood loss, leading to an upsurge in treatment costs and a rise in workload intensity. In this educational review, we discuss the pathophysiology of the clotting cascade within an extracorporeal circuit and the use of various types of anticoagulant methods in various pediatric KRT modalities.

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306.

Kidney Injury in Critically Ill Patients Treated with Vancomycin and Zosyn or an Alternative: A Systematic Review and Meta-Analysis.
Blears E.E., Morris J., Popp D., Lee J.O., Norbury W.B.

Embase
Surgical Infections. 23(6) (pp 516-524), 2022. Date of Publication: 01 Aug 2022.
[Review]
AN: 638736319
Background: Zosyn (piperacillin-tazobactam; Pfizer Medical, New York, NY), a valuable antibiotic against gram-negative bacteria, combined with vancomycin (Z+V) is known for its high incidence of acute kidney injury (AKI), particularly in the intensive care unit (ICU), leading to the frequent use of alternatives for gram-negative coverage (Alt+V). Because there are limited data describing AKI on these alternative antibiotic agents, a systematic review and meta-analysis was conducted to determine if these regimens were indeed associated with decreased rates of AKI.
Patients and Methods: A literature review was performed electronically from its inception to November 1, 2018, screening for relevant literature by title, abstract and full text according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines within the following databases: PubMed/Medline, CINAHL, Scopus, and Cochrane Central Register of Controlled Trials. Studies were included if they contained adults who had been admitted to the ICU for treatment and had received a combination of intravenous Z + V or Alt+V as well as had AKI measured during administration of these antibiotic agents. Studies were excluded if they represented pediatric populations, did not receive care in an ICU during their hospital admission, only received monotherapy for antibiotic treatment or received antibiotic treatment for less than 48 hours. Independent extraction was performed by two reviewers. Risk of bias was assessed using the Risk of Bias in Non-randomised Studies of Interventions (ROBINS-I) methodology for retrospective studies. Random-effects models were used to calculate any differences between rates of AKI after Z + V or Alt + V.
Result(s): Fourteen articles (totaling 30,399 patients) were included. All studies available were retrospective in design. Compared with Alt + V, Z + V was associated with a higher risk ratio of AKI (1.79; 95% confidence interval [CI], 1.46-2.19; $p < 0.001$). Cefepime (C + V) was the most common alternative to Zosyn, and Z + V was associated with higher rates of kidney injury compared with C + V (1.70; 95% CI, 1.36-2.12; $p < 0.00001$). However, there was substantial heterogeneity in the data collected as well as high risk of bias.
Conclusion(s): Zosyn plus vancomycin is associated with more risk of AKI compared with Alt+V coverage in ICU adult populations. However, the conclusions were limited by the retrospective nature of the studies, high bias of included articles, and heterogeneity of the included studies.

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307.

Elevated Levels of Urinary Biomarkers TIMP-2 and IGFBP-7 Predict Acute Kidney Injury in Neonates after Congenital Heart Surgery.
Ramirez M., Chakravarti S., Busovsky-Mcneal M., McKinstry J., Al-Qaqaa Y., Sahulee R., Kumar T.K.S., Li X., Goldberg J.D., Gefen A.M., Malaga-Dieguez L.
Embase
Journal of Pediatric Intensive Care. 11(2) (pp 153-158), 2022. Date of Publication: 01 Jun 2022.
[Article]
AN: 636706492
Objectives: This article investigated the utility of urine biomarkers tissue inhibitor of metalloproteinase-2 (TIMP-2) and insulin-like growth factor binding protein-7 (IGFBP-7) in identifying acute kidney injury (AKI) in neonates after congenital heart surgery (CHS). TIMP-2 and IGFBP-7 are cell cycle arrest proteins detected in urine during periods of kidney stress/injury.
Method(s): We conducted a single-center, prospective study between September 2017 and May 2019 with neonates undergoing CHS requiring cardiopulmonary bypass (CPB). Urine samples were analyzed using NephroCheck prior to surgery and 6, 12, 24, and 96 hours post-CPB. All patients were evaluated using the Acute Kidney Injury Network (AKIN) criteria. Wilcoxon rank sum tests were used to compare the medians of the [TIMP-2*IGFBP-7] values in the AKIN negative and positive groups at each time point. Receiver operating characteristic curves were used to measure how well the [TIMP-2*IGFBP-7] values predict AKIN status.
Result(s): Thirty-six patients were included. No patients met the AKIN criteria for AKI preoperatively. Postoperatively, 19 patients (53%) met the AKIN criteria for AKI diagnosis: 13 (36%) stage 1, 5 (14%) stage 2, and 1 (3%) stage 3. None required renal replacement therapy. At the 24-hour time points, patients who met the AKIN criteria for AKI had a statistically significantly higher [TIMP-2*IGFBP7] values than the patients without AKI (1.1 vs. 0.27 [ng/mL] 2/1,000) at 24 hours (adj-p = 0.0019).
Conclusion(s): AKI is a serious complication associated with adverse outcomes in patients undergoing cardiac surgery. [TIMP-2*IGFBP-7] urinary level 24 hours after CPB is a good predictor of AKI in this population.

Status
Embase
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308.

Pediatric Mortality and Acute Kidney Injury Are Associated with Chloride Abnormalities in Intensive Care Units in the United States: A Multicenter Observational Study.
Khan A.H., Gai J., Faruque F., Bost J.E., Patel A.K., Pollack M.M.
Embase
Journal of Pediatric Intensive Care. 11(2) (pp 91-99), 2022. Date of Publication: 01 Jun 2022.
[Article]
AN: 633573577
Our objective was to determine in children in the intensive care unit (ICU) the incidence of hyperchloremia (>110 mmol/L) and hypochloremia (<98 mmol/L), the association of diagnoses with chloride abnormalities, and the associations of mortality and acute kidney injury (AKI) with chloride abnormalities. We analyzed the initial, maximum, and minimum chloride measurements of 14,684 children in the ICU with >=1 chloride measurement in the Health Facts database between 2009 and 2016. For hyperchloremia and hypochloremia compared with normochloremia, mortality rates increased three to fivefold and AKI rates increased 1.5 to threefold. The highest mortality rate (7.7%; n = 95/1,234) occurred with hyperchloremia in the minimum chloride measurement group and the highest AKI rate (7.7%; n = 72/930) occurred with hypochloremia in the initial chloride measurement group. The most common diagnostic categories associated with chloride abnormalities were injury and poisoning; respiratory; central nervous system; infectious and parasitic diseases; and endocrine, nutritional, metabolic, and immunity disorders. Controlled for race, gender, age, and diagnostic categories, mortality odds ratios, and AKI odds ratios were significantly higher for hyperchloremia and hypochloremia compared with normochloremia. In conclusion, hyperchloremia and hypochloremia are independently associated with mortality and AKI in children in the ICU.

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Embase
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Publisher
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309.

Risk Factors and Consequences of Acute Kidney Injury After Noncardiac Surgery in Children.
Hawkins J., Mpody C., Corridore M., Cambier G., Tobias J.D., Nafiu O.O.
Embase
Anesthesia and Analgesia. 135(3) (pp 625-632), 2022. Date of Publication: 01 Sep 2022.
[Article]
AN: 2019858970
BACKGROUND: Postoperative acute kidney injury (AKI) is a serious complication that is associated with prolonged hospital stay, high risk of short-term postsurgical mortality, need for dialysis, and possible progression to chronic kidney disease. To date, very little data exist on the risk of postoperative AKI among children undergoing noncardiac surgical procedures. We used data from a large multicenter cohort to determine the factors associated with AKI among children

who underwent inpatient noncardiac surgical procedures and its impact on the postoperative course.
METHOD(S): We utilized the National Surgical Quality Improvement Program Pediatric participant user files to identify a cohort of children who underwent inpatient surgery between 2012 and 2018 (n = 257,439). We randomly divided the study population into a derivation cohort of 193,082 (75%) and a validation cohort of 64,357 (25%), and constructed a multivariable logistic regression model to identify independent risk factors for AKI. We defined AKI as the occurrence of either acute renal failure or progressive renal insufficiency within the 30 days after surgery.
RESULT(S): The overall rate of postoperative AKI was 0.10% (95% confidence interval [CI], 0.09-0.11). In a multivariable model, operating times longer than 140 minutes, preexisting hematologic disorder, and preoperative sepsis were the strongest independent predictors of AKI. Other independent risk factors for AKI were American Society of Anesthesiologists (ASA) physical status >=III, preoperative inotropic support, gastrointestinal disease, ventilator dependency, and corticosteroid use. The 30-day mortality rate was 10.1% in children who developed AKI and 0.19% in their counterparts without AKI (P <.001). Children who developed AKI were more likely to require an extended hospital stay (>=75th percentile of the study cohort) relative to their peers without AKI (77.4% vs 21.0%; P <.001).
CONCLUSION(S): Independent preoperative risk factors for AKI in children undergoing inpatient noncardiac surgery were hematologic disorder, preoperative sepsis, ASA physical status >=III, inotropic support, gastrointestinal disease, ventilator dependency, and steroid use. Children with AKI were 10 times more likely to die and nearly 3 times more likely to require an extended hospital stay, relative to their peers without AKI.

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Publisher
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Year of Publication
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310.

Development and validation of a clinical prediction model of acute kidney injury in intensive care unit patients at a rural tertiary teaching hospital in South Africa: a study protocol.
Mrara B., Paruk F., Sewani-Rusike C., Oladimeji O.
Embase
BMJ Open. 12(7) (no pagination), 2022. Article Number: e060788. Date of Publication: 27 Jul 2022.
[Article]
AN: 2019699676
Introduction Acute kidney injury (AKI) is a decline in renal function lasting hours to days. The rising global incidence of AKI, and associated costs of renal replacement therapy, is a public health priority. With the only therapeutic option being supportive therapy, prevention and early diagnosis will facilitate timely interventions to prevent progression to chronic kidney disease. While many factors have been identified as predictive of AKI, none have shown adequate sensitivity or specificity on their own. Many tools have been developed in developed-country

cohorts with higher rates of non-communicable disease, and few have been validated and practically implemented. The development and validation of a predictive tool incorporating clinical, biochemical and imaging parameters, as well as quantification of their impact on the development of AKI, should make timely and improved prediction of AKI possible. This study is positioned to develop and validate an AKI prediction tool in critically ill patients at a rural tertiary hospital in South Africa. Method and analysis Critically ill patients will be followed from admission until discharge or death. Risk factors for AKI will be identified and their impact quantified using statistical modelling. Internal validation of the developed model will be done on separate patients admitted at a different time. Furthermore, patients developing AKI will be monitored for 3 months to assess renal recovery and quality of life. The study will also explore the utility of endothelial monitoring using the biomarker Syndecan-1 and capillary leak measurements in predicting persistent AKI. Ethics and dissemination The study has been approved by the Walter Sisulu University Faculty of Health Science Research Ethics and Biosafety Committee (WSU No. 005/2021), and the Eastern Cape Department of Health Research Ethics (approval number: EC 202103006). The findings will be shared with facility management, and presented at relevant conferences and seminars.

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Publisher
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311.

Risk Factors for Sepsis-Associated Acute Kidney Injury in the PICU: A Retrospective Cohort Study.
Ninmer E.K., Charlton J.R., Spaeder M.C.
Embase
Pediatric Critical Care Medicine. 23(7) (pp E366-E370), 2022. Date of Publication: 01 Jul 2022. [Article]
AN: 2019316160
OBJECTIVES: Acute kidney injury (AKI), particularly of greater severity and longer duration, is associated with increased morbidity and mortality in the pediatric population. AKI frequently occurs during sepsis, yet the knowledge of risk factors for sepsis-associated AKI in the PICU is limited. We aimed to identify risk factors for AKI that develops or persists after 72 hours from sepsis recognition in pediatric patients with severe sepsis. DESIGN: Retrospective cohort study. SETTING: PICU at an academic, tertiary-care center. PATIENTS: Children greater than 1 month and less than or equal to 18 years with severe sepsis in the combined cardiac and medical/surgical PICU between December 1, 2013, and December 31, 2020, at the University of

Virginia Children's Hospital. INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: The cohort included 124 patients with severe sepsis with 33 patients (27%) who were postcardiac surgery with cardiopulmonary bypass. AKI was defined by the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. The primary outcome was severe AKI, defined as KDIGO stage 2 or 3 AKI present at any point between days 3 and 7 after sepsis recognition. Severe AKI was present in 25 patients (20%). Factors independently associated with severe AKI were maximum vasoactive-inotropic score (VIS) within 48 hours after sepsis recognition and fluid overload. The presence of severe AKI was associated with increased inhospital mortality.
CONCLUSION(S): In children with severe sepsis, the degree of hemodynamic support as measured by the VIS and the presence of fluid overload may identify patients at increased risk of developing severe AKI.

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Publisher
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312.

Multisystem Inflammatory Syndrome in Children and Acute Kidney Injury: Retrospective Study of Five Italian PICUs.
Ricci Z., Colosimo D., Cumbo S., L'Erario M., Duchini P., Rufini P., Perrotta D., De Sanctis F., Di Nardo M., Amigoni A., Pulitano S.
Embase
Pediatric Critical Care Medicine. 23(7) (pp E361-E365), 2022. Date of Publication: 01 Jul 2022. [Article]
AN: 2019316159
OBJECTIVES: Multisystem inflammatory syndrome in children (MIS-C) manifests with heart dysfunction and respiratory failure some weeks after a severe acute respiratory syndrome coronavirus disease 2 infection. The aim of our study was to explore the prevalence, severity, timing, and duration of acute kidney injury (AKI) in MIS-C patients. Furthermore, we evaluated which clinical variables and outcomes are associated with AKI. DESIGN: Multicenter retrospective study. SETTING: Five tertiary hospital PICUs in Italy. Data were collected in the first 7 days of PICU admission and renal function was followed throughout the hospital stay. PATIENTS: Patients less than 18 years old admitted to the PICU for greater than 24 hours with MIS-C. INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: We collected the following data, including: demographic information, inflammatory biomarkers, lactate levels, Pao2/Fio2, ejection fraction, N-terminal pro-B-type natriuretic peptide (NT-proBNP), renal function (serum creatinine, urinary output, fluid balance, and percentage fluid accumulation), Vasoactive-Inotropic Score (VIS), pediatric Sequential Organ Failure Assessment (pSOFA), and Pediatric Index of Mortality 3. AKI was diagnosed in eight of 38 patients (21%) and severe AKI was present in four of eight patients. In all cases, AKI was present at PICU admission and its median

(interquartile range) duration was 3.5 days (1.5-5.7 d). We did not identify differences between AKI and no-AKI patients when not making correction for multiple comparisons, for example, in weight, ejection fraction, pSOFA, Pao2/Fio2, and lactates. We failed to identify any difference in these groups in urine output and fluid balance. Exploratory analyses of serial data between no-AKI and AKI patients showed significant differences on lymphocyte count, NT-proBNP value, ejection fraction, pSOFA, Pao2/Fio2, and VIS.
CONCLUSION(S): In this multicenter Italian PICU experience, MIS-C is associated with AKI in one-in-five cases. In general, AKI is characterized by an associated reduction in glomerular filtration rate with a self-limiting time course.

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Publisher
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Year of Publication
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313.

Acute Kidney Injury and Fluid Overload in Pediatric Extracorporeal Cardio-Pulmonary Resuscitation: A Multicenter Retrospective Cohort Study.
Gist K.M., Misfeldt A., Sahay R.D., Gorga S.M., Askenazi D.J., Bridges B.C., Paden M.L., Zappitelli M., Gien J., Basu R.K., Jetton J.G., Murphy H.J., King E., Fleming G.M., Selewski D.T., Cooper D.S.
Embase
ASAIO Journal. 68(7) (pp 956-963), 2022. Date of Publication: 01 Jul 2022.
[Article]
AN: 2019092215
Acute kidney injury (AKI) and fluid overload (FO) are common complications of extracorporeal membrane oxygenation (ECMO). The purpose of this study was to characterize AKI and FO in children receiving extracorporeal cardiopulmonary resuscitation (eCPR). We performed a multicenter retrospective study of children who received eCPR. AKI was assessed during ECMO and FO defined as <10% [FO-] vs. >=10% [FO+] evaluated at ECMO initiation and discontinuation. A composite exposure, defined by a four-group discrete phenotypic classification [FO-/AKI-, FO-/AKI+, FO+/AKI-, FO+/AKI+] was also evaluated. Primary outcome was mortality and hospital length of stay (LOS) among survivors. 131 patients (median age 29 days (IQR:9, 242 days); 51% men and 82% with underlying cardiac disease) were included. 45.8% survived

hospital discharge. FO+ at ECMO discontinuation, but not AKI was associated with mortality [aOR=2.3; 95% CI: 1.07-4.91]. LOS for FO+ patients was twice as long as FO- patients, irrespective of AKI status [(FO+/AKI+ (60 days; IQR: 49-83) vs. FO-/AKI+ (30 days, IQR: 19-48 days); P = 0.01]. FO+ at ECMO initiation and discontinuation was associated with an adjusted 66% and 50% longer length of stay respectively. Prospective studies that target timing and strategy of fluid management, including its removal in children receiving ECPR are greatly needed.

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34643574 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34643574]
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314.

Risk factors and outcomes associated with acute kidney injury following extracardiac total cavopulmonary connection: a retrospective observational study.
Bai L., Jin Y., Zhang P., Li Y., Gao P., Wang W., Wang X., Feng Z., Zhao J., Liu J.
Embase

Translational Pediatrics. 11(6) (pp 848-858), 2022. Date of Publication: June 2022.
[Article]
AN: 2019052668
Background: Total cavopulmonary connection (TCPC) is an important operation for the treatment of complex congenital heart disease. Epidemiology and outcomes for pediatric patients with acute kidney injury (AKI) following extracardiac TCPC have not been well documented. This study investigates the prevalence, risk factors, and outcomes of AKI in children after extracardiac TCPC surgery.
Method(s): We retrospectively evaluated patients (age at surgery <18 years) who underwent extracardiac TCPC surgery between January 2008 and January 2020 in the Pediatric Cardiac Surgical Center of Fuwai Hospital, Beijing, China. AKI was defined according to the pediatric-modified risk, injury, failure, loss of function, and end-stage renal disease criteria.
Result(s): A total of 377 pediatric patients were included in this study; 123 patients (32.6%) had some degree of AKI. Among the patients with AKI, 101 (82.1%) were diagnosed with AKI-risk (AKI-R), while 22 (17.9%) were diagnosed with acute kidney injury/failure (AKI/F) (16 with AKI, and 6 with AKF). Preoperative estimated creatinine clearance (OR: 1.039, 95% CI: 1.024-1.055, P<0.001), neutrophil-to-lymphocyte ratio (OR: 1.208, 95% CI: 1.128-1.294, P<0.001), and renal perfusion pressure (OR: 0.962, 95% CI: 0.938-0.986, P=0.002) on postoperative day (POD) 0 were significantly associated with AKI after TCPC. Having previously undergone a bidirectional Glenn was significantly associated with the severity of postoperative AKI (OR: 0.253, 95% CI: 0.088-0.731, P=0.011). Furthermore, AKI was associated with prolonged mechanical ventilation time, prolonged intensive care unit stay, and composite adverse outcome. Compared with non-AKI patients, the 10-year survival rate of patients with severe AKI was significantly lower (95.5% vs. 65.9%, P=0.009).
Conclusion(s): Although the incidence of AKI was high in patients undergoing TCPC surgery, most cases were AKI-R. Severe AKI was significantly associated with early adverse outcomes and poor long-term survival.

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Publisher
AME Publishing Company
Year of Publication
2022

315.

Urine protein in patients with type I hypersensitivity is indicative of reversible renal tube injury.
Cao Y., Shao L., Xin M., Zhang Y., Xu Y., Song Y., Lu H., Wang Y., Xia Y., Zhang M., Guo Y., Wang L., Qiao Z.
Embase
Life Sciences. 305 (no pagination), 2022. Article Number: 120735. Date of Publication: 15 Sep 2022.

[Article]
AN: 2019048195
Aims: In our clinical work, some patients with type I hypersensitivity could be detected protein in their urine. This study focused on the early renal injury in patients with type I hypersensitivity.
Main Method(s): From 43 type I hypersensitivity patients with proteinuria, 10 patients were randomly selected for mass spectrometry analysis of 24-h urine together with 5 healthy volunteers. Mice were vaccinated with Dermatophagoides farina (Der f) and ovalbumin (OVA) were used as antigen to establish the type I hypersensitivity animal models.
Key Findings: The urine protein of hypersensitivity patients was significantly increased in the alpha-1-microglobulin/ bikunin precursor (Protein AMBP) (t = 3.140, P = 0.008), retinol binding protein 4 (RBP4) (t = 2.426, P = 0.031), kininogen-1 (t = 2.501, P = 0.027), and transferrin appeared only in patients' urine. After immunizing mice with antigens, significant increases of the total serum immunoglobulin E (IgE) were observed in both Der f (86.92 +/- 36.01 U/mL, t = 5.231, P = 0.0004) and OVA group (34.65 +/- 24.72 U/mL, t = 2.891, P = 0.0161) compared with the negative control group (2.68 +/- 0.47 U/mL). Meanwhile, definite eosinophil infiltration around the impaired renal tubules as well as the bronchus in Der f mice were observed, and urine protein appeared. After stopping the allergen stimulation, proteinuria disappeared. Instead, when the mice were treated with the antigen again, proteinuria reappeared.
Significance: Our findings suggest that renal tubular damage in patients with type I hypersensitivity is reversible, and proteinuria disappears with allergy symptoms remission.

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316.

Integration of the Renal Angina Index and Urine Neutrophil Gelatinase-Associated Lipocalin Improves Severe Acute Kidney Injury Prediction in Critically Ill Children and Young Adults.
Goldstein S.L., Krallman K.A., Kirby C., Roy J.-P., Collins M., Fox K., Schmerge A., Wilder S., Gerhardt B., Chima R., Basu R.K., Chawla L., Fei L.
Embase
Kidney International Reports. 7(8) (pp 1842-1849), 2022. Date of Publication: August 2022.
[Article]
AN: 2018940637
Introduction: Acute kidney injury (AKI) occurs in one-fourth of children and young adults admitted to pediatric intensive care unit (PICU). Severe AKI (sAKI; Kidney Disease: Improving Global Outcomes stage 2 or 3) is associated with morbidity and mortality. An AKI risk stratification system, the Renal Angina Index (RAI) calculated at 12 hours of admission, exhibits excellent performance to rule out sAKI at 72 hours of admission. We found that integration of urine

neutrophil gelatinase-associated lipocalin (NGAL) with RAI improves prediction of sAKI. We now report the first-year results after implementation of our prospective automated RAI-NGAL clinical decision support (CDS) program.
Method(s): Patients 3 months to 25 years of age were eligible. Admission order sets have a conditional order for urine NGAL released when a 12-hour RAI >=8. The primary outcome was sAKI any time at days 2 to 4 of admission. We assessed performance of the RAI and RAI+/NGAL to predict the primary outcome.
Result(s): A total of 1427 unique patients accounted for 1575 admissions. In 147 admissions, RAI was >=8. RAI <8 had negative predictive value (NPV) of 0.98 (95% CI 0.97-0.99); RAI >= 8 had positive predictive value (PPV) of 0.37 (95% CI 0.30-0.46) to predict days 2 to 4 sAKI (area under the receiver operating characteristic curve [AUC-ROC] 0.88 [95% CI 0.84-0.92]). Of 147 RAI+ patients, 89 had NGAL available. RAI/NGAL combination improved PPV (0.64, 95% CI 0.50-0.79) without decrement in NPV (0.98, 95% CI 0.97-0.98).
Conclusion(s): AKI biomarker assessment directed by risk stratification improves prediction of sAKI in critically ill children and young adults. This CDS process has potential to enrich the population for interventional study, although improvement to adherence to CDS is needed.

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317.

Construction of Prediction Model of Renal Damage in Children with Henoch-Schonlein Purpura Based on Machine Learning.
Cao T., Zhu Y.
Embase
Computational and Mathematical Methods in Medicine. 2022 (no pagination), 2022. Article Number: 6991218. Date of Publication: 2022.
[Article]

AN: 2018699067
Objective. The children with Henoch-Schonlein purpura (HSP) may suffer from renal insufficiency, which seriously affects the life and health of the children. This study aims to construct a prediction model of Henoch-Schonlein purpura nephritis (HSPN). Methods. A total of 240 children with HSP treated in dermatology and pediatrics in our hospital were selected. The general information, patients' clinical symptoms, and laboratory examination indicators were collected for feature selection, and the XGBoost algorithm prediction model was built. Results. According to the input feature indexes, the top ten crucial feature indicators output by the XGBoost model were urine N-acetyl-beta-D-aminoglucosidase, urinary retinol-binding protein, IgA, age, recurrence of purpura, purpura area, abdominal pain, 24-h urinary protein quantification, percentage of neutrophils, and serum albumin. The areas under the curves of the training set (0.895, 95% CI: 0.827-0.963) and test set (0.870, 95% CI: 0.799-0.941) models were similar. Conclusion. The prediction model based on XGBoost is used to predict HSP renal damage based on clinical data of children, which can reduce the harm caused by invasive examination for patients.

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318.

Cystatin C, renal resistance index, and kidney injury molecule-1 are potential early predictors of diabetic kidney disease in children with type 1 diabetes.
Trutin I., Bajic Z., Turudic D., Cvitkovic-Roic A., Milosevic D.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 962048. Date of Publication: 29 Jul 2022.
[Article]
AN: 2018633680
Background: Diabetic kidney disease (DKD) is the main cause of end-stage renal disease in patients with diabetes mellitus type I (DM-T1). Microalbuminuria and estimated glomerular filtration rate (eGFR) are standard predictors of DKD. However, these predictors have serious weaknesses. Our study aimed to analyze cystatin C, renal resistance index, and urinary kidney injury molecule-1 (KIM-1) as predictors of DKD.
Method(s): We conducted a cross-sectional study in 2019 on a consecutive sample of children and adolescents (10-18 years) diagnosed with DM-T1. The outcome was a risk for DKD estimated using standard predictors: age, urinary albumin, eGFR, serum creatinine, DM-T1 duration, HbA1c, blood pressure, and body mass index (BMI). We conducted the analysis using structural equation modeling.

Result(s): We enrolled 75 children, 36 girls and 39 boys with the median interquartile range (IQR) age of 14 (11-16) years and a median (IQR) duration of DM-T1 of 6 (4-9) years. The three focal predictors (cystatin C, resistance index, and urinary KIM-1) were significantly associated with the estimated risk for DKD. Raw path coefficients for cystatin C were 3.16 [95% CI 0.78; 5.53; p = 0.009, false discovery rate (FDR) < 5%], for renal resistance index were -8.14 (95% CI -15.36; -0.92; p = 0.027; FDR < 5%), and for urinary KIM-1 were 0.47 (95% CI 0.02; 0.93; p = 0.040; FDR < 5%).
Conclusion(s): Cystatin C, renal resistance index, and KIM-1 may be associated with the risk for DKD in children and adolescents diagnosed with DM-T1. We encourage further prospective cohort studies to test our results.

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Publisher
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Year of Publication
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319.

Associations of Long-Term Visit-to-Visit Blood Pressure Variability With Subclinical Kidney Damage and Albuminuria in Adulthood: a 30-Year Prospective Cohort Study.
Wang Y., Zhao P., Chu C., Du M.-F., Zhang X.-Y., Zou T., Hu G.-L., Zhou H.-W., Jia H., Liao Y.-Y., Chen C., Ma Q., Wang D., Yan Y., Sun Y., Wang K.-K., Niu Z.-J., Zhang X., Man Z.-Y., Wu Y.-X., Wang L., Li H.-X., Zhang J., Li C.-H., Gao W.-H., Gao K., Lu W.-H., Desir G.V., Delles C., Chen F.-Y., Mu J.-J.
Embase
Hypertension. 79(6) (pp 1247-1256), 2022. Date of Publication: 01 Jun 2022.
[Article]
AN: 2018384271
Background: Recent evidence indicates that long-term visit-to-visit blood pressure variability (BPV) may be associated with risk of cardiovascular disease. We, therefore, aimed to determine the potential associations of long-term BPV from childhood to middle age with subclinical kidney damage (SKD) and albuminuria in adulthood.
Method(s): Using data from the ongoing cohort of Hanzhong Adolescent Hypertension study, which recruited children and adolescents aged 6 to 18 years at baseline, we assessed BPV by SD and average real variability (ARV) for 30 years (6 visits). Presence of SKD was defined as estimated glomerular filtration rate between 30 and 60 mL/min per 1.73 m2or elevated urinary albumin-to creatinine ratio at least 30 mg/g. Albuminuria was defined as urinary albumin-to creatinine ratio >=30 mg/g.
Result(s): During 30 years of follow-up, of the 1771 participants, 204 SKD events occurred. After adjustment for demographic, clinical characteristics, and mean BP during 30 years, higher

SDSBP, ARVSBP, SDDBP, ARVDBP, SDMAP, ARVMAP, and ARVPPwere significantly associated with higher risk of SKD. When we used cumulative exposure to BP from childhood to adulthood instead of mean BP as adjustment factors, results were similar. In addition, greater long-term BPV was also associated with the risk of albuminuria. Long-term BPV from childhood to middle age was associated with higher risk of SKD and albuminuria in adulthood, independent of mean BP or cumulative exposure to BP during follow-up.
Conclusion(s): Identifying long-term BPV from early age may assist in predicting kidney disease and cardiovascular disease in later life.

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320.

Sestrin2 remedies podocyte injury via orchestrating TSP-1/TGF-beta1/Smad3 axis in diabetic kidney disease.
Song S., Shi C., Bian Y., Yang Z., Mu L., Wu H., Duan H., Shi Y.
Embase

Cell Death and Disease. 13(7) (no pagination), 2022. Article Number: 663. Date of Publication: July 2022.
[Article]
AN: 2018356693
Sestrin2 is identified as a stress-induced protein and could functionate in many aspects. In our study, we investigated the latent impact of Sestrin2 on podocyte injury and its molecular mechanism in vivo and in vitro in diabetic kidney disease (DKD). Sestrin2 was low-expressed in renal biopsies from individuals with DKD, the glomeruli from diabetic mice, and mouse podocytes exposed to high glucose (HG). Sestrin2 overexpression ameliorated HG-induced phenotypic alterations, apoptosis, and oxidative stress in conditionally immortalized mouse podocytes and modulated the activity of Thrombospondin-1 (TSP-1)/transforming growth factor (TGF-beta1)/Smad3 pathway in podocytes. Moreover, TSP-1 inhibitor LSKL or TGF-beta blocker Pirfenidone arrested podocyte injury induced by HG. Streptozotocin (STZ) was employed to render equivalent diabetes in B6-TgN (CMV-Sestrin2) (TgN) and wild-type (WT) control mice. Sestrin2 alleviated increased levels of 24-h urinary protein, blood urea nitrogen, serum creatinine and triglyceride, and urine 8-OHdG in diabetic mice. Podocyte phenotypic alterations, increased expression of apoptosis-associated proteins and podocyte loss were observed in WT but not in diabetic TgN mice, as well as oxidative stress. Additionally, TSP-1/TGF-beta1/Smad3 signaling pathway was also suppressed in glomeruli of diabetic TgN mice. Thus, Sestrin2 mitigates podocyte injury in DKD via orchestrating TSP-1/TGF-beta1/Smad3 pathway, underlining Sestrin2 as a promising therapeutic target for DKD.

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321.

Effect of dexmedetomidine for prevention of acute kidney injury after cardiac surgery: an updated systematic review and meta-analysis.
Liu X., Hu Q., Chen Q., Jia J., Liao Y.-H., Feng J.
Embase
Renal Failure. 44(1) (pp 1150-1159), 2022. Date of Publication: 2022.
[Review]
AN: 2018273855

Background: Acute kidney injury (AKI) is a serious complication related to cardiac surgery. Several studies have been conducted to investigate the effect of dexmedetomidine administration on AKI prevention.
Objective(s): To assess if dexmedetomidine is associated with a protective effect of renal function after cardiac surgery. And the aim of conducting this meta-analysis is to summarize the literature and determine the clinical utility of dexmedetomidine administration in patients undergoing cardiac surgery.
Method(s): PubMed, Cochrane Library, and EMBASE databases were comprehensively searched for all randomized controlled trials (RCTs) published before 1 December, 2021 that investigated the effect of dexmedetomidine on AKI prevention.
Result(s): Our analysis included 16 studies involving 2148 patients. Compared with the control group, dexmedetomidine administration significantly reduced AKI incidence (OR, 0.47; 95% CI, 0.36-0.61; p < 0.00001; I 2 = 26%) and the length of stay in the intensive care unit (ICU) but did not alter mortality rate, length of stay in the hospital, and mechanical ventilation time. Furthermore, the incidence of delirium among patients treated with dexmedetomidine was significantly decreased.
Conclusion(s): Dexmedetomidine administration has a positive effect on preventing AKI and postoperative delirium after cardiac surgery and significantly reduces the length of stay in the ICU.

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322.

The Neglected Price of Pediatric Acute Kidney Injury: Non-renal Implications.
Pande C.K., Smith M.B., Soranno D.E., Gist K.M., Fuhrman D.Y., Dolan K., Conroy A.L., Akcan-Arikan A.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 893993. Date of Publication: 30 Jun 2022.
[Review]
AN: 2018268261
Preclinical models and emerging translational data suggest that acute kidney injury (AKI) has far reaching effects on all other major organ systems in the body. Common in critically ill children and adults, AKI is independently associated with worse short and long term morbidity, as well as mortality, in these vulnerable populations. Evidence exists in adult populations regarding the

impact AKI has on life course. Recently, non-renal organ effects of AKI have been highlighted in pediatric AKI survivors. Given the unique pediatric considerations related to somatic growth and neurodevelopmental consequences, pediatric AKI has the potential to fundamentally alter life course outcomes. In this article, we highlight the challenging and complex interplay between AKI and the brain, heart, lungs, immune system, growth, functional status, and longitudinal outcomes. Specifically, we discuss the biologic basis for how AKI may contribute to neurologic injury and neurodevelopment, cardiac dysfunction, acute lung injury, immunoparalysis and increased risk of infections, diminished somatic growth, worsened functional status and health related quality of life, and finally the impact on young adult health and life course outcomes.

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323.

Comparison of diagnostic criteria for acute kidney injury in critically ill children: a multicenter cohort study.
Kuai Y., Li M., Chen J., Jiang Z., Bai Z., Huang H., Wei L., Liu N., Li X., Lu G., Li Y.
Embase
Critical Care. 26(1) (no pagination), 2022. Article Number: 207. Date of Publication: December 2022.
[Article]
AN: 2018180025
Background: Substantial interstudy heterogeneity exists in defining acute kidney injury (AKI) and baseline serum creatinine (SCr). This study assessed AKI incidence and its association with pediatric intensive care unit (PICU) mortality under different AKI and baseline SCr definitions to determine the preferable approach for diagnosing pediatric AKI.

Method(s): In this multicenter prospective observational cohort study, AKI was defined and staged according to the Kidney Disease: Improving Global Outcome (KDIGO), modified KDIGO, and pediatric reference change value optimized for AKI (pROCK) definitions. The baseline SCr was calculated based on the Schwartz formula or estimated as the upper normative value (NormsMax), admission SCr (AdmSCr) and modified AdmSCr. The impacts of different AKI definitions and baseline SCr estimation methods on AKI incidence, severity distribution and AKI outcome were evaluated.
Result(s): Different AKI definitions and baseline SCr estimates led to differences in AKI incidence, from 6.8 to 25.7%; patients with AKI across all definitions had higher PICU mortality ranged from 19.0 to 35.4%. A higher AKI incidence (25.7%) but lower mortality (19.0%) was observed based on the Schwartz according to the KDIGO definition, which however was overcome by modified KDIGO (AKI incidence: 16.3%, PICU mortality: 26.1%). Furthermore, for the modified KDIGO, the consistencies of AKI stages between different baseline SCr estimation methods were all strong with the concordance rates > 90.0% and weighted kappa values > 0.8, and PICU mortality increased pursuant to staging based on the Schwartz. When the NormsMax was used, the KDIGO and modified KDIGO led to an identical AKI incidence (13.6%), but PICU mortality did not differ among AKI stages. For the pROCK, PICU mortality did not increase pursuant to staging and AKI stage 3 was not associated with mortality after adjustment for confounders.
Conclusion(s): The AKI incidence and staging vary depending on the definition and baseline SCr estimation method used. The modified KDIGO definition based on the Schwartz method leads AKI to be highly relevant to PICU mortality, suggesting that it may be the preferable approach for diagnosing AKI in critically ill children and provides promise for improving clinicians' ability to diagnose pediatric AKI.

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324.

Continuous Renal Replacement Therapy in Pediatric Patients With Acute Kidney Injury After Liver Transplantation.
Sun Y., Gao S., Wang X., Yu L., Xu M., Gao W., Sun C., Wang B.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 878460. Date of Publication: 22 Jun 2022.

[Article]
AN: 2018145183
Objective: This study aimed to explore the clinical application of continuous renal replacement therapy (CRRT) in pediatric patients with acute kidney injury (AKI) after liver transplantation.
Method(s): Pediatric patients who underwent liver transplantation were retrospectively investigated. Those who developed AKI within 1 year after the surgery were included and divided into a CRRT group and a non-CRRT group. The perioperative conditions and postoperative complications of the two groups were compared along with the prognoses of the groups to analyze the high-risk factors of the postoperative CRRT.
Result(s): 189 (36.91%) patients developed AKI within 1 year after the liver transplantation surgery. There were 18 patients in the CRRT group and 171 in the non-CRRT group. The differences in the preoperative conditions were not statistically significant between the two groups. Compared with the non-CRRT group, patients in the CRRT group had significantly longer transplantation times, higher volumes of intraoperative hemorrhage, and increased incidence of postoperative unscheduled surgery, postoperative primary nonfunction of the transplanted liver, secondary liver transplantation, hepatic artery occlusion, and intestinal fistula ($P < 0.05$). Moreover, the proportion of patients in AKI stage 3 is higher in the CRRT group (83.33%) than that in the non-CRRT group (11.11%), $P < 0.001$. The median time to initiate CRRT was 10 days postoperatively, the median number of CRRT treatments per patient was 2 times, the average duration of each CRRT treatment was 10.1 h, and the average rate of the decrease in blood creatinine per treatment was 25.6%. Results of multivariate logistic regression analysis showed that AKI stage 3 [OR=40.000, 95%CI (10.598, 150.969), $P = 0.016$], postoperative unscheduled surgery [OR=6.269, 95%CI (3.051, 26.379), $P = 0.007$], and hepatic artery occlusion [OR = 17.682, 95%CI (1.707, 40.843), $P = 0.001$] were recognized as risk factors for postoperative AKI with CRRT therapy. The one- and two-year survival rates were 72.22% and 72.22% in the CRRT group, respectively; and 97.08% and 96.49% in the non-CRRT group, accordingly. There were statistically significant differences in the one- and two-year survival rates between the two groups ($P < 0.001$).
Conclusion(s): The incidence of AKI after liver transplantation in pediatric patients was high. Patients with AKI stage 3, hepatic artery occlusion, and underwent unscheduled surgery postoperatively were with a high likelihood of receiving CRRT, which was related to a lower one- and two-year survival rates. CRRT effectively improved the one- and two-year survival rates.

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325.

Blackwater fever and acute kidney injury in children hospitalized with an acute febrile illness: pathophysiology and prognostic significance.
Conroy A.L., Hawkes M.T., Leligdowicz A., Mufumba I., Starr M.C., Zhong K., Namasopo S., John C.C., Opoka R.O., Kain K.C.
Embase

BMC Medicine. 20(1) (no pagination), 2022. Article Number: 221. Date of Publication: December 2022.
[Article]
AN: 2018100775
Background: Acute kidney injury (AKI) and blackwater fever (BWF) are related but distinct renal complications of acute febrile illness in East Africa. The pathogenesis and prognostic significance of BWF and AKI are not well understood.
Method(s): A prospective observational cohort study was conducted to evaluate the association between BWF and AKI in children hospitalized with an acute febrile illness. Secondary objectives were to examine the association of AKI and BWF with (i) host response biomarkers and (ii) mortality. AKI was defined using the Kidney Disease: Improving Global Outcomes criteria and BWF was based on parental report of tea-colored urine. Host markers of immune and endothelial activation were quantified on admission plasma samples. The relationships between BWF and AKI and clinical and biologic factors were evaluated using multivariable regression.
Result(s): We evaluated BWF and AKI in 999 children with acute febrile illness (mean age 1.7 years (standard deviation 1.06), 55.7% male). At enrollment, 8.2% of children had a history of BWF, 49.5% had AKI, and 11.1% had severe AKI. A history of BWF was independently associated with 2.18-fold increased odds of AKI (95% CI 1.15 to 4.16). When examining host response, severe AKI was associated with increased immune and endothelial activation (increased CHI3L1, sTNFR1, sTREM-1, IL-8, Angpt-2, sFlt-1) while BWF was predominantly associated with endothelial activation (increased Angpt-2 and sFlt-1, decreased Angpt-1). The presence of severe AKI, not BWF, was associated with increased risk of in-hospital death (RR, 2.17 95% CI 1.01 to 4.64) adjusting for age, sex, and disease severity.
Conclusion(s): BWF is associated with severe AKI in children hospitalized with a severe febrile illness. Increased awareness of AKI in the setting of BWF, and improved access to AKI diagnostics, is needed to reduce disease progression and in-hospital mortality in this high-risk group of children through early implementation of kidney-protective measures.

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326.

Incidence and factors associated with acute kidney injury among children with type 1 diabetes hospitalized with diabetic ketoacidosis: A prospective study.
Hegab A.M., Khalil F.F., Abosedera M.M.
Embase
Pediatric Diabetes. 23(6) (pp 783-791), 2022. Date of Publication: September 2022.
[Article]
AN: 2017864974
Background and Objectives: Acute kidney injury (AKI) is frequent among critically ill children. This study aimed to assess the incidence and factors associated with AKI among children with type 1 diabetes mellitus (T1DM) hospitalized with diabetic ketoacidosis (DKA).
Method(s): This prospective observational study was conducted at Sohag University Hospital, Egypt over 1 year. Children aged 6 months to 12 years, diagnosed with T1DM and hospitalized with the criteria of DKA were included. The study participants received intravenous fluid therapy and intravenous insulin infusion for DKA management. Serum creatinine levels were measured at admission, 24 and 48 h after admission. AKI was defined and staged using the Kidney Disease Improving Global Outcomes serum creatinine criteria.
Result(s): The study included 265 DKA episodes in 240 participants. AKI was found in 110 (41.5%) DKA episodes. Moderated to severe AKI developed in 41 (15.5%) episodes. Multivariate regression analysis revealed that age (adjusted odds ratio = 0.78, 95% confidence interval (CI): 0.69-0.89, p < 0.001), Glasgow-Coma scale (GCS) < 14 at admission (adjusted odds ratio = 4.66, 95% CI: 1.66-13.14, p = 0.004) and serum chloride level at 12 h (adjusted odds ratio = 1.10, 95% CI: 1.02-1.18, p = 0.01) were the most significant factors associated with moderate to severe AKI development.
Conclusion(s): AKI is common among T1DM children hospitalized with DKA. Younger age, low GCS at hospital admission and increased serum chloride level during DKA management were associated with increased risk for moderate to severe AKI development.

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327.

Documentation of acute kidney injury at discharge from the neonatal intensive care unit and role of nephrology consultation.
Chmielewski J., Chaudhry P.M., Harer M.W., Menon S., South A.M., Chappell A., Griffin R., Askenazi D., Jetton J., Starr M.C., Ambalavanan N., Selewski D.T., Sarkar S., Kent A., Fletcher J., Abitbol C.L., DeFreitas M., Duara S., Charlton J.R., Swanson J.R., Guillet R., D'Angio C., Mian A., Rademacher E., Mhanna M.J., Raina R., Kumar D., Jetton J.G., Brophy P.D., Colaizy T.T., Klein J.M., Arikan A.A., Rhee C.J., Goldstein S.L., Nathan A.T., Kupferman J.C., Bhutada A., Rastogi S., Bonachea E., Ingraham S., Mahan J., Nada A., Cole F.S., Davis T.K., Dower J.,

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Embase
Journal of Perinatology. 42(7) (pp 930-936), 2022. Date of Publication: July 2022.
[Article]
AN: 2017815202
Objective: To investigate whether NICU discharge summaries documented neonatal AKI and estimate if nephrology consultation mediated this association. Study design: Secondary analysis of AWAKEN multicenter retrospective cohort. Exposures: AKI severity and diagnostic criteria. Outcome(s): AKI documentation on NICU discharge summaries using multivariable logistic regression to estimate associations and test for causal mediation.
Result(s): Among 605 neonates with AKI, 13% had documented AKI. Those with documented AKI were more likely to have severe AKI (70.5% vs. 51%, p < 0.001) and SCr-only AKI (76.9% vs. 50.1%, p = 0.04). Nephrology consultation mediated 78.0% (95% CL 46.5-109.4%) of the total effect of AKI severity and 82.8% (95% CL 70.3-95.3%) of the total effect of AKI diagnostic criteria on documentation.
Conclusion(s): We report a low prevalence of AKI documentation at NICU discharge. AKI severity and SCr-only AKI increased odds of AKI documentation. Nephrology consultation mediated the associations of AKI severity and diagnostic criteria with documentation.

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328.

Acute Kidney Disease in Hospitalized Pediatric Patients With Acute Kidney Injury in China.
Deng Y.-H., Yan P., Zhang N.-Y., Luo X.-Q., Wang X.-F., Duan S.-B.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 885055. Date of Publication: 23 May 2022.
[Article]
AN: 2017683450
Objective: The epidemiology and outcomes of acute kidney disease (AKD) after acute kidney injury (AKI) in hospitalized children are poorly described. The aim of this study is to investigate the prevalence, predictive factors, and clinical outcomes of AKD in hospitalized children with AKI. Method(s): Children (1 month-18 years) with AKI during hospitalization in the Second Xiangya Hospital from January 2015 to December 2020 were identified. AKD was defined based on the consensus report of the Acute Disease Quality Initiative 16 workgroup. The endpoints include adverse outcomes in 30 and 90 days. Multivariable logistic regression analyses were used to

estimate the odds ratio of 30- and 90-day adverse outcomes associated with AKD and identify the risk factors of AKD.
Result(s): AKD was developed in 42.3% (419/990) of the study patients, with 186 in AKD stage 1, 107 in AKD stage 2, and 126 in AKD stage 3. Pediatric patients with AKD stages 2-3 had significantly higher rates of developing 30- and 90-day adverse outcomes than those with AKD stage 0 and 1. The adjusted odds ratio of AKD stage 2-3 was 12.18 (95% confidence interval (CI), 7.38 - 20.09) for 30-day adverse outcomes and decreased to 2.49 (95% CI, 1.26 - 4.91) for 90-day adverse outcomes. AKI stages 2 and 3, as well as glomerulonephritis, were the only predictive factors for AKD stage 2-3.
Conclusion(s): AKD is frequent among hospitalized pediatric AKI patients. AKD stage 2-3 represents a high-risk subpopulation among pediatric AKI survivors and is independently associated with 30- and 90-day adverse outcomes. Awareness of the potential risks associated with AKD stage 2-3 and its risk factors may help improve outcomes through careful monitoring and timely intervention.

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329.

Incidence and Perioperative Risk Factors of Acute Kidney Injury Among Lung Transplant Recipients.
Wajda-Pokrontka M., Nadziakiewicz P., Krauchuk A., Ochman M., Zawadzki F., Przybylowski P.
Embase
Transplantation Proceedings. 54(4) (pp 1120-1123), 2022. Date of Publication: May 2022.
[Article]
AN: 2017680924
Background: Acute kidney injury (AKI) is a significant burden in an early postoperative period after lung transplantation (LT). The development of severe AKI, including a need for continuous renal replacement therapy (CRRT), is associated with increased mortality among lung transplant recipients. Evaluation of AKI incidence and predictive factors related to the development of severe AKI and with the use of CRRT in the early postoperative period after LT.
Method(s): Retrospective study of 73 consecutive patients after LT operated between 2015 and 2018 in our center. We noted the stage of AKI according to KDIGO guidelines in the 7 postoperative days.
Result(s): We noted AKI among 62 lung transplant recipients (84.9%). We recognized the first and second stages of AKI in 21 patients (28.8%) and 19 patients 26%, respectively (group A). We identified severe AKI (group C) in 22 recipients (30.1%), 9 of whom needed CRRT postoperatively. There was a nonsignificant difference between groups in baseline serum creatinine (0.69 +/- 0.22 mg/dL vs 0.84 +/- 0.34; P =.073). Group C subjects statistically more often suffered from pulmonary hypertension (P <.001) and diabetes (P <.001). In both groups, the duration of the procedure was comparable, but, among patients with severe AKI, procedures were performed more often with the use of extracorporeal circulation (50% vs 68%; P =.194)

Conclusion(s): Pulmonary hypertension and diabetes could be significant risk factors of high-grade AKI development after LT. Identification of factors modifying renal insufficiency development in lung transplant recipients needs further investigations.

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Publisher
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330.

Incidence and risk factors of acute kidney injury in severely burned patients in Mulago Hospital, Uganda-a prospective cohort.
Wandabwa J., Kalyesubula R., Najjingo I., Nalunjogi J., Ssekitooleko B., Mbiine R., Alenyo R.
Embase
International Journal of Burns and Trauma. 12(3) (pp 131-138), 2022. Date of Publication: 2022.
[Article]
AN: 2017531804
Background: Acute Kidney Injury (AKI) is associated with increased mortality among severely burned pa-tients. According to World Health Organization (WHO) 11 million people suffer from burns worldwide and burns con-tribute to 180,000 deaths yearly. Majority of these burns occur in the Low and Middle-Income Countries. Currently there is no published data on the incidence, risk factors and outcomes of AKI among patients with severe burns in Uganda. Early screening and treatment of patients at risk of developing AKI has been shown to improve survival. We therefore carried out a study to determine the incidence and risk factors of AKI in Uganda.
Method(s): This was a prospective cohort study that consecutively included patients with severe burns admitted in Mulago National Referral Hospital burns unit between February and May 2018. Patients were followed up for 14 days and AKI was assessed according to the KIDGO criteria. The incidence of AKI was expressed as a proportion. Kaplan Meier graph was used to estimate the median survival of patients with or without AKI. The risk factors for AKI were assessed using cox proportion hazard regression analysis.
Result(s): Of the 147 patients screened, 92 met the inclusion criteria but 2 declined to participate in the study. Of the study participants, 48 (53.3%) were male, 47 (52.2%) were aged 3 years and below, the median TBSA was 17 (IQR; 13-23), 58 (69.9%) had low albumin levels and 16 (18.6%) had inhalation burns. The incidence of AKI was found to be 34.4% (95% CI; 25.9-45.9) with a mortality of 11.76% (95% CI; 6.37-20.73). Total burn surface area HR=3.10 (95% CI; 1.39 to 6.94 P=0.003) was the only independent risk factor for AKI.

Conclusion(s): The incidence and mortality rate of AKI in patients with severe burns was found to be high. Having burns greater than 18% TBSA was an independent risk factor for AKI. Therefore, patients with burns greater than 18% should be assessed regularly for AKI so that treatment is instituted early should it occur.

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Publisher
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331.

Urine Output Monitoring for the Diagnosis of Early-Onset Acute Kidney Injury in Very Preterm Infants.
De Mul A.E., Parvex P., Eneau A.H., Biran V.E., Poncet A., Baud O., Saint-Faust M., Wilhelm-Bals A.
Embase
Clinical Journal of the American Society of Nephrology. 17(7) (pp 949-956), 2022. Date of Publication: July 2022.
[Article]
AN: 2017450682
Background and objectives The current threshold used for oliguria in the definition of neonatal AKI has been empirically defined as 1 ml/kg per hour. Urine output criteria are generally poorly documented, resulting in uncertainty in the most accurate threshold to identify AKI in very preterm infants with known tubular immaturity. Design, setting, participants, & measurementsWe conducted a bicentric study including 473 very preterm infants (240/7-296/7 weeks of gestation) born between January 2014 and December 2018 with urine output measurements every 3 hours during the first 7 days of life and two serum creatinine measurements during the first 10 days of life. AKI was defined using the neonatal Kidney Disease Improving Global Outcomes (KDIGO) definition.We tested whether higher urine output thresholds (1.5 or 2 ml/kg per hour) in modified AKI definitions may better discriminate neonatal mortality compared with the current definition. Results Early-onset AKI was developed by 101 of 473 (21%) very preterm infants. AKI was diagnosed on the basis of urine output criteria alone (no rise in creatinine) for 27 of 101 (27%) participants. Early-onset AKI was associated with higher risk of death before discharge (adjusted odds ratio, 3.9; 95% confidence interval, 1.9 to 7.8), and the AKI neonatal KDIGO score showed good discriminative performance for neonatal mortality, with an area under the receiver operating characteristic (ROC) curve of 0.68 (95% confidence interval, 0.61 to 0.75). Modified AKI definitions that included higher urine output thresholds showed significantly improved discriminative performance, with areas under the ROC curve of 0.73 (95% confidence interval, 0.66 to 0.80) for the 1.5-ml/kg per hour threshold and 0.75 (95% confidence interval, 0.68 to 0.81) for the 2-ml/kg per hour threshold. Conclusions Early-onset AKI was diagnosed on the basis of urine output exclusively for a quarter of the cases. Furthermore, modified AKI definitions that included higher urine output improved the discriminative performance for predicting mortality.

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332.

Kidney injury in children and adolescents with leptospirosis in France. Atteinte renale chez les enfants infectes par la leptospirose en France <Atteinte renale chez les enfants infectes par la leptospirose en France.>
De Thomasis S., Flodrops H., Llanas B., Martinez Casado E., Cloarec S., Pietrement C., Zaloszyc A.
Embase
Nephrologie et Therapeutique. 18(3) (pp 189-194), 2022. Date of Publication: June 2022.
[Article]
AN: 2017191366
Introduction: Leptospirosis is an anthropozoonosis with polymorphic clinical symptoms and a high variability of severity, ranging from flu-like syndrome to severe acute kidney injury. This disease is highly incident in tropical regions but there is a trend towards increasing incidence in metropolitan France and in Reunion Island. The objective of this study was to describe the epidemiological, clinical, laboratory and therapeutic characteristics of the pediatric leptospirosis in metropolitan France and in Reunion Island.
Patients and Methods: We performed a retrospective analysis of leptospirosis cases hospitalized in University hospitals where members of the Paediatric Nephrology Society work in France between January 2008 and December 2020, 6 centers reported leptospirosis cases, one center had one patient in consultation but lack of available data and 10 centers did not find any case.
Result(s): A total of 21 cases were reported (mean age 13.4 +/- 3.4 years), mostly boys (ratio 6:1). Out of 21 patients, 95% had fever, 71% were presenting with myalgia, 81% with thrombocytopenia, and 76% with gastrointestinal symptoms. Regarding kidney impairment, 18 patients (86%) had acute kidney injury, including 4 (19%) with oligoanuria, but none of them required acute dialysis. About 30% of patients had biological signs of tubulopathy including hypophosphatemia, hypokalemia, or tubular proteinuria. No death due to the disease occurred. The therapeutic management followed the current guidelines with the use of antibiotic therapy by amoxicillin or 3rd generation cephalosporins with symptomatic treatment. When there was biological control after exit, creatinine decreased.
Discussion(s): In this multicenter retrospective study, we report 21 children with leptospirosis with a significant proportion of acute kidney injury, the outcome was favorable. Children do not seem to be at high risk of chronic kidney disease progression but nephrology follow-up has not been systematically carried out. Compared to studies performed in adults, the prognosis was better and hepatic impairment was rare. Compared to other pediatric studies, conjunctivitis was not a common symptom but kidney injury and survival appeared to be similar. Children were presenting

with anicteric renal presentation. The casebook wasn't exhaustive and didn't include the other overseas territories, which account for the highest proportion of leptospirosis infection.
Conclusion(s): Leptospirosis is an infection which may lead to multivisceral failure with kidney involvement conditioning the outcome. Despite a better prognosis in children, it remains important to quickly diagnose this infection in order to start appropriate antibiotic therapy and perform a kidney function monitoring.

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333.

Application of different methods used to measure the apparent diffusion coefficient of renal cell carcinoma on the same lesion and its correlation with ISUP nuclear grading.
Kilicarslan G., Eroglu Y., Kilicarslan A.
Embase
Abdominal Radiology. 47(7) (pp 2442-2452), 2022. Date of Publication: July 2022.
[Article]
AN: 2016879855
Purpose: To determine the most frequently used different apparent diffusion coefficient (ADC) measurement methods in renal cell carcinoma (RCC), and their correlation with the International Society of Urological Pathology (ISUP) histologic grading system.
Method(s): A total of 99 patients who underwent diffusion-weighted imaging and whose pathologic diagnosis of RCC was confirmed were included in the study. As a result of a literature review, region of interest (ROI) selection and measurement methods were determined in five ways. These included a small ROI (ADC1) on the solid part of the lesion showing the most restriction; a large ROI (ADC2) on the solid part of the lesion showing restriction; ROI (ADC3) that covered the lesion in the cross-section with the largest diameter, which was obtained by placing ROIs (ADC4) covering the lesion on all sections of the lesion; three small ROIs (ADC5) on solid parts of the lesion showing the most restriction. Then, ADC measurements were made from the contralateral normal kidney parenchyma. Tumors were pathologically subdivided [71 clear cell RCCs (ccRCC), 17 chromophobe RCCs (chRCC), 11 papillary RCCs (pRCC)], and graded according to the ISUP nuclear grading system (42 high-grade, 57 low-grade). Data were analyzed statistically.

Result(s): In all measurement methods, ADC values of RCCs were statistically significantly lower than normal kidney ADC values. There were no differences between the ADC3 and ADC4 measurements of RCCs (p = 0.999). There was a statistical difference in other measurement methods (p < 0.001). There were differences between ccRCCs and pRCCs and chRCCs in all measurement methods. In all measurement methods, pRCC and chRCC ADC values were lower than ccRCC ADC values. When ISUP nuclear grading and ADC values were compared, there was a statistically inverse correlation between all ADC measurements. The strongest correlation was found in the ADC1 and ADC5 measurements. When the ADC values of ISUP low and high-grade groups were compared, a significant difference was found in the ADC5 measurement method (p = 0.046).
Conclusion(s): According to the findings of the study, ADC5 is the measurement method that shows the best correlation with the ISUP histologic grading system. Therefore, we think that ADC5 can be the primary measurement method for determining the ADC value of RCCs.
Graphical abstract: [Figure not available: see fulltext.]

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Publisher
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334.

Insufficient Fruit and Vegetable Intake and Low Potassium Intake Aggravate Early Renal Damage in Children: A Longitudinal Study.
Li M., Amaerjiang N., Li Z., Xiao H., Zunong J., Gao L., Vermund S.H., Hu Y.
Embase
Nutrients. 14(6) (no pagination), 2022. Article Number: 1228. Date of Publication: March-2 2022. [Article]
AN: 2015965892
Insufficient fruit and vegetable intake (FVI) and low potassium intake are associated with many non-communicable diseases, but the association with early renal damage in children is uncertain. We aimed to identify the associations of early renal damage with insufficient FVI and daily potassium intake in a general pediatric population. We conducted four waves of urine assays based on our child cohort (PROC) study from October 2018 to November 2019 in Beijing, China. We investigated FVI and other lifestyle status via questionnaire surveys and measured urinary potassium, beta2-microglobulin (beta2-MG), and microalbumin (MA) excretion to assess daily potassium intake and renal damage among 1914 primary school children. The prevalence of insufficient FVI (<4/d) was 48.6% (95% CI: 46.4%, 50.9%) and the estimated potassium intake at baseline was 1.63 +/- 0.48 g/d. Short sleep duration, long screen time, lower estimated potassium intake, higher beta2-MG and MA excretion were significantly more frequent in the insufficient FVI group. We generated linear mixed effects models and observed the bivariate associations of

urinary beta2-MG and MA excretion with insufficient FVI (beta = 0.012, 95% CI: 0.005, 0.020; beta = 0.717, 95% CI: 0.075, 1.359), and estimated potassium intake (beta = -0.042, 95% CI: -0.052, -0.033; beta = -1.778, 95% CI: -2.600, -0.956), respectively; after adjusting for age, sex, BMI, SBP, sleep duration, screen time and physical activity. In multivariate models, we observed that urinary beta2-MG excretion increased with insufficient FVI (beta = 0.011, 95% CI: 0.004, 0.018) and insufficient potassium intake (<1.5 g/d) (beta = 0.031, 95% CI: 0.023, 0.038); and urinary MA excretion increased with insufficient FVI (beta = 0.658, 95% CI: 0.017, 1.299) and insufficient potassium intake (beta = 1.185, 95% CI: 0.492, 1.878). We visualized different quartiles of potassium intake showing different renal damage with insufficient FVI for interpretation and validation of the findings. Insufficient FVI and low potassium intake aggravate early renal damage in children and underscores that healthy lifestyles, especially adequate FVI, should be advocated.

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335.

Postoperative physiological parameters associated with severe acute kidney injury after pediatric heart transplant.
Alali A., Acosta S., Ahmed M., Spinner J., Akcan-Arikan A., Morris S.A., Jain P.N.
Embase
Pediatric Transplantation. 26(5) (no pagination), 2022. Article Number: e14267. Date of Publication: August 2022.
[Article]
AN: 2015281081
Background: The primary objective was to evaluate associations between perioperative clinical variables and postoperative hemodynamic indices after HT with the development of severe AKI. The secondary objective was to evaluate associations between UOP or creatinine as AKI indicators and morbidity after HT.
Method(s): Retrospective study of all patients who underwent HT 1/2016-11/2019 at a quaternary pediatric institution. Severe AKI was defined as KDIGO stage 2 or higher.
Result(s): Of 94 HT patients, 73 met inclusion criteria; 45% of patients developed severe AKI. In univariate analysis, non-Hispanic Black race, preoperative AKI, longer CPB duration, lower weight, and peak lactate within 12 h post-HT were associated with severe AKI. CVP <=12 h post-HT had a quadratic relationship, rather than linear, with severe AKI. PPV >18% was significantly associated with severe AKI but equated to noncontiguous 10 min of high variation over a 12-h period, and thus was deemed not clinically significant. In multivariate analysis, Black race, longer CPB duration, and higher CVP remained associated with severe AKI (c: 0.84, 95% CI 0.73-0.92). Severe AKI per creatinine, but not UOP criteria, was associated with longer duration of ventilation (p =.012) and longer intensive care unit length of stay (p =.003).

Conclusion(s): In pediatric HT patients, non-Hispanic Black race, longer CPB time, and higher postoperative CVP <=12 h post-HT were associated with severe AKI. AKI based on creatinine, not UOP, was associated with postoperative HT morbidity.

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Publisher
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336.

Accuracy of diagnosing acute kidney injury by assessing urine output within the first week of life in extremely preterm infants.
Hirabayashi M., Yamanouchi S., Akagawa S., Akagawa Y., Kino J., Fujishiro S., Kimata T., Mine K., Tsuji S., Ohashi A., Kaneko K.
Embase
Clinical and Experimental Nephrology. 26(7) (pp 709-716), 2022. Date of Publication: July 2022.
[Article]
AN: 2015261063
Background: Neonatal acute kidney injury (AKI) is associated with increased mortality and is often assessed with the neonatal modified Kidney Disease: improving Global Outcomes (KDIGO) classification, which uses changes in serum creatinine levels. However, because this classification has many drawbacks, a novel method, the neonatal Risk, Injury, Failure, Loss, and End-Stage Kidney Disease (nRIFLE) classification for diagnosing neonatal AKI according to urine output (UO), was recently proposed. To date, no data on the incidence of AKI according to nRIFLE are available for extremely preterm infants (born at gestational age less than 28 weeks). This study was conducted to clarify the association between incidence of AKI and in-hospital mortality in extremely preterm infants.
Method(s): Of 171 extremely preterm infants hospitalized from 2006 to 2020, 84 in whom indwelling bladder catheters were placed for UO measurements within 24 h of life were included. The incidence of AKI was assessed using the nRIFLE classification. In-hospital mortality was compared between patients with AKI and those without it.

Result(s): The incidence of AKI during the first week of life was 56% and that of in-hospital mortality was significantly higher in patients with AKI (25.5%) than in those without it (2.8%). The odds ratio was 12.3 with 95% confidence interval ranging from 1.5 to 100.0.
Conclusion(s): The incidence of AKI according to nRIFLE was higher than reported in most previous studies using the neonatal modified KDIGO classification, suggesting that assessment by nRIFLE criteria using UO may improve diagnostic accuracy of AKI in extremely preterm infants.

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337.

Risks and renal outcomes of severe acute kidney injury in children with steroid-resistant nephrotic syndrome.
Ishiwa S., Sato M., Kamei K., Nishi K., Kanamori T., Okutsu M., Ogura M., Sako M., Ito S., Orihashi Y., Ishikura K.
Embase
Clinical and Experimental Nephrology. 26(7) (pp 700-708), 2022. Date of Publication: July 2022. [Article]
AN: 2015238252
Background: Risks and renal outcomes of severe acute kidney injury (AKI) in children with steroid-resistant nephrotic syndrome (SRNS), particularly those who require dialysis, have not been fully explored.
Method(s): This retrospective cohort study enrolled children who had been diagnosed with idiopathic nephrotic syndrome at the National Center for Child Health and Development between March 2002 and December 2018. Children with steroid-sensitive nephrotic syndrome or SRNS-related gene mutations were excluded.
Result(s): Sixty-two children with SRNS (37 boys; median age, 3.6 years [interquartile range (IQR) 2.0-10.3]) were enrolled. Sixteen patients (25.8%) had severe AKI, including nine patients (14.5%) who received dialysis. The period from nephrotic syndrome (NS) onset to partial remission (median [IQR]) was not significantly influenced by dialysis status, but tended to be longer in the dialysis group (125 days [74-225] vs. 40 days [28-113]; p = 0.09); notably, no patient developed chronic kidney disease during the follow-up period. Infection and posterior reversible encephalopathy (PRES) were significantly associated with AKI. Patients with AKI tended to require dialysis in the presence of infection, undergo treatment with cyclosporine A, and have PRES. The period from onset of NS to AKI was significantly longer in the dialysis group (26 days [15.5-46.0] vs. 4 days [0.0-14.0]; p = 0.01).

Conclusion(s): Dialysis was commonly required among children with SRNS who exhibited severe AKI. The period from onset of NS to partial remission tended to be longer in patients receiving dialysis, whereas renal prognosis was satisfactory during subsequent follow-up.

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338.

Extent of hypertension and renal injury in children surviving acute lymphoblastic leukemia.
Kumar R., Mahan J.D., Stanek J.R., Reed S.
Embase
Pediatric Blood and Cancer. 69(9) (no pagination), 2022. Article Number: e29628. Date of Publication: September 2022.
[Article]
AN: 2015180910
Background: Childhood acute lymphoblastic leukemia (ALL) fortunately has high survival rates, and understanding longer term implications of therapy is critical. In this study, we aimed to investigate kidney health outcomes by assessing the prevalence of renal dysfunction and hypertension (HTN) in children with ALL at 1-5 years after ALL diagnosis.
Method(s): This was a single-center, cross-sectional study of children with ALL who were 1-5 years post diagnosis. Glomerular filtration rate (GFR) measurements were calculated, and urine samples were collected to assess for protein/creatinine and albumin/creatinine. Blood pressure (BP) was determined by standard oscillometric technique, and children >=6 years of age were eligible for ambulatory blood pressure monitoring (ABPM).
Result(s): Forty-five patients enrolled in the study, and 21 completed ABPMs. Fifteen patients (33%, 95% CI: 20%-49%) developed acute kidney injury (AKI) at least once. Thirteen (29%, 95% CI: 16%-44%) had hyperfiltration, and 11 (24%) had abnormal proteinuria and/or albuminuria. Prevalence of HTN based on clinic measurements was 42%. In the 21 ABPM patients, 14 had abnormal results (67%, 95% CI: 43%-85%), with the majority (11/21) demonstrating abnormal nocturnal dipping pattern.
Conclusion(s): Among children with ALL, there is a high prevalence of past AKI. The presence of hyperfiltration, proteinuria, and/or albuminuria at 1-5 years after ALL diagnosis suggests real risk of developing chronic kidney disease (CKD) over time. There is a high prevalence of HTN on casual BP readings and even higher prevalence of abnormal ABPM in this group. The high

prevalence of impaired nocturnal dipping by ABPM indicates an increased risk for future cardiovascular or cerebral ischemic events.

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339.

Comprehensive analysis of paediatric pelvic fracture urethral injury: a reconstructive centre experience.
Sreeranga Y.L., Joshi P.M., Bandini M., Kulkarni S.B.
Embase
BJU International. 130(1) (pp 114-125), 2022. Date of Publication: July 2022.
[Article]
AN: 2015102434
Objective: To analyse our experience in pelvic fracture urethral injury (PFUI) in children and adolescents, with various anastomotic urethroplasties (AUs) used to accomplish tension-free anastomosis described and their surgical outcomes evaluated.
Patients and Methods: From 2008 to 2019, 192 cases including both primary and redo PFUI, which comprised 181 boys and 11 girls aged <=18 years. The results are presented separately according to gender. Moreover, the two populations were divided in two age-related sub-groups for sensitivity analyses: Group 1 (children) aged <=11 years and Group 2 (adolescent) aged 12-<=18 years.
Result(s): The median (interquartile range [IQR]) age at presentation in our series was 14 (9-17) years for boys and 9 (6-10) years for girls. Primary vs redo cases were 85 (47%) vs 96 (53%) in boys and 10/11 vs one of 11 in girls. In the primary male cases (85), the bulbo-membranous junction was the commonest site of injury (63, 74.1%). In boys, transperineal AU (TPAU) was performed in 160 (88.4%) and transpubic urethroplasty (TPU) in 17 (9.4%). In girls, TPU was utilised in nine cases, where two received meatoplasty and vaginal episiotomy. In boys, the overall success rate for TPAU was 81.2% and in primary PFUI cases success for TPAU was 88.3%. Overall success for TPU was 64.7%. In girls, the success rate for TPU was 100%. In boys and girls, the success rates for various AUs utilised between the child and adolescent groups were comparable. The median (IQR) hospital stay was 3 (3-4) days for boys and girls. The median (IQR) follow-up duration was 25 (16-33) months and 20 (17-27) months for boys and girls, respectively. Secondary procedures were performed in 39 boys and one girl, which comprised laser optical internal urethrotomy in 26 (14.4%) boys and redo surgery in 13 (7.2%)

boys and one (9.1%) girl. Of all patients, four of the 11 girls and 74 boys (38.5%) were lost to follow-up.
Conclusion(s): Most paediatric PFUI can be addressed via a transperineal approach with reasonable long-term outcomes. In challenging cases salvage procedures utilising vascular-based flaps as a urethral substitute give satisfactory results. Even young children can be managed with a high success rate in expert hands and these injuries should be addressed by specialist reconstructive urologists.

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340.

A child presents with acute kidney injury, alkalosis and hypercalcaemia-a new-age cause for a historical syndrome: Answers.
Kermond R., Carter S., Quinlan C.
Embase
Pediatric Nephrology. 37(8) (pp 1807-1810), 2022. Date of Publication: August 2022.
[Article]
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341.

Nephrotoxic medications and associated acute kidney injury in hospitalized neonates.
Mohamed T.H., Abdi H.H., Magers J., Prusakov P., Slaughter J.L.
Embase
Journal of Nephrology. 35(6) (pp 1679-1687), 2022. Date of Publication: July 2022.
[Article]
AN: 2015052043
Objectives: Hospitalized neonates are often treated with nephrotoxic medications, a known risk factor for acute kidney injury (AKI). Nephrotoxic medications and AKI, especially in periviable neonates, could be detrimental to nephrogenesis. Our objectives were to evaluate the prevalence of neonatal treatment with nephrotoxic medications and its relationship with AKI in in the first 28 days of life, and to delineate the associated demographics and diagnoses. Study design: Multicenter retrospective analysis using the national Pediatric Hospital Information System database, including 49 pediatric hospitals. Neonates admitted within the first two postnatal days were included. Treatment with 37 nephrotoxic medications across demographics and clinical variables, and relationship with AKI were evaluated. AKI was determined by using the International Classification of Diseases codes.
Result(s): Of 192,229 neonates, 74% were treated with at least one nephrotoxic medication. Incidence of AKI was significantly higher in the treated group (aRR 3.68 [95% CI: 2.85, 4.75]). The aRRs of treatment were increased in infants born < 32-week, and < 2000 g. Nephrotoxic medications were prescribed to 90-95% of neonates born <= 28-week gestational age. Most treatments (95-98%) occurred in the first 3 days. Intravascular aminoglycosides were the most frequent type; 28% of neonates were treated for >= 4 calendar days. Most common diagnoses were infections (25%) and patent ductus arteriosus (20%).
Conclusion(s): Neonatal treatment with nephrotoxic medications is common, especially among the smallest, most immature preterm neonates and demonstrates a need for initiatives to reduce neonatal exposure to these agents, when feasible. Across all gestational age categories, the prevalence of AKI is higher in the neonates treated with nephrotoxic drugs. The long-term effects of treatment with nephrotoxic medications and subsequent AKI on nephrogenesis and nephron endowment will need to be evaluated. Graphical abstract: [Figure not available: see fulltext.].

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342.

Urinary metabolomics to develop predictors for pediatric acute kidney injury.
Franiek A., Sharma A., Cockovski V., Wishart D.S., Zappitelli M., Blydt-Hansen T.D.
Embase
Pediatric Nephrology. 37(9) (pp 2079-2090), 2022. Date of Publication: September 2022.
[Article]
AN: 2014741191
Background: Acute kidney injury (AKI) is characterized by an abrupt decline in glomerular filtration rate (GFR). We sought to identify separate early urinary metabolomic signatures at AKI onset (with-AKI) and prior to onset of functional impairment (pre-AKI).
Method(s): Pre-AKI (n=15), AKI (n=22), and respective controls (n=30) from two prospective PICU cohort studies provided urine samples which were analyzed by GC-MS and DI-MS mass spectrometry (193 metabolites). The cohort (n=58) was 8.7+/-6.4 years old and 66% male. AKI patients had longer PICU stays, higher PRISM scores, vasopressors requirement, and respiratory diagnosis and less commonly had trauma or post-operative diagnosis. Urine was collected within 2-3 days after admission and daily until day 5 or 14.
Result(s): The metabolite classifiers for pre-AKI samples (1.5+/-1.1 days prior to AKI onset) had a cross-validated area under receiver operator curve (AUC)=0.93 (95%CI 0.85-1.0); with-AKI samples had an AUC=0.94 (95%CI 0.87-1.0). A parsimonious pre-AKI classifier with 13 metabolites was similarly robust (AUC=0.96, 95%CI 0.89-1.0). Both classifiers were similar and showed modest correlation of high-ranking metabolites (tau=0.47, p<0.001).
Conclusion(s): This exploratory study demonstrates the potential of a urine metabolite classifier to detect AKI-risk in pediatric populations earlier than the current standard of diagnosis with the need for external validation. Graphical abstract: [Figure not available: see fulltext.]A higher resolution version of the Graphical abstract is available as Supplementary information with inner reference to ESM for GA.

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343.

Validation of the STARZ neonatal acute kidney injury risk stratification score.
Sethi S.K., Raina R., Rana A., Agrawal G., Tibrewal A., Bajaj N., Gupta N.P., Mirgunde S., Sahoo J., Balachandran B., Afzal K., Shrivastava A., Bagla J., Krishnegowda S., Konapur A., Soni K., Sharma D., Khooblall A., Khooblall P., Bunchman T., Wazir S.
Embase
Pediatric Nephrology. 37(8) (pp 1923-1932), 2022. Date of Publication: August 2022.
[Article]
AN: 2014715163
Background: Neonatal acute kidney injury (AKI) is common in neonatal intensive care units (NICU) and leads to worse outcomes. Stratifying neonates into an "at risk" category allows health care providers to objectively recognize opportunities for improvements in quality of care.
Method(s): The "Neonatal AKI Risk Prediction Scoring" was devised as the "STARZ [Sethi, Tibrewal, Agrawal, Raina, waZir]" Score. The STARZ score was derived from our prior multicentre study analysing risk factors for AKI in neonates admitted to the NICU. This tool includes 10 variables with a total score ranging from 0 to 100 and a cut-off score of 31.5. In the present study, the scoring model has been validated in our multicentre cohort of 744 neonates.
Result(s): In the validation cohort, this scoring model had sensitivity of 82.1%, specificity 91.7%, positive predictive value 81.2%, negative predictive value 92.2% and accuracy 88.8%. Based on the STARZ cut-off score of >= 31.5, an area under the receiver operating characteristic (ROC) curve was observed to be 0.932 (95% CI, 0.910-0.954; p < 0.001) signifying that the discriminative power was high. In the validation cohort, the probability of AKI was less than 20% for scores up to 32, 20-40% for scores between 33 and 36, 40-60% for scores between 37 and 43, 60-80% for scores between 44 and 49, and >= 80% for scores >= 50.
Conclusion(s): To promote the survival of susceptible neonates, early detection and prompt interventional measures based on highly evidenced research is vital. The risk of AKI in admitted neonates can be quantitatively determined by the rapid STARZ scoring system. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information[Figure not available: see fulltext.].

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344.

Associations of a healthy lifestyle score from childhood to adulthood with subclinical kidney damage in midlife: a population-based cohort study.
Liu C., Tian J., Jose M.D., He Y., Dwyer T., Venn A.J.
Embase
BMC Nephrology. 23(1) (no pagination), 2022. Article Number: 2. Date of Publication: December 2022.
[Article]
AN: 2014636094
Background: The relationships of healthy lifestyle scores (HLS) of various kinds in adulthood with the risk of chronic kidney disease (CKD) have been reported, but little is known about the association of childhood lifestyle with later life CKD. This study examined the relationship of HLS from childhood to adulthood with subclinical kidney damage (SKD) in midlife, a surrogate measure for CKD.
Method(s): Data were collected in an Australian population-based cohort study with 33 years follow-up. 750 participants with lifestyle information collected in childhood (ages 10-15 years) and midlife (ages 40-50 years), and measures of kidney function in midlife were included. The HLS was generated from the sum scores of five lifestyle factors (body mass index, smoking, alcohol consumption, physical activity, and diet). Each factor was scored as poor (0 point), intermediate (1 point), or ideal (2 points). Log-binomial regression was used to investigate the relationship of HLS in childhood and from childhood to adulthood with SKD defined as either 1) estimated glomerular filtration rate (eGFR) 30-60 mL/min/1.73m2 or 2) eGFR> 60 mL/min/1.73m2 with urine albumin-creatinine ratio >= 2.5 mg/mmol (males) or 3.5 mg/mmol (females), adjusting for socio-demographic factors and the duration of follow-up.
Result(s): The average HLS was 6.6 in childhood and 6.5 in midlife, and the prevalence of SKD was 4.9% (n = 36). Neither HLS in childhood nor HLS from childhood to adulthood were significantly associated with the risk of SKD in midlife.
Conclusion(s): A HLS from childhood to adulthood did not predict SKD in this middle-aged, population-based Australian cohort.

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345.

Low albumin levels are independently associated with neonatal acute kidney injury: a report from AWAKEN Study Group.
Nada A., Askenazi D., Kupferman J.C., Mhanna M., Mahan J.D., Boohaker L., Li L., Griffin R.L., Selewski D.T., Ambalavanan N., Sarkar S., Kent A., Fletcher J., Abitbol C.L., DeFreitas M., Duara S., Charlton J., Swanson J.R., Brophy P.D., Guillet R., D'Angio C., Mian A., Rademacher E., Raina R., Kumar D., Jetton J.G., Colaizy T.T., Klein J.M., Akcan-Arikan A., Joseph C., Rhee C.J., Bhutada A., Rastogi S., Cole F.S., Davis T.K., Milner L., Smith A., Fuloria M., Kaskel F.J., Reidy K., Gist K.M., Soranno D.E., Gien J., Hanna M., Chishti A.S., Hingorani S., Starr M., Wong C.S., DuPont T., Ohls R., Khokhar S., Perazzo S., Ray P.E., Revenis M., Sethi S.K., Rohatgi S., Mammen C., Synnes A., Wazir S., Zappitelli M., Woroniecki R., Sridhar S., Goldstein S.L., Nathan A.T., Staples A., Wintermark P.
Embase
Pediatric Nephrology. 37(7) (pp 1675-1686), 2022. Date of Publication: July 2022.
[Article]
AN: 2014009834
Background: Data from adult and pediatric literature have shown an association between albumin levels and AKI. Whether hypoalbuminemia and neonatal AKI are associated has not been studied.
Method(s): We evaluated the association of albumin with early (during the first postnatal week) and late (after the first postnatal week) AKI for 531 neonates from the Assessment of Worldwide AKI Epidemiology in Neonates (AWAKEN) database and for 3 gestational age (GA) subgroups: < 29, 29 to < 36, and >= 36 weeks GA.
Result(s): Low albumin levels were associated with increased odds of neonatal AKI; for every 0.1 g/dL decrease in albumin, the odds of late AKI increased by 12% on continuous analysis. After adjustment for potential confounders, neonates with albumin values in the lowest quartiles (< 2.2 g/dL) had an increased odds of early [Adjusted Odd Ratio (AdjOR) 2.5, 95% CI = 1.1-5.3, p < 0.03] and late AKI [AdjOR 13.4, 95% CI = 3.6-49.9, p < 0.0001] compared to those with albumin in the highest quartile (> 3.1 g/dL). This held true for albumin levels 2.3 to 2.6 g/dL for early [AdjOR 2.5, 95% CI = 1.2-5.5, p < 0.02] and late AKI [AdjOR 6.4, 95% CI = 1.9-21.6, p < 0.01]. Albumin quartiles of (2.7 to 3.0 g/dL) were associated with increased odds of late AKI. Albumin levels of 2.6 g/dL and 2.4 g/dL best predicted early (AUC = 0.59) and late AKI (AUC = 0.64), respectively. Analysis of albumin association with AKI by GA is described.
Conclusion(s): Low albumin levels are independently associated with early and late neonatal AKI. Albumin could be a potential modifiable risk factor for neonatal AKI.

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346.

Half-dose glucarpidase as efficient rescue for toxic methotrexate levels in patients with acute kidney injury.
Heuschkel S., Kretschmann T., Teipel R., von Bonin S., Richter S., Quick S., Alakel N., Rollig C., Balaian E., Kroschinsky F., Knoth H., Bornhauser M., von Bonin M.
Embase
Cancer Chemotherapy and Pharmacology. 89(1) (pp 41-48), 2022. Date of Publication: January 2022.
[Article]
AN: 2013978911
Purpose: High-dose methotrexate (HDMTX)-associated acute kidney injury with delayed MTX clearance has been linked to an excess in MTX-induced toxicities. Glucarpidase is a recombinant enzyme that rapidly hydrolyzes MTX into non-toxic metabolites. The recommended dose of glucarpidase is 50 U/kg, which has never been formally established in a dose finding study in humans. Few case reports, mostly in children, suggest that lower doses of glucarpidase might be equally effective in lowering MTX levels.
Method(s): Seven patients with toxic MTX plasma concentrations following HDMTX therapy were treated with half-dose glucarpidase (mean 25 U/kg, range 17-32 U/kg). MTX levels were measured immunologically as well as by liquid chromatography-mass spectrometry (LC-MS). Toxicities were assessed according to National Cancer Institute-Common Terminology Criteria for Adverse Events (CTCAE) v5.0.
Result(s): All patients experienced HDMTX-associated kidney injury (median increase in creatinine levels within 48 h after HDMTX initiation compared to baseline of 251%, range 80-455%) and showed toxic MTX plasma concentrations (range 3.1-182.4 micromol/L) before glucarpidase injection. The drug was administered 42-70 h after HDMTX initiation. Within one day after glucarpidase injection, MTX plasma concentrations decreased by >= 97.7% translating into levels of 0.02-2.03 micromol/L. MTX rebound was detected in plasma 42-73 h after glucarpidase initiation, but concentrations remained consistent at < 10 micromol/L.
Conclusion(s): Half-dose glucarpidase seems to be effective in lowering MTX levels to concentrations manageable with continued intensified folinic acid rescue.

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347.

Acute kidney injury in critically Ill children and young adults with suspected SARS-CoV2 infection.
Basu R.K., Bjornstad E.C., Gist K.M., Starr M., Khandhar P., Chanchlani R., Krallman K.A., Zappitelli M., Askenazi D., Goldstein S.L.
Embase
Pediatric Research. 91(7) (pp 1787-1796), 2022. Date of Publication: June 2022.
[Article]
AN: 2013319692
Background: We aimed to study the association of suspected versus confirmed infection with the novel SARS-CoV2 virus with the prevalence of acute kidney injury (AKI) in critically ill children.
Method(s): Sequential point-prevalence study of children and young adults aged 7 days to 25 years admitted to intensive care units under investigation for SARS-CoV2 infection. AKI was staged in the first 14 days of enrollment using KDIGO creatinine-based staging. SARS-CoV2 positive (CONFIRMED) were compared to SUSPECTED (negative or unknown). Outcome data was censored at 28-days.
Result(s): In 331 patients of both sexes, 179 (54.1%) were CONFIRMED, 4.2% (14) died. AKI occurred in 124 (37.5%) and severe AKI occurred in 63 (19.0%). Incidence of AKI in CONFIRMED was 74/179 (41.3%) versus 50/152 (32.9%) for SUSPECTED; severe AKI occurred in 35 (19.6%) of CONFIRMED and 28 (18.4%) of SUSPECTED. Mortality was 6.2% (n = 11) in CONFIRMED, but 9.5% (n = 7) in those CONFIRMED with AKI. On multivariable analysis, only Hispanic ethnicity (relative risk 0.5, 95% CI 0.3-0.9) was associated with less AKI development among those CONFIRMED.
Conclusion(s): AKI and severe AKI occur commonly in critically ill children with SARS-CoV2 infection, more than double the historical standard. Further investigation is needed during this continuing pandemic to describe and refine the understanding of pediatric AKI epidemiology and outcomes. Trial registration: NCT01987921. Impact: What is the key message of the article? AKI occurs in children exposed to the novel SARS-CoV2 virus at high prevalence (~40% with some form of AKI and 20% with severe AKI). What does it add to the existing literature? Acute kidney injury (AKI) occurs commonly in adult patients with SARS-CoV2 (COVID), very little data describes the epidemiology of AKI in children exposed to the virus. What is the impact? A

pediatric vaccine is not available; thus, the pandemic is not over for children. Pediatricians will need to manage significant end-organ ramifications of the novel SARS-CoV2 virus including AKI.

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348.

The lower threshold of hypothermic oxygen delivery to prevent neonatal acute kidney injury.
Zhang P., Tong Y., Liu J., Guo S., Jin Y., Bai L., Li Y., Feng Z., Zhao J.
Embase
Pediatric Research. 91(7) (pp 1741-1747), 2022. Date of Publication: June 2022.
[Article]
AN: 2013175651
Background: Oxygen delivery during cardiopulmonary bypass (CPB) is closely related to postoperative acute kidney injury (AKI). The value of critical indexed oxygen delivery (DO2i) is a key indicator to reflect oxygen supply in cardiovascular surgery. However, the target DO2i value for neonates undergoing hypothermic CPB remains unclear.
Method(s): One hundred and twenty-six consecutive newborns (<=28 days) undergoing arterial switch operations were retrospectively divided into two groups according to AKI occurrence. Baseline characteristics, intraoperative variables, and clinical outcomes were collected. Multivariate logistic regression analysis and receiver-operating characteristic curve were performed to investigate the association between DO2i and AKI.
Result(s): Neonates in the no-AKI group (n = 67) had significantly higher nadir bypass flow and DO2i during the hypothermic phase compared with the AKI group (n = 59). AKI group had remarkably higher incidences of hepatic dysfunction and peritoneal dialysis requirement compared with newborns without AKI. Mixed venous oxygen saturation (SvO2) was comparable between the two groups. Base excess (BE)(P = 0.011) value during the hypothermic phase of the

AKI group was higher than the no-AKI group. Multivariate analysis showed that hypothermic DO2i was negatively associated with AKI. The cut-off value of hypothermic DO2i was 269 mL min-1 m-2.
Conclusion(s): The importance of hypothermic DO2i should be highlighted, even when SvO2 was satisfactory. A lower threshold of DO2i > 269 mL min-1 m-2 may help protect neonates from the risk of postoperative AKI. Impact: The key message of our article is that the lower threshold of DO2i > 269 mL min-1 m-2 may help protect neonates from the risk of AKI after on-pump hypothermic cardiovascular surgery.The critical DO2i value for neonates undergoing hypothermic CPB remains unclear, and our study may add new evidence for this matter based on the 6-year experience of our center.In this study, the lowest critical value of DO2i in neonatal hypothermic CPB is determined for the first time, which provides a reference for intra-CPB management strategy to improve the postoperative outcomes of newborns.

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349.

In PICU acute kidney injury stage 3 or mortality is associated with early excretion of urinary renin.
Kuai Y., Huang H., Dai X., Zhang Z., Bai Z., Chen J., Fang F., Pan J., Li X., Wang J., Li Y.
Embase
Pediatric Research. 91(5) (pp 1149-1155), 2022. Date of Publication: April 2022.
[Article]
AN: 2012310923
Background: Urinary renin is proposed to be a novel prognostic biomarker of acute kidney injury (AKI) in adults. The intention of our study was to evaluate the early predictive value of urinary renin for AKI and pediatric intensive care unit (PICU) mortality in critically ill children.
Method(s): The first available urine sample during the first 24 h after admission was collected upon PICU admission for the measurement of renin using ELISA. Urinary renin concentrations were corrected for urinary creatinine (urinary renin-to-creatinine ratio, uRenCR). AKI was defined based on KDIGO criteria.
Result(s): Of the 207 children, 22 developed AKI, including 6 with stage 1, 6 with stage 2, and 10 with stage 3, and 14 died during PICU stay. There was a significant difference in uRenCR between non-AKI children and those with AKI stage 3 (P = 0.001), but not with AKI stage 1 or 2. The uRenCR remained associated with AKI stage 3 and PICU mortality after adjustment for

potential confounders. The area under the receiver operating characteristic curve of uRenCR for discrimination of AKI stage 3 was 0.805, and PICU mortality was 0.801.
Conclusion(s): Urinary renin was associated with the increased risk for AKI stage 3 and PICU mortality in critically ill children. Impact: Urinary renin is proposed to be a novel prognostic biomarker of AKI in adult patients.There are some differences between children and adults in physiological and pathophysiological characteristics.This study demonstrated that urinary renin was associated with the increased risk for AKI stage 3 and PICU mortality in critically ill children.Accurate identification of patients with severe renal injury or at high risk for mortality early in the disease course could augment the efficacy of available interventions and improve patient outcomes.

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350.

Biomarkers of acute kidney injury in pediatric cardiac surgery.
Cavalcante C.T.M.B., Cavalcante M.B., Castello Branco K.M.P., Chan T., Maia I.C.L., Pompeu R.G., de Oliveira Telles A.C., Brito A.K.M., Liborio A.B.
Embase
Pediatric Nephrology. 37(1) (pp 61-78), 2022. Date of Publication: January 2022.
[Review]
AN: 2011602419
Acute kidney injury (AKI) is characterized by a sudden decrease in kidney function. Children with congenital heart disease are a special group at risk of developing AKI. We performed a systematic review of the literature to search for studies reporting the usefulness of novel urine, serum, and plasma biomarkers in the diagnosis and progression of AKI and their association with clinical outcomes in children undergoing pediatric cardiac surgery. In thirty studies, we analyzed the capacity to predict AKI and poor outcomes of five biomarkers: Cystatin C, Neutrophil gelatinase-associated lipocalin, Interleukin-18, Kidney injury molecule-1, and Liver fatty acid-binding protein. In conclusion, we suggest the need for further meta-analyses with the availability of additional studies.

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351.

Fifteen-minute consultation: How to identify and treat children with acute kidney injury.
Scott M., McCall G.
Embase
Archives of Disease in Childhood: Education and Practice Edition. 107(1) (pp 9-14), 2022. Date of Publication: 01 Feb 2022.
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AN: 633948915
Acute kidney injury (AKI) is under-recognised in children and neonates. It is associated with increased mortality and morbidity along with an increased incidence of chronic kidney disease in adulthood. It is important that paediatricians are able to recognise AKI quickly, enabling prompt treatment of reversible causes. In this article, we demonstrate an approach to recognising paediatric AKI, cessation of nephrotoxic medication, appropriate investigations and the importance of accurately assessing fluid status. The mainstay of treatment is attempting to mimic the kidneys ability to provide electrolyte and fluid homeostasis; this requires close observation and careful fluid management. We discuss referral to paediatric nephrology and the importance of long-term follow-up. We present an approach to AKI through case-presentation.

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352.

Under-Recognition of Neonatal Acute Kidney Injury and Lack of Follow-Up.
Roy J.-P., Goldstein S.L., Schuh M.P.
Embase
American Journal of Perinatology. 39(5) (pp 526-531), 2022. Date of Publication: 01 Apr 2022.
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AN: 633048866
Objective: Acute kidney injury (AKI) incidence is 30% in neonatal intensive care units (NICU). AKI is associated with increased mortality and risk of chronic kidney disease (CKD) in children. To assess follow-up and early CKD, we retrospectively reviewed outcomes of Cincinnati Children's Hospital Medical Center (CCHMC) cohort of neonates from the AWAKEN trial (2014).
Study Design: Data from 81 CCHMC patients were extracted from the AWAKEN dataset. KDIGO (Kidney Disease: Improving Global Outcomes) criteria for serum creatinine (SCr) and urine output (UOP) <1 mL/kg/h, reported per 24 hours on postnatal days 2 to 7, were used to define AKI. Charts were reviewed until May 2019 for death, nephrology consult, AKI diagnosis on discharge summary, follow-up, and early CKD at >6 months of age (defined as: estimated glomerular filtration rate < 90 mL/min/1.73 m 2, hyperfiltration, proteinuria, hypertension, or abnormal ultrasound). Patients were considered to have renal follow-up if they had >=1 follow-up visit containing: SCr, urinalysis, or blood pressure measurement.
Result(s): Seventy-seven patients had sufficient data to ascertain AKI diagnosis. In total 47 of 77 (61%) were AKI+ by SCr or UOP criteria (20 stage 1, 14 stage 2, 13 stage 3). Four died during their admission and five were removed from CKD analyses due to urologic anomalies. AKI-UOP alone outnumbered AKI-SCr (45 AKI+ vs 5 AKI+ for all stages). 33% of patients had <2 SCr measured while inpatient. Only 3 of 47 AKI+ patients had a nephrology consult (all stage 3 by SCr) and 2 of 47 had AKI included in discharge summary. 67% of AKI+ patients had follow-up. In total 10 of 43 (23%) AKI+ versus 12 of 25 (48%) AKI-patients had >=1 marker of early CKD assessed after 6 months. Based on SCr, 3 of 7 (43%) AKI+ had hyperfiltration versus 0 of 7 (0%) AKI-(p = 0.19).
Conclusion(s): AKI is vastly under-recognized in the NICU, especially if based on SCr alone. This leads to insufficient follow-up to ascertain renal sequelae in this high-risk population. Key Points AKI is under-recognized in high-risk neonates. There is a lack of adequate follow-up. Identification of AKI by SCr alone is insufficient.

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353.

COVID-19 and acute kidney injury in German hospitals 2020.
Walendy V., Girndt M., Greinert D.

Embase
PLoS ONE. 17(6 June) (no pagination), 2022. Article Number: e0264510. Date of Publication: June 2022.
[Article]
AN: 2018748903
Introduction The SARS-CoV-2 pandemic is a major challenge for patients, healthcare professionals, and populations worldwide. While initial reporting focused mainly on lung involvement, the ongoing pandemic showed that multiple organs can be involved, and prognosis is largely influenced by multi-organ involvement. Our aim was to obtain nationwide retrospective population-based data on hospitalizations with COVID-19 and AKI in Germany. Materials & methods We performed a query of G-DRG data for the year 2020 via the Institute for the hospital remuneration system (Institut fur das Entgeltsystemim Krankenhaus GmbH, InEK) data portal and therefore included hospitalizations with a secondary diagnosis of RT-PCR proven COVID-19 infection, aged over 15 years. We included hospitalizations with acute kidney injury (AKI) stages 1 to 3. Age-specific and age-standardized hospitalization and in-hospital mortality rates (ASR) per 100.000 person years were calculated, with the German population of 2011 as the standard. Results In 2020, there were 16.776.845 hospitalizations in German hospitals. We detected 154.170 hospitalizations with RT-PCR proven COVID-19 diagnosis. The age-standardized hospitalization rate for COVID-19 in Germany was 232,8 per 100.000 person years (95% CI 231,6- 233,9). The highest proportion of hospitalizations associated with COVID-19 were in the age group over 80 years. AKI was diagnosed in 16.773 (10.9%) of the hospitalizations with COVID-19. The relative risk of AKI for males was 1,49 (95%CI 1,44-1,53) compared to females. Renal replacement therapy (RRT) was performed in 3.443 hospitalizations, 20.5% of the hospitalizations with AKI. For all hospitalizations with COVID-19, the in-hospital mortality amounted to 19.7% (n = 30.300). The relative risk for in-hospital mortality was 3,87 (95%CI 3,80-3,94) when AKI occurred. The age-standardized hospitalization rates for COVID-19 took a bimodal course during the observation period. The first peak occurred in April (ASR 23,95 per 100.000 person years (95%CI 23,58-24,33)), hospitalizations peaked again in November 2020 (72,82 per 100.000 person years (95%CI 72,17-73,48)). The standardized rate ratios (SRR) for AKI and AKI-related mortality with the overall ASR for COVID-19 hospitalizations in the denominator, decreased throughout the observation period and remained lower in autumn than they were in spring. In contrast to all COVID-19 hospitalizations, the SRR for overall mortality in COVID-19 hospitalizations diverged from hospitalizations with AKI in autumn 2020. Discussion Our study for the first time provides nationwide data on COVID-19 related hospitalizations and acute kidney injury in Germany in 2020. AKI was a relevant complication and associated with high mortality. We observed a less pronounced increase in the ASR for AKIrelated mortality during autumn 2020. The proportion of AKI-related mortality in comparison to the overall mortality decreased throughout the course of the pandemic.

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354.

Epidemiological, Clinical, Therapeutic, and Evolutionary Aspects of Acute Kidney Damage during Severe Malaria in Children at the Borgou Departmental Teaching Hospital (Benin).
Ahoui S., Noudamadjo A., Kpanidja G., Eteka E., Akoto K.O.A., Agbeille F., Toutche M., Dah A., Adedemy J.D., Agossou J.
Embase
Journal of Renal and Hepatic Disorders. 6(1) (pp 48-55), 2022. Date of Publication: 2022.
[Article]
AN: 2018387389
Malaria is an endemic pathology with several complications, including kidney damage. The objective of this work was to study kidney damage during severe malaria in children at the pediatrics department of the Borgou Departmental Teaching Hospital (Borgou DTH), Benin in 2021. This was a longitudinal study carried out over 4 months from June 1, 2021 to September 30, 2021 (with 1 month of recruitment from June 1 to July 1, 2021) at the pediatric department of the Borgou DTH. The study included children aged 1 month-15 years, hospitalized for Plasmodium falciparum malaria with at least one clinical manifestation of malaria severity established by the World Health Organization in 2000 and whose parents had given their informed consent. The damage was established by urinary sedimentation using urine dipstick and urinary cap and serum creatinine. Acute kidney injury (AKI) was intended and classified according to the Kidney Disease Improving Global Outcomes (KDIGO) criteria. The dependent variable was the presence of at least one clinical, biological, and functional impairment. Follow-up was regular for up to 3 months. Lost to follow-up were excluded. Predictors of occurrence were identified. Statistical difference was considered significant at P < 0.05. Of the 164 children hospitalized for severe malaria during the study period, 72 had at least one renal impairment, with a frequency of 43.90%. The average age of the children was 44.93 months. On urine dipstick, 76.39% of the patients had hemoglobinuria and 55.56% had albuminuria. Urinary cap revealed 44% granular cylindruria and 32% crystalluria. AKI was detected in 4.54% patients. Recovery was complete in all follow-up cases. The predictors of kidney damage were coma (P = 0.017), jaundice (P = 0.007), thrombocytopenia (P = 0.021), and long hospital stay (P = 0.008). Kidney damage in severe malaria is frequent. Early diagnosis and prompt treatment are fundamentals of rapid and complete recovery of kidney functions.

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355.

The outcome of traumatized kidneys in children: A 6-year prospective study. Devenir des reins traumatises chez l'enfant : etude prospective sur 6 ans <Devenir des reins traumatises chez l'enfant : etude prospective sur 6 ans.>
Balde F.B., Khattala K., Benmassaoud Z., Zemmari M., Alaoui O., Mahmoudi A., Bouabdallah Y.

Embase
Journal de Pediatrie et de Puericulture. 35(3) (pp 140-145), 2022. Date of Publication: June 2022.
[Article]
AN: 2017890637
Introduction: L'objectif de notre travail est d'analyser le devenir du rein traumatise chez l'enfant dans la perspective d'etablir les facteurs predictifs de survenue de sequelles. Materiels et methodes: Nous avons fait un suivi prospectif de tous les traumatismes renaux repondant aux criteres de selection. Nous avons fait un suivi clinique (PA), biologique (uree, creatinine, hemoglobine) et radiologique (echographie, tomodensitometrie et scintigraphie renale) selon un rythme regulier (48 heures, un mois, trois mois, six mois, un an, deux ans, ..., six ans). Resultats: Sur 6 ans, 13 patients ont ete suivis. L'age moyen etait de 7 ans avec une predominance masculine. Le rein droit etait plus expose et les lesions de grade III plus frequentes. La regression des lesions debutait au dixieme jour du traumatisme pour les lesions de grade I et II; a la premiere annee pour les grades III, IV et V. Pour le meme grade III, nous avons observe une restitution du parenchyme pour les enfants de moins de 10 ans, et une hypotrophie renale pour les plus de 10 ans. Cinq reins ont evolue vers une involution et a la scintigraphie, la fonction de filtration etait normale chez 6/13 patients, inferieure a 40 % chez 4/13 patients et 3/13 avaient un rein muet.
Conclusion(s): Nous recommandons un suivi clinique (surveillance de la pression arterielle), biologique par le dosage trimestriel de l'uree et la creatinine sanguins. Enfin un controle radiologique une echographie abdominale au dixieme jour du traumatisme; un uro scanner a un mois, trois mois, six mois, puis chaque an jusqu'a disparition complete des lesions ou apparition des sequelles. La scintigraphie renale au DMSA a partir de la deuxieme annee du traumatisme, mais lorsque la fonction d'excretion etait affectee a l'uro scanner nous avons prefere le DTPA. La survenue de sequelles apres un traumatisme renal est imprevisible ce qui impose un suivi long et regulier. Background: We aimed to analyze the becoming of the traumatized kidney in children to establish predictive factors for the occurrence of sequelae.
Material(s) and Method(s): We prospectively followed up on all the renal traumas meeting the selection criteria. We followed up clinically (blood pressure) biologically (urea, creatinine, haemoglobin). Radiologically (ultrasound, CT-scan and renal scintigraphy) at regular intervals (48 hours, one month, three months, six months, one year, two years... six years).
Result(s): Over 6 years, 13 patients were followed-up. The average age was 7 years with a male predominance. The right kidney was more exposed, and the grade III lesions were more frequent. Regression of the lesions started on the tenth day for grade I and II lesions; on the first year for grades III, IV and V. For the same grade III, we observed restitution of the renal parenchyma for children under 10-years of age and renal hypotrophy for those over 10-years of age. Five kidneys progressed to hypotrophy. On scintigraphy, the filtration function was normal in 6/13 patients, less than 40 % in 4/13 patients and 3/13 had a mute kidney.
Conclusion(s): We recommend a clinical follow-up (monitoring of the blood pressure), biological by the quarterly dosage of urea and creatinine blood. Finally, a radiological control with an abdominal ultrasound on the tenth day of the trauma; an uro scan at one month, three months, six months, and then every year until complete disappearance of the lesions or appearance of sequelae. In the second year, renal scintigraphy with DMSA. When the excretory function was affected at the uro scan, we preferred the DTPA. The occurrence of sequelae after renal trauma is unpredictable and requires long and regular followup.

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356.

Acute kidney injury in COVID-19 pediatric patients in North America: Analysis of the virtual pediatric systems data.
Raina R., Mawby I., Chakraborty R., Sethi S.K., Mathur K., Mahesh S., Forbes M.
Embase
PLoS ONE. 17(4 April) (no pagination), 2022. Article Number: e0266737. Date of Publication: April 2022.
[Article]
AN: 2017880089
Background Despite extensive research into acute kidney injury (AKI) in adults, research into the epidemiology, associated risk factors, treatment, and mortality of AKI in pediatric COVID-19 patients is understudied. Advancing understanding of this disease is crucial to further developing treatment and preventative care strategies to reduce morbidity and mortality. Methods This is a retrospective analysis of 2,546 COVID-19 pediatric patients (age <= 21 years) who were admitted the ICU in North America. Analysis of the Virtual Pediatric Systems (VPS) COVID-19 database was conducted between January 1, 2020, and June 30, 2021. Results Out of a total of 2,546 COVID positive pediatric patients, 10.8% (n = 274) were diagnosed with AKI. Significantly higher continuous and categorical outcomes in the AKI subset compared to the non-AKI cohort included: length of stay at the hospital (LOS) [9.04 (5.11-16.66) vs. 5.09 (2.58-9.94) days], Pediatric Index of Mortality (PIM) 2 probability of death [1.20 (0.86-3.83) vs. 0.96 (0.79-1.72)], PIM 3 probability of death [0.98 (0.72-2.93) vs. 0.78 (0.69-1.26)], mortality [crude OR (95% CI): 5.01 (2.89-8.70)], airway and respiratory support [1.63 (1.27-2.10)], cardio-respiratory support [3.57 (1.55-8.23)], kidney support [12.52 (5.30-29.58)], and vascular access [4.84 (3.70-6.32)]. Conclusions This is one of the first large scale studies to analyze AKI among pediatric COVID-19 patients admitted to the ICU in North America. Although the course of the COVID-19 virus appears milder in the pediatric population, renal complications may result, increasing the risk of disease complication and mortality.

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357.

Improving acute kidney injury diagnostic precision using biomarkers.
Hasson D., Menon S., Gist K.M.
Embase
Practical Laboratory Medicine. 30 (no pagination), 2022. Article Number: e00272. Date of Publication: May 2022.
[Review]
AN: 2017776156
Acute kidney injury (AKI) is common in hospitalized patients of all ages and is associated with significant morbidity and mortality. Accurate prediction and early identification of AKI is of utmost importance because no therapy exists to mitigate AKI once it has occurred. Yet, serum creatinine lacks adequate sensitivity and specificity, and quantification of urine output is challenging in incontinent children without indwelling bladder catheters. Integration of clinically available biomarkers have the potential to delineate unique AKI phenotypes that could have important prognostic and therapeutic implications. Plasma Cystatin C, urine neutrophil gelatinase associated lipocalin (NGAL) and the urinary product of tissue inhibitor metalloproteinase (TIMP-2) and insulin growth factor binding protein-7 (IGFBP7) are clinically available. These biomarkers have been studied in heterogenous populations across the age spectrum and in a variety of clinical settings for prediction of AKI. The purpose of this review is to describe and discuss the clinically available AKI biomarkers including how they have been used to delineate AKI phenotypes.

Status
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358.

Adolescent Blood Pressure and the Risk for Early Kidney Damage in Young Adulthood.
Tsur A.M., Akavian I., Derazne E., Tzur D., Vivante A., Grossman E., Rotem R.S., Fishman B., Afek A., Coresh J., Chodick G., Twig G.
Embase
Hypertension. 79(5) (pp 974-983), 2022. Date of Publication: 01 May 2022.
[Article]
AN: 2017761423
BACKGROUND: Recent guidelines classified blood pressure above 130/80 mmHg as hypertension. However, outcome data were lacking.

OBJECTIVE(S): To determine the association between blood pressure in adolescence and the risk for early kidney damage in young adulthood.
METHOD(S): In this nationwide cohort study, we included 629168 adolescents aged 16 to 20 who underwent medical examinations before mandatory military service in Israel. We excluded 30466 adolescents with kidney pathology, hypertension, or missing blood pressure or anthropometric data at study entry. Blood pressure measurements at study entry were categorized according to the Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents: group A (<120/<80 mmHg; Reference group), group B (120/<80-129/<80 mmHg), group C (130/80-139/89 mmHg), and group D (>=140/90 mmHg). Early kidney damage in young adulthood was defined as albuminuria of >=30 mg/g with an estimated glomerular filtration rate of 60 mL/(min.1.73 m2) or over.
RESULT(S): Of 598702 adolescents (54% men), 2004 (0.3%) developed early kidney damage during a mean follow-up of 15.1 (7.2) years. The adjusted hazard ratios for early kidney damage in blood pressure group C were 1.17 (1.03-1.32) and 1.51 (1.22-1.86) among adolescents with lean (body mass index <85th percentile) and high body mass index (body mass index >=85th percentile), respectively. Corresponding hazard ratios for kidney disease in group D were 1.49 (1.15-1.93) and 1.79 (1.35-2.38) among adolescents with lean and high body mass index, respectively.
CONCLUSION(S): Blood pressure of >=130/80 mmHg was associated with early kidney damage in young adulthood, especially in adolescents with overweight and obesity.

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359.

Ischemic preconditioning-induced protective effect for promoting angiogenesis in renal ischemia-reperfusion injury by regulating miR-376c-3p/HIF-1alpha/VEGF axis in male rats.

Xue J., Zhu K., Cao P., Long C., Deng Y., Liu T., Yin G., Li X., Wang Z.
Embase
Life Sciences. 299 (no pagination), 2022. Article Number: 120357. Date of Publication: 15 Jun 2022.
[Article]
AN: 2017599687
Objective: Ischemic preconditioning (IPC) is defined as a well-established phenomenon in which brief exposure to sublethal episodes of ischemia and reperfusion induces a tolerance to injurious effects of prolonged ischemia by exploiting intrinsic defence mechanisms. The present study was performed to determine the protective effect of IPC on the rat renal ischemia-reperfusion injury (IRI) via miR-376c-3p/HIF-1alpha/VEGF axis.
Method(s): In vivo, these male Sprague-Dawley rats were treated by IRI and IPC. Meanwhile, these rats from different treatment groups were also injected subcutaneously with 2 nmol agomir-376c-3p and/or 10 nmol recombinant rat HIF-1alpha. At 72 h after reperfusion, serum samples were respectively collected for renal function. Besides, kidney tissues were harvested to observe renal morphology changes. Subsequently, the expression levels of CD31, HIF-1alpha and VEGF in the kidney tissues were measured using immunohistochemical staining, quantitative real-time PCR, as well as Western blotting analysis at the indicated time points after reperfusion. In vitro, HK-2 cells were used to detect the cell activity by CCK-8 and transfection of mir-376c-3p mimic in Hypoxia/Reoxygenation (H/R) group.
Result(s): In vivo, the pathological changes were significantly relieved in the rats with IPC group, compared to the IRI group. Rats which were treated IPC significantly reduced the levels of blood urea nitrogen (BUN), serum creatinine (Scr) at 24 h after operation, compared to IRI group. After IPC treatment, the expression level of CD31 was obviously decreased, compared to IRI group. A total of differently expressed microRNAs were screened out by microRNA microarray assay in rat renal ischemia tissue, especially showing that miR-376c-3p was selected as the target miRNA. Compared to IRI group, the expression level of miR-376c-3p were obviously higher in IPC-treated group. Double-luciferase reporter assay demonstrated that miR-376c-3p directly targeted HIF-1alpha. In vitro, IPC significantly increased cell viability of HK-2, and promoted the angiogenesis via up-regulating miR-376c-3p/HIF-1alpha/VEGF axis. Furthermore, the expression level of HIF-1alpha was apparently decreased in HK-2 treated with H/R after miR-376c-3p mimic transfection respectively, as well as the increased expression level of VEGF.
Conclusion(s): Our study provided a novel insight for investigating the protective effect of IPC on renal IRI. Consequently, miR-376c-3p played an important role in renal IRI by promoting angiogenesis via targeting HIF-1alpha/VEGF pathway in male rats.

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360.

Incidence of Acute Kidney Injury in Perinatal Asphyxia and it's Correlation with Hypoxic Ischemic Encephalopathy Staging.
Meena S.C., Upadhyay P.K., Sinsinwar R., Meena N.K.
Embase
Journal of Cardiovascular Disease Research. 13(1) (pp 444-450), 2022. Date of Publication: 2022.
[Article]
AN: 2017573906
Introduction: Perinatal asphyxia is an imperative reason for neonatal mortality and long haul neurological morbidity. The general rate of this condition is assessed to be between 1 to 10 for every 1000 live births and is affected by the birth weight and gestational age of the infant furthermore by the neighborhood accessibility of therapeutic resources. Aim and Objective:To determine the incidence of Acute Kidney Injury in Term asphyxiated neonates and correlate severity of Acute Kidney Injury with Hypoxic Ischemic Encephalopathy (HIE) staging, of the asphyxiated neonates.
Material(s) and Method(s):This prospective case control study was done at 80 term asphyxiated neonates and 80 term normal neonates born in six month of study period.
Result(s):The incidence of AKI was found around 60.0%. Monitoring of blood levels of blood urea, serum creatinine and urine output helps in the early diagnosis and management of kidney injury. In this study 45.76% non-oliguric neonates had AKI hence monitoring only urine output does not help in the diagnosis of AKI, renal biochemical parameters should be monitored.
Conclusion(s): AKI in asphyxiated neonates is predominantly pre renal (77.08%) and responds to fluid resuscitation with 100% recovery. Shock is important predisposing factor and a clinical marker associated with AKI in perinatal asphyxia.12 out of 13 cases with shock developed AKI. AKI in perinatal asphyxia shows a strong positive correlation with HIE staging. 33.3% of HIE I, 64.4% of HIE II, 100% of HIE III cases developed AKI in this study.

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361.

Postoperative Acute Kidney Injury in Williams Syndrome Compared With Matched Controls.
Yokota R., Kwiatkowski D.M., Journel C., Adamson G.T., Zucker E., Suarez G., Lechich K.M., Chaudhuri A., Collins R.T.
Embase
Pediatric Critical Care Medicine. 23(3) (pp 162-170), 2022. Date of Publication: 01 Mar 2022.
[Article]
AN: 2017431858
OBJECTIVES: Cardiovascular manifestations occur in over 80% of Williams syndrome (WS) patients and are the leading cause of morbidity and mortality. One-third of patients require

cardiovascular surgery. Renal artery stenosis (RAS) is common in WS. No studies have assessed postoperative cardiac surgery-related acute kidney injury (CS-AKI) in WS. Our objectives were to assess if WS patients have higher risk of CS-AKI postoperatively than matched controls and if RAS could contribute to CS-AKI. DESIGN: This was a retrospective study of all patients with WS who underwent cardiac surgery at our center from 2010 to 2020. The WS study cohort was compared with a group of controls matched for age, sex, weight, and surgical procedure. SETTING: Patients underwent cardiac surgery and postoperative care at Lucile Packard Children's Hospital Stanford. PATIENTS: There were 27 WS patients and 43 controls (31% vs 42% female; p = 0.36). Median age was 1.8 years (interquartile range [IQR], 0.7-3.8 yr) for WS and 1.7 years (IQR, 0.8-3.1 yr) for controls. INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: Postoperative hemodynamics, vasopressor, total volume input, diuretic administration, and urine output were collected in the first 72 hours. Laboratory studies were collected at 8-hour intervals. Multivariable analysis identified predictors of CS-AKI. Controlled for renal perfusion pressure (RPP) and vasoactive inotrope score (VIS), compared with controls, the odds ratio (OR) of CS-AKI in WS was 4.2 (95% CI, 1.1-16; p = 0.034). Higher RPP at postoperative hours 9-16 was associated with decreased OR of CS-AKI (0.88 [0.8-0.96]; p = 0.004). Increased VIS at hour 6 was associated with an increased OR of CS-AKI (1.47 [1.14-1.9]; p = 0.003). Younger age was associated with an increased OR of CS-AKI (1.9 [1.13-3.17]; p = 0.015).
CONCLUSION(S): The OR of CS-AKI is increased in pediatric patients with WS compared with controls. CS-AKI was associated with VIS at the sixth postoperative hour. Increases in RPP and mean arterial pressure were associated with decreased odds of CS-AKI.

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Publisher
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362.

Serum KIM-1 and Cystatin Levels as the Predictors of Acute Kidney Injury in Asphyxiated Neonates.
Mehrkesh M., Barekatain B., Gheisari A., Ahmadi M., Shahsanai A.
Embase
Iranian Journal of Neonatology. 13(1) (pp 6-12), 2022. Date of Publication: 01 Dec 2022.
[Article]
AN: 2017286101
Background: Asphyxia may lead to serious complications, among which acute kidney injury (AKI) is the most common. Early diagnosis of AKI can help prevent impaired acid-base, fluid, and

electrolyte balance that may lead to life-threatening complications. This study aimed to evaluate the effect of kidney injury molecule-1 (KIM-1) and cystatin-C in the early diagnosis of AKI among asphyxiated neonates.
Method(s): This case-control study was conducted on 45 asphyxiated neonates, 24 of whom were in the control group and 23 cases were in the case group. Creatinine (Cr), KIM-1, and cystatin-C were measured for participants within 8 h and 4 days after birth and compared between case and control groups.
Result(s): The mean level of Cr-Standardized KIM-1 measured within 8 h and 4 days after birth was significantly higher in the case group, compared to the control group (P-value<0.05). The mean level of Cr-Standardized cysteine, only 4 days after birth, was significantly higher in the case group, compared to the control group (P-value<0.05). A receiver operating characteristic (ROC) curve analysis demonstrated that between the two biomarkers with two measurements, the KIM-1 Cr-Standardized within 4 days had the highest area under the curve (AUC) (0.751, 95% CI: 0.597-0.905). Moreover, the results of ROC curve analysis showed that Cr-Standardized KIM-1 within 4 days after birth with a critical value of >0.67 ng/ml allowed to predict kidney failure in newborns with 57.1 % sensitivity and 86.4 % specificity.
Conclusion(s): The findings of the present study show that high-specificity KIM-1 is a good biomarker for the early detection of acute renal failure in asphyxiated infants; however, similar expectations cannot exist with regards to cystatin-C for at least the first 8 h after birth.

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363.

Perioperative acute kidney injury: Impact and recent update.
Ojo B., Campbell C.H.
Embase
Current Opinion in Anaesthesiology. 35(2) (pp 215-223), 2022. Date of Publication: 01 Apr 2022. [Review]
AN: 2017207302
Purpose of reviewAcute kidney injury (AKI) is common in hospitalized patients and is a major risk factor for increased length of stay, morbidity, and mortality in postoperative patients. There are multiple barriers to reducing perioperative AKI - the etiology is multi-factorial and the diagnosis is fraught with issues. We review the recent literature on perioperative AKI and some considerations

for anesthesiologists that examine the far-reaching effects of AKI on multiple organ systems.Recent findingsThis review will discuss recent literature that addresses the epidemiology, use of novel biomarkers in risk stratification, and therapeutic modalities for AKI in burn, pediatrics, sepsis, trauma, cardiac, and liver disease, contrast-induced AKI, as well as the evidence assessing goal-directed fluid therapy.SummaryRecent studies address the use of risk stratification models and biomarkers, more sensitive than creatinine, in the preoperative identification of patients at risk for AKI. Although exciting, these scores and models need validation. There is a need for research assessing whether early AKI detection improves outcomes. Enhanced recovery after surgery utilizing goal-directed fluid therapy has not been shown to make an appreciable difference in the incidence of AKI. Reducing perioperative AKI requires a multi-pronged and possibly disease-specific approach.

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364.

Estimating baseline creatinine values to define acute kidney injury in critically ill pediatric patients.
Lee Y.J., Park Y.S., Park S.J., Jhang W.K.
Embase
Kidney Research and Clinical Practice. 41(3) (pp 322-331), 2022. Date of Publication: May 2022.
[Article]
AN: 2017054714
Background: Acute kidney injury (AKI) is a common complication in critically ill children. However, the common lack of baseline serum creatinine values affects AKI diagnosis and staging. Several approaches for estimating baseline creatinine values in those patients were evaluated.
Method(s): This single-center retrospective study enrolled pediatric patients with documented serum creatinine measurements within 3 months before admission and more than two serum creatinine measurements within 7 days after admission to the pediatric intensive care unit of a tertiary care children's hospital between January 2016 and April 2020. Four different approaches for estimating AKI using serum creatinine measurements were compared: 1) back-calculation using age-adjusted normal reference glomerular filtration rates, 2) age-adjusted normal reference serum creatinine values, 3) minimum values measured within 7 days after admission, and 4) initial values upon admission.
Result(s): The approach using minimum values showed the best agreement with the measured baseline value, with the largest intra-class correlation coefficient (0.623), smallest bias (-0.04), and narrowest limit of agreement interval (1.032). For AKI diagnosis and staging, the minimum values were 80.8% and 76.1% accurate, respectively. The other estimated baseline values underestimated AKI and showed poor agreement with baseline values before admission, with a misclassification rate of up to 42% ($p < 0.001$).
Conclusion(s): Minimum values of serum creatinine measured within 7 days after hospital admission showed the best agreement with creatinine measured within 3 months before

admission, indicating the possibility of using it as a baseline when baseline data are un-available. Further large-scale studies are required to accurately diagnose AKI in critically ill children.

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Publisher
The Korean Society of Nephrology
Year of Publication
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365.

Analysis of renal lesions in Chinese tuberous sclerosis complex patients with different types of TSC gene mutations.
Wang W., Zhao Y., Wang X., Wang Z., Cai Y., Li H., Zhang Y.
Embase
Genetics and Molecular Biology. 45(2) (no pagination), 2022. Article Number: e20200387. Date of Publication: 2022.
[Article]
AN: 2017040666
We sought to explore the relationship between renal lesion features and genetic mutations in tuberous sclerosis complex (TSC) patients. TSC patients with renal lesions were subjected to TSC1/2 gene next-generation sequencing (NGS). TSC1/2 mutation types and imaging examinations were screened for combined analysis of genetic and clinical features. Seventy-three probands among TSC patients with renal lesions were included. Twenty affected relatives were also included. In total, 93 patients were included. Eighty patients (86.0%) had bilateral renal angiomyolipomas (AMLs), and one had epithelioid AML. Two patients had polycystic kidney disease, one had renal cell carcinoma, and one had Wilms tumor. Among the 73 probands, four had TSC1 mutations, 53 had TSC2 mutations, and 16 had no mutations identified (NMI). There was no statistically significant difference between TSC1 mutation, TSC2 mutation and NMI group (P= 0.309), or between familial and sporadic groups (P= 0.775) when considering AML size. There was no statistically significant difference between pathogenic/likely pathogenic and benign/likely benign/NMI groups (P= 0.363) or among patients with different mutation types of TSC2 (P= 0.906). The relationship between the conditions of TSC gene mutations and the severity of renal lesions still needs more analysis. Patients with NMI, particularly those with familial disease, need more attention because the pathogenesis remains unknown.

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Publisher
Brazilian Journal of Genetics

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366.

Genome-Wide Analyses of Nephrotoxicity in Platinum-Treated Cancer Patients Identify Association with Genetic Variant in RBMS3 and Acute Kidney Injury.
Klumpers M.J., De Witte W., Gattuso G., Schiavello E., Terenziani M., Massimino M., Gidding C.E.M., Vermeulen S.H., Driessen C.M., van Herpen C.M., van Meerten E., Guchelaar H.-J., Coenen M.J.H., Te Loo D.M.W.M.
Embase
Journal of Personalized Medicine. 12(6) (no pagination), 2022. Article Number: 892. Date of Publication: June 2022.
[Article]
AN: 2017012612
Nephrotoxicity is a common and dose-limiting side effect of platinum compounds, which often manifests as acute kidney injury or hypomagnesemia. This study aimed to investigate the genetic risk loci for platinum-induced nephrotoxicity. Platinum-treated brain tumor and head-neck tumor patients were genotyped with genome-wide coverage. The data regarding the patient and treatment characteristics and the laboratory results reflecting the nephrotoxicity during and after the platinum treatment were collected from the medical records. Linear and logistic regression analyses were performed to investigate the associations between the genetic variants and the acute kidney injury and hypomagnesemia phenotypes. A cohort of 195 platinum-treated patients was included, and 9,799,032 DNA variants passed the quality control. An association was identified between RBMS3 rs10663797 and acute kidney injury (coefficient -0.10 (95% confidence interval -0.13--0.06), p-value 2.72 x 10-8). The patients who carried an AC deletion at this locus had statistically significantly lower glomerular filtration rates after platinum treatment. Previously reported associations, such as BACH2 rs4388268, could not be replicated in this study's cohort. No statistically significant associations were identified for platinum-induced hypomagnesemia. The genetic variant in RBMS3 was not previously linked to nephrotoxicity or related traits. The validation of this study's results in independent cohorts is needed to confirm this novel association.

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367.

Persistent Markers of Kidney Injury in Children Who Developed Acute Kidney Injury After Pediatric Cardiac Surgery: A Prospective Cohort Study.
Van den Eynde J., Salaets T., Louw J.J., Herman J., Breysem L., Vlasselaers D., Desmet L., Meyns B., Budts W., Gewillig M., Mekahli D.
Embase
Journal of the American Heart Association. 11(7) (no pagination), 2022. Article Number: e024266. Date of Publication: 05 Apr 2022.
[Article]
AN: 2016445220
BACKGROUND: Acute kidney injury (AKI) after pediatric cardiac surgery is common. Longer-term outcomes and the incidence of chronic kidney disease after AKI are not well-known. METHODS AND RESULTS: All eligible children (aged <16 years) who had developed AKI following cardiac surgery at our tertiary referral hospital were prospectively invited for a formal kidney assessment =5 years after AKI, including measurements of estimated glomerular filtration rate, proteinuria, alpha1-microglobulin, blood pressure, and kidney ultrasound. Longer-term follow-up data on kidney function were collected at the latest available visit. Among 571 patients who underwent surgery, AKI occurred in 113 (19.7%) over a 4-year period. Fifteen of these (13.3%) died at a median of 31 days (interquartile range [IQR], 9-57) after surgery. A total of 66 patients participated in the kidney assessment at a median of 4.8 years (IQR, 3.9-5.7) after the index AKI episode. Thirty-nine patients (59.1%) had at least 1 marker of kidney injury, including estimated glomerular filtration rate <90 mL/min per 1.73 m2 in 9 (13.6%), proteinuria in 27 (40.9%), alpha1-microglobinuria in 5 (7.6%), hypertension in 13 (19.7%), and abnormalities on kidney ultrasound in 9 (13.6%). Stages 1 to 5 chronic kidney disease were present in 18 (27.3%) patients. Patients with CKD were more likely to have an associated syndrome (55.6% versus 20.8%, P=0.015). At 13.1 years (IQR, 11.2- 14.0) follow-up, estimated glomerular filtration rate <90 mL/min per 1.73 m2 was present in 18 of 49 patients (36.7%), suggesting an average estimated glomerular filtration rate decline rate of -1.81 mL/min per 1.73 m2 per year. CONCLUSION(S): Children who developed AKI after pediatric cardiac surgery showed persistent markers of kidney injury. As chronic kidney disease is a risk factor for cardiovascular comorbidity, long-term kidney follow-up in this population is warranted.

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American Heart Association Inc.
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368.

Implementation of a Standardized Renal Trauma Protocol at a Level 1 Trauma Center: 7-Year Protocol and 10-Year Institutional Review.
Werner Z., Haffar A., Bacharach E., Knight-Davis J., Hajiran A., Luchey A.
Embase
Research and Reports in Urology. 14 (pp 79-85), 2022. Date of Publication: 2022.
[Article]
AN: 2016398983
Objective: Current urologic renal trauma guidelines favor conservative management. In 2012, we implemented an institution-wide renal trauma protocol to standardize management. This protocol details initiation of DVT (deep vein thrombosis) prophylaxis, cessation of bed rest, and frequency of laboratory studies. We hypothesized that low-grade injuries (grade I-III) could be managed without urologic consultation and that our chemical DVT prophylaxis regimen would not pose an increased risk of hemorrhage requiring transfusion.
Method(s): We performed a cross-sectional analysis of a prospectively maintained database containing all renal trauma at our institution from 2009 to 2019. We segregated injuries based on grade, presence of multi-organ trauma, and evaluated the presence and types of intervention, initiation of chemical DVT prophylaxis, and post-DVT prophylaxis hemorrhage requiring transfusion.
Result(s): We identified 295 cases of renal trauma, of which 62 were isolated injuries. Forty-three of the isolated renal injuries were transferred from outside facilities, 70% of which were classified as low-grade injuries. There were 220 low-grade lacerations and 75 high-grade lacerations. No grade I or II lacerations required any interventions. Two (2.5%) grade III lacerations required IR embolization. Twenty-five (41%) grade IV lacerations required intervention, of which five were nephrectomy. Seven (54%) grade V lacerations required intervention, of which 5 were nephrectomies. Upon review of our protocol with early ambulation and DVT prophylaxis, there were no cases of isolated renal injury where initiation of either treatment resulted in delayed hemorrhage requiring transfusion or surgical intervention.
Conclusion(s): Only 2/220 low-grade renal lacerations required intervention. Our data suggest that grade I and II renal lacerations can be managed safely without urologic consultation. Consultation is warranted for grade III injuries given the possibility of initial understaging. Furthermore, we believe our renal laceration protocol in our admittedly small, isolated sample has shown our DVT prophylaxis initiation to not pose increased risk.

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369.

Article Value of Acute Kidney Injury in Predicting Mortality in Vietnamese Patients with Decompensated Cirrhosis.
Nguyen N.N., Mai T.H.N., Vo N.H., Vo C.T., Ngo N.T.Y., Vi M.T., Nguyen T.
Embase
Gastroenterology Insights. 13(2) (pp 139-147), 2022. Date of Publication: June 2022.
[Article]
AN: 2016335476
Background: Acute kidney injury remains a common complication with a poor prognosis, and is a significant predictor of mortality in cirrhosis patients. We aimed to determine the percentage of acute kidney injury in decompensated cirrhosis patients and evaluate the treatment results of acute kidney injury as well as several factors related to the mortality of decompensated cirrhosis patients.
Method(s): A prospective study was conducted on decompensated cirrhosis patients in Can Tho City, Vietnam, from 2019 to 2020. Decompensated cirrhosis patients were found to have acute kidney injury on admission by a blood creatinine test. They were treated according to ICA 2015 standards, after which they were monitored and evaluated for treatment outcomes during hospitalization.
Result(s): Of 250 decompensated cirrhosis patients, 64 (25.6%) had acute kidney injury and 37.5% died. Several factors were associated with mortality in decompensated cirrhosis patients, such as Child-Pugh C (p = 0.02; OR = 3, 95% CI 1.5-6.3), acute kidney injury (p < 0.0001; OR = 9.5, 95% CI 4.3-21.1), hyponatremia (p = 0.01; OR = 2.5, 95% CI 1.2-5.1), elevated total bilirubin > 51 micromol/L (p = 0.03; OR = 2.2, 95% CI 1.1-4.6), and prothrombin < 70% (p = 0.03; OR = 6.8, 95% CI 1-51.6). Hypoalbuminemia was unrelated to mortality in these patients (p = 0.8; OR = 1.2, 95% CI 0.5-2.7), but gastrointestinal bleeding significantly increased mortality in these patients up to 2.3 times (p = 0.03; OR = 2.3, 95% CI 1.1-4.9). Three independent factors regarding mortality in decompensated cirrhosis patients included acute kidney injury, hepatic encephalopathy, and gastrointestinal bleeding. The rate of acute kidney injury in patients with decompensated cirrhosis was 25.6%; the mortality rate was 37.5%.
Conclusion(s): Acute kidney injury was a valuable predictor of mortality in Vietnamese patients with decompensated cirrhosis.

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Publisher
MDPI

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370.

Neonatal Acute Kidney Injury.
Coleman C., Tambay Perez A., Selewski D.T., Steflik H.J.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 842544. Date of Publication: 07 Apr 2022.
[Review]
AN: 2015666133
Acute kidney injury (AKI) is a common occurrence in the neonatal intensive care unit (NICU). In recent years, our knowledge of the incidence and impact of neonatal AKI on outcomes has expanded exponentially. Neonatal AKI has been shown to be associated with adverse outcomes including increased length of mechanical ventilation, prolonged length of stay, and rise in mortality. There has also been increasing work suggesting that neonates with AKI are at higher risk of chronic kidney disease (CKD). In the past, AKI had been defined multiple ways. The utilization of the neonatal modified Kidney Disease: Improving Global Outcomes (KDIGO) criteria as the standard definition for neonatal AKI in research and clinical care has driven the advances in our understanding of neonatal AKI over the last 10 years. This definition has allowed researchers and clinicians to better understand the incidence, risk factors, and outcomes associated with neonatal AKI across populations through a multitude of single-center studies and the seminal, multicenter Assessment of Worldwide Acute Kidney Injury Epidemiology in Neonates (AWAKEN) study. As the impacts of neonatal AKI have become clear, a shift in efforts toward identifying those at highest risk, protocolizing AKI surveillance, improving prevention and diagnosis, and expanding kidney support therapy (KST) for neonates has occurred. These efforts also include improving risk stratification (identifying high risk populations, including those with nephrotoxic medication exposure) and diagnostics (novel biomarkers and diagnostic tools). Recent work has also shown that the targeted use of methylxanthines may prevent AKI in a variety of high-risk populations. One of the most exciting developments in neonatal AKI is the advancement in technology to provide KST to neonates with severe AKI. In this comprehensive review we will provide an overview of recent work and advances in the field of neonatal AKI. This will include a detailed review of (1) the definition of neonatal AKI, (2) the epidemiology, risk factors, and outcomes associated with neonatal AKI, (3) improvements in risk stratification and diagnostics, (4) mitigation and treatment, (5) advancements in the provision of KST to neonates, and (6) the incidence and risk of subsequent CKD.

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Publisher
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371.

Acute kidney injury during pregnancy in kidney transplant recipients.
Yadav A., Salas M.A.P., Coscia L., Basu A., Rossi A.P., Sawinski D., Shah S.
Embase
Clinical Transplantation. 36(5) (no pagination), 2022. Article Number: e14668. Date of Publication: May 2022.
[Review]
AN: 2015635066
Pregnancy-related acute kidney injury (AKI) is a public health problem and remains an important cause of maternal and fetal morbidity and mortality. The incidence of pregnancy-related AKI has increased in developed countries due to increase in maternal age and higher detection rates. Pregnancy in women with kidney transplants is associated with higher adverse outcomes like preeclampsia, preterm births, and allograft dysfunction, but limited data exists on causes and outcomes of pregnancy-related AKI in the kidney transplant population. Diagnosis of AKI during pregnancy remains challenging in kidney transplant recipients due to lack of diagnostic criteria. Management of pregnancy-related AKI in the kidney transplant population requires a multidisciplinary team consisting of transplant nephrologists, high-risk obstetricians, and neonatologists. In this review, we discuss pregnancy-related AKI in women with kidney transplants, etiologies, pregnancy outcomes, and management strategies.

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372.

Management of Acute Kidney Injury in Extremely Low Birth Weight Infants.

Branagan A., Costigan C.S., Stack M., Slagle C., Molloy E.J.
Embase
Frontiers in Pediatrics. 10 (no pagination), 2022. Article Number: 867715. Date of Publication: 30 Mar 2022.
[Review]
AN: 2015604692
Acute kidney injury (AKI) is a common problem in the neonatal intensive care unit (NICU). Neonates born at <1,000 g (extremely low birth weight, ELBW) are at an increased risk of secondary associated comorbidities such as intrauterine growth restriction, prematurity, volume restriction, ischaemic injury, among others. Studies estimate up to 50% ELBW infants experience at least one episode of AKI during their NICU stay. Although no curative treatment for AKI currently exists, recognition is vital to reduce potential ongoing injury and mitigate long-term consequences of AKI. However, the definition of AKI is imperfect in this population and presents clinical challenges to correct identification, thus contributing to under recognition and reporting. Additionally, the absence of guidelines for the management of AKI in ELBW infants has led to variations in practice. This review summarizes AKI in the ELBW infant and includes suggestions such as close observation of daily fluid balance, review of medications to reduce nephrotoxic exposure, management of electrolytes, maximizing nutrition, and the use of diuretics and/or dialysis when appropriate.

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Publisher
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373.

Association Between Exogenous Nitric Oxide Given During Cardiopulmonary Bypass and the Incidence of Postoperative Kidney Injury in Children.
Vuong T.A., Rana M.S., Moore B., Cronin J., Ceneri N.M., Sinha P., Deutsch N., Matisoff A.J.
Embase
Journal of Cardiothoracic and Vascular Anesthesia. Part A. 36(8) (pp 2352-2357), 2022. Date of Publication: August 2022.
[Article]
AN: 2015595181
Objective: To compare the incidence and severity of acute kidney injury (AKI) after cardiac surgery with cardiopulmonary bypass and the administration of exogenous nitric oxide in children.
Design(s): A retrospective cohort study.
Setting(s): A single institution, university hospital.

Participant(s): All children younger than 18 years of age who underwent surgery with cardiopulmonary bypass.
Intervention(s): Medical records of all eligible patients between January 4, 2017, and June 28, 2019, were reviewed. Patients were divided into two groups based on whether they received exogenous nitric oxide.
Measurements and Main Results: The primary endpoint was a change in serum creatinine level, defined as the difference between the preoperative creatinine and peak postoperative creatinine. The secondary endpoint was the incidence and severity of postoperative AKI. A difference-in-difference method using fixed-effect multiple linear regression was carried out to compare the difference in maximum serum creatinine changes between the control and intervention groups. Five hundred ninety-one patients were included in the analysis: 298 (50.5%) in the control group and 293 (49.5%) in the intervention group. Control and intervention groups did not vary significantly in terms of baseline characteristics except for bypass time. After adjusting for all baseline variables, there was no statistically significant difference in the increase in serum creatinine between the control and the intervention groups (0.01 [95% CI: -0.03, 0.05], p = 0.545).
Conclusion(s): This single-center, retrospective, cohort study found no change in the incidence and severity of postoperative AKI after the administration of nitric oxide into the cardiopulmonary bypass circuit in children.

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Publisher
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Year of Publication
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374.

Diagnosis of proteinuria using a random urine protein-creatinine ratio and its correlation with adverse outcomes in pregnancy with preeclampsia characterized by renal damage.
Xiao J., Fan W., Zhu Q., Shi Z.
Embase
Journal of Clinical Hypertension. 24(5) (pp 652-659), 2022. Date of Publication: May 2022.
[Article]
AN: 2015408546
Based on a limited number of studies, a random urine protein-creatinine ratio (uPCR) value of >= 0.3 indicates abnormal proteinuria in preeclampsia with renal damage. However, current

guidelines do not recommend a reasonable diagnostic threshold of uPCR for severe preeclampsia with renal damage. Furthermore, the correlation between the uPCR value and clinical adverse outcomes remains poorly understood. The aim of the present study was to evaluate the value of uPCR in the diagnosis of significant proteinuria and to assess its correlation with adverse pregnancy outcomes in preeclampsia characterized by renal damage. In all, 1837 women were enrolled in this retrospective cohort study. Eventually, 961 women were enrolled under the exclusion criteria. First, the authors found that uPCR and 24-hour proteinuria showed a significant association (r = 0.901). The optimal threshold of uPCR for diagnosing preeclampsia was 0.295, and for diagnosing severe preeclampsia the cut-off was 0.625. Meanwhile, the adjusted odds ratio per 1 unit increase in ln (uPCR) was 1.679 (95% confidence interval [CI]:1.142-2.469) for severe adverse perinatal outcomes; 1.456 (95% CI: 1.242-1.705) for small for gestational age; 1.380 (95% CI: 1.051-1.811) for severe small for gestational age; 1.672 (95% CI: 1.210-2.310) for very early preterm birth; 1.989 (95% CI 1.726-2.293) for severe hypertension; and 2.279 (95% CI 1.906-2.724) for preterm birth. This study indicated that there was a significant and positive correlation between uPCR and 24-hour urine protein. For neonatal and maternal adverse outcomes, uPCR is an independent predictor of prognosis.

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Publisher
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375.

Clinical value of serum miR-320-3p expression in predicting the prognosis of sepsis-induced acute kidney injury.
Ji J., Luo H., Shi J.
Embase
Journal of Clinical Laboratory Analysis. 36(5) (no pagination), 2022. Article Number: e24358.
Date of Publication: May 2022.
[Article]
AN: 2015408343
Background: For investigating the expression of miR-320-3p in children with sepsis-induced acute kidney injury (AKI) and its prognostic value.
Method(s): A total of 142 patients were grouped into a survival group (n = 95) and death group (n = 47), which was based on their 28-day survival. Serum degrees of miR-320-3p, neutrophil gelatinase-associated lipid carrier protein (NGAL) and kidney injury molecule-1 (KIM-1) were detected. The Acute Physiology and Chronic Health scoring system II (APACHE II) marks were recorded. Target gene forecast and functional enrichment discussion of miR-320-3p were performed, and a protein-protein interaction (PPI) network diagram was plotted by applying bioinformatics methods. Multivariate logistic regression, ROC curve and Pearson correlation analysis were applied.

Result(s): The death group showed greatly higher serum levels of miR-320-3p, KIM-1 and APACHE II scores than the survival group (p < 0.01). Multivariate logistic regression analysis showed that levels of miR-320-3p, NGAL, KIM-1 and APACHE II scores were independent risk elements for death in sepsis children with AKI (p < 0.01). According to ROC curve analysis, the region under the curve (0.963, 95% CI: 0.908-0.996) of miR-320-3p, NGAL, KIM-1 levels and APACHE II scores combined to forecast the death of kids suffering from sepsis and AKI were the biggest. According to correlation analysis, the expression degree of serum miR-320-3p in the death group was positively correlated with NGAL, KIM-1 and APACHE II scores (all p < 0.01). Conclusion(s): The expression level of serum miR-320-3p in children with sepsis-induced AKI was significantly increased, and the combination of NGAL, KIM-1 and APACHE II scores has good value for prognosis prediction in children.

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376.

The safety cutoff storage pressure for preventing upper urinary tract damage in neurogenic bladder from spinal cord pathology and risk factor analysis.
Swatesutipun V., Tangpaitoon T.
Embase
Neurourology and Urodynamics. 41(4) (pp 991-1001), 2022. Date of Publication: April 2022.
[Article]
AN: 2015398155
Introduction: Low-compliance bladder or high bladder pressure undoubtedly leads to hydronephrosis and renal impairment. As four decades have elapsed since a previous study found a detrusor leak-point pressure (DLPP) >40 cm H2O to result in hydronephrosis, we suspected the possibility of hydronephrosis or vesicoureteral reflux occurring at any point below the 40 cm H2O DLPP reference. Therefore, this study aimed to determine the storage detrusor pressure value and risk factors related to upper urinary tract damage (UUTD).
Material(s) and Method(s): This study retrospectively reviewed the hospital records of 110 patients who visited the Neurogenic Bladder TU Service of Excellence Unit, Thammasat University Hospital, Pathum Thani, Thailand, and were diagnosed with neurogenic bladder between 2016 and 2020. The inclusion criteria were as follows: patients who were diagnosed with neurogenic bladder from spinal cord problems (spinal dysraphism, spinal cord disease [tumor, degenerative, arteriovenous malformation, etc.], or traumatic spinal cord injury) and underwent a complete examination, including urodynamic study and renal ultrasound. The exclusion criteria

were as follows: patients who had previous pelvic irradiation, other concomitant neurological disease (stroke, Parkinson's disease, etc.), or other urological diseases (stone, tumor, etc.), and those who had an indwelling suprapubic or urethral catheter. We identified the cutoff point for storage pressure related to UUTD using receiver operating characteristic (ROC) curve analysis to identify the value that produced maximum sensitivity and specificity. To identify risk factors for developing UUTD, we included seven risk factors: intravesical pressure, poor compliance, detrusor overactivity (DO), detrusor sphincter dyssynergia (DSD), level of the spinal cord pathology, male sex, and spontaneous voiding in univariable and multivariable regression analyses.
Result(s): Of the 110 patients who met the inclusion criteria, 22 were excluded from the study. Fifty-nine patients had a normal upper urinary tract, and 29 had UUTD. The mean age, sex, voiding pattern, type of spinal cord pathology, and level of spinal cord lesions were not different between the two groups. After performing ROC curve analysis, a cutoff value for daily storage pressure >=15 cm H2O provided 79.31% sensitivity and 67.80% specificity (area under the ROC curve: 0.73) for UUTD development. From univariable analysis, low compliance (cutoff values at <12.5 and <20 ml/cm H2O) and a storage pressure >=15 cm H2O was related to UUTD with statistical significance (risk ratio [RR]: 3.16, 2.3, and 3.6, respectively [p < 0.05]). After performing multivariable analysis, a storage pressure >=15 cm H2O and both cutoff values for low compliance were related to UUTD with statistical significance (RR: 3.9, 2.4, and 3.2, respectively [p < 0.05]). However, other factors, including male sex, spontaneous voiding, suprasacral lesion, DSD, and DO, were not related to UUTD.
Conclusion(s): Our results demonstrated that low compliance and a storage pressure >=15 cm H2O were significantly associated with UUTD. Various bladder-management strategies have been developed to prevent UUTDs. However, the main concept continues to be the maintenance of a low storage pressure.

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Publisher
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Year of Publication
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377.

Serum Cystatin C as a predictor of acute kidney injury in neonates: a meta-analysis.
Yang H., Lin C., Chen J., Jia Y., Shi H., Zhuang C.
Embase
Jornal de Pediatria. 98(3) (pp 230-240), 2022. Date of Publication: 01 May 2022.
[Review]
AN: 2015375482
Objectives: The objective of this meta-analysis is to evaluate the diagnostic value of serum Cystatin C in acute kidney injury (AKI) in neonates. Sources: PubMed, Embase, Cochrane Library, Web of Science, China National Knowledge Infrastructure (CNKI), and WanFang

Database were searched to retrieve the literature related to the diagnostic value of Cystatin C for neonatal AKI from inception to May 10, 2021. Subsequently, the quality of included studies was determined using the QUADAS-2 tool. Stata 15.0 statistical software was used to calculate the combined sensitivity (SEN), specificity (SPE), positive likelihood ratio (PLR), negative likelihood ratio (NLR), and diagnostic odds ratio (DOR). Additionally, meta-regression analysis and subgroup analysis contributed to explore the sources of heterogeneity. Summary of the findings: Twelve articles were included. The pooled sensitivity was 0.84 (95%CI: 0.74-0.91), the pooled specificity was 0.81 (95%CI: 0.75-0.86), the pooled PLR was 4.39 (95%CI: 3.23-5.97), the pooled NLR was 0.19 (95%CI: 0.11-0.34), and the DOR was 22.58 (95%CI: 10.44-48.83). The area under the receiver operating characteristic curve (AUC) was 0.88 (95%CI: 0.85-0.90). No significant publication bias was identified (p > 0.05).
Conclusion(s): Serum Cystatin C has a good performance in predicting neonatal AKI; therefore, it can be used as a candidate biomarker after the optimal level is determined by large prospective studies.

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Publisher
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378.

What do X-ray images of the bladder during video urodynamics show us in patients with spinal cord injury?.
Wyndaele J.J., Wyndaele M., Rapidi C.-A., Krassioukov A.
Embase
Spinal Cord. 60(5) (pp 408-413), 2022. Date of Publication: May 2022.
[Article]
AN: 2015120622
Study design: Retrospective anonymized cohort study.

Objective(s): To study X-ray images of video urodynamics (VUD) in patients with spinal cord injury (SCI).
Setting(s): Single-center study.
Method(s): X-ray images during VUD were categorized. Relation with the American Spinal Injury Association Impairment Scale (AIS), time since and level of SCI, cystometric data, method of bladder management, findings of flexible cystoscopy, and renal ultrasound were evaluated. Changes over time were studied.
Result(s): In 231 consecutive patients, VUD was done at a mean of 8.5 years after SCI. X3-ray bladder appearance was categorized as normal/standard, tonic, or flaccid. In 19 patients, specific findings were seen: diverticula, cystocele, vesicoureteral reflux. X-ray images differed by maximum cystometric capacity, presence of neurogenic detrusor overactivity, and maximum detrusor pressure during detrusor overactivity, but not by bladder compliance. There was no difference in the categories found in different levels and completeness of SCI. In the 23 patients able to void no pathology was seen on urethral images. Renal ultrasound was normal in >99%. In 86 patients, repeated testing after 72 +/- 143 weeks showed changed findings in 30%. Cystoscopy showed significantly more local pathologies.
Conclusion(s): Complications in the lower urinary tract were seen on imaging only in a limited number of our cohort. As our findings represent a real-life example of the actual yield of VUD in patients with neurogenic bladder due to SCI treated following the international guidelines, further multicentre evaluation is needed to determine when imaging should be used or not.

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379.

Exosomal MicroRNAs as Potential Biomarkers of Hepatic Injury and Kidney Disease in Glycogen Storage Disease Type Ia Patients.
Resaz R., Cangelosi D., Segalerba D., Morini M., Uva P., Bosco M.C., Banderali G., Estrella A., Wanner C., Weinstein D.A., Sechi A., Paci S., Melis D., Di Rocco M., Lee Y.M., Eva A.
Embase
International Journal of Molecular Sciences. 23(1) (no pagination), 2022. Article Number: 328. Date of Publication: January-1 2022.
[Article]
AN: 2015106258
Glycogen storage disease type Ia (GSDIa) is an inherited metabolic disorder caused by mutations in the enzyme glucose-6-phosphatase-alpha (G6Pase-alpha). Affected individuals develop renal

and liver complications, including the development of hepatocellular adenoma/carcinoma and kidney failure. The purpose of this study was to identify potential biomarkers of the evolution of the disease in GSDIa patients. To this end, we analyzed the expression of exosomal microRNAs (Exo-miRs) in the plasma exosomes of 45 patients aged 6 to 63 years. Plasma from age-matched normal individuals were used as controls. We found that the altered expression of several Exo-miRs correlates with the pathologic state of the patients and might help to monitor the progression of the disease and the development of late GSDIa-associated complications.

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380.

Urinary cystatin C: pediatric reference intervals and comparative assessment as a biomarker of renal injury among children in the regions with high burden of CKDu in Sri Lanka.
Sandamini P.M.M.A., De Silva P.M.C.S., Gunasekara T.D.K.S.C., Gunarathna S.D., Pinipa R.A.I., Herath C., Jayasinghe S.S., Chandana E.P.S., Jayasundara N.
Embase
World Journal of Pediatrics. 18(3) (pp 196-205), 2022. Date of Publication: March 2022.
[Article]
AN: 2014919728
Background: Cystatin C (Cys-C) is an emerging biomarker of renal diseases and its clinical use, particularly for screening the communities affected by chronic kidney disease of unknown etiology (CKDu), is hindered due to the lack of reference intervals (RIs) for diverse ethnic and age groups. The present study aimed to define RIs for urinary Cys-C (uCys-C) for a healthy pediatric population in Sri Lanka and in turn compare the renal function of the residential children in CKDu endemic and non-endemic regions in Sri Lanka.
Method(s): A cross-sectional study was conducted with 850 healthy children (10-17 years) from selected locations for reference interval establishment, while a total of 892 children were recruited for the comparative study. Urine samples were collected and analyzed for Cys-C, creatinine (Cr) and albumin. Cr-adjusted uCys-C levels were partitioned by age, and RIs were determined with quantile regression (2.5th, 50th and 97.5th quantiles) at 90% confidence interval.

Result(s): The range of median RIs for uCys-C in healthy children was 45.94-64.44 ng/mg Cr for boys and 53.58-69.97 ng/mg Cr for girls. The median (interquartile range) uCys-C levels of children in the CKDu endemic and non-endemic regions were 58.18 (21.8-141.9) and 58.31 (23.9-155.3) ng/mg Cr with no significant difference (P = 0.781). A significant variation of uCys-C was noted in the children across age.
Conclusion(s): Notably high uCys-C levels were observed in children with elevated proteinuria. Thus, uCys-C could be a potential biomarker in identifying communities at high risk of CKDu susceptibility.

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381.

Heart rate cut-offs to identify non-febrile children with dehydration and acute kidney injury.
Marzuillo P., Di Sessa A., Iafusco D., Capalbo D., Polito C., Nunziata F., Miraglia del Giudice E., Montaldo P., Guarino S.
Embase
European Journal of Pediatrics. 181(5) (pp 1967-1977), 2022. Date of Publication: May 2022.
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We hypothesized that the heart rate (HR) variation in an acute setting compared with HR in wellbeing status could be a good marker of both dehydration and acute kidney injury (AKI). Since HR in wellbeing status is unknown in most cases, we assumed as reliable surrogate the 50th percentile of HR according to age and gender. We evaluated if the estimated percentage of heart rate variation in acute setting compared with 50th percentile of HR (EHRV) could be marker of dehydration and AKI in children. Two independent cohorts, one prospective comprehending 185 children at type 1 diabetes mellitus onset (derivation) and one retrospective comprehending 151 children with acute gastroenteritis and pneumonia (validation), were used to develop and externally validate EHRV as predictor of the >= 5% dehydration and/or AKI composite outcome. Febrile patients were excluded. EHRV was calculated as ((HR at admission-50th percentile of HR)/HR at admission) x 100. The prevalences of >= 5% dehydration and AKI were 61.1% and 43.8% in the derivation and 34.4% and 24.5% in the validation cohort. For the >= 5% dehydration and/or AKI composite outcome, the area under receiver-operating characteristic curve of the

EHRV in the derivation cohort was 0.69 (95%CI, 0.62-0.77; p < 0.001) and the best EHRV cut-off was > 24.5%. In the validation cohort, EHRV > 24.5% showed specificity = 100% (95%CI, 96.2-100.0), positive predictive value = 100%, and negative predictive value = 67.1% (95%CI, 64.7-69.5). The positive likelihood ratio was infinity, and odds ratio was not calculable because all the patients with EHRV > 24.5% showed >= 5% dehydration and/or AKI.
Conclusion(s): EHRV appears a rather reliable marker of dehydration and AKI. Further validations could allow implementing EHRV in the clinical practice.What is Known:* Increased heart rate (HR) is an easily and quickly detectable sign of dehydration in childhood, but its cut-off to suspect dehydration or acute kidney injury (AKI) is not defined.What is New:* We found that a percentage of estimated HR variation in acute setting in comparison with 50th percentile of HR (EHRV)>24.5% predicted >=5% dehydration and/or AKI in non-febrile patients.* We provide a one-page tool to suspect >=5% dehydration and/or AKI on the basis of the HR. If furtherly validated, this tool could be implemented in the daily clinical practice.

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382.

Blood filters in children with COVID-19 and acute kidney injury: A review.
Raina R., Sethi S.K., Chakraborty R., Singh S., Teo S., Khooblall A., Montini G., Bunchman T., Topaloglu R., Yap H.K.
Embase
Therapeutic Apheresis and Dialysis. 26(3) (pp 566-582), 2022. Date of Publication: June 2022. [Review]
AN: 2014869826
COVID-19 has challenged the global healthcare system through rapid proliferation and lack of existing treatment resulting in over 180 million cases and 3.8 million deaths since December 2019. Although pediatric patients only comprise 1%-2% of diagnosed cases, their incidence of acute kidney injury ranges from 8.2% to 18.2% compared to 49% in adults. Severe infection, initiated by dysregulated host response, can lead to multiorgan failure. In this review, we focus on the use of various blood filters approved for use in pediatric kidney replacement therapy to mitigate adverse effects of severe illness. Therapeutic effects of these blood filters range from cytokine removal (CytoSorb, HA330, HCO/MCO), endotoxin removal (Toraymyxin, CPFA), both cytokine and endotoxin removal (oXiris), and nonspecific removal of proteins (PMMA) that have already been established and can be used to mitigate the various effects of the cytokine storm syndrome in COVID-19.

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383.

Biomarkers of acute kidney injury after pediatric cardiac surgery: a meta-analysis of diagnostic test accuracy.
Van den Eynde J., Schuermans A., Verbakel J.Y., Gewillig M., Kutty S., Allegaert K., Mekahli D.
Embase
European Journal of Pediatrics. 181(5) (pp 1909-1921), 2022. Date of Publication: May 2022.
[Article]
AN: 2014759317
Acute kidney injury (AKI) occurs frequently after cardiac surgery in children. Although current diagnostic criteria rely on serum creatinine and urine output, changes occur only after considerable loss of kidney function. This meta-analysis aimed to synthesize the knowledge on novel biomarkers and compare their ability to predict AKI. PubMed/MEDLINE, Embase, Scopus, and reference lists were searched for relevant studies published by March 2021. Diagnostic accuracy parameters were extracted and analyzed using hierarchical summary receiver operating characteristic (HSROC) method. Pooled estimates of the area under the curve (AUC) were calculated using conventional random-effects meta-analysis. Fifty-six articles investigating 49 biomarkers in 8617 participants fulfilled our eligibility criteria. Data from 37 studies were available for meta-analysis. Of the 10 biomarkers suitable for HSROC analysis, urinary neutrophil gelatinase-associated lipocalin (uNGAL) to creatinine (Cr) ratio yielded the highest diagnostic odds ratio (91.0, 95% CI 90.1-91.9), with a sensitivity of 91.3% (95% CI 91.2-91.3%) and a

specificity of 89.7% (95% CI 89.6-89.7%). These results were confirmed in pooled AUC analysis, as uNGAL-to-Cr ratio and uNGAL were the only elaborately studied biomarkers (> 5 observations) with pooled AUCs >= 0.800. Liver fatty acid-binding protein (L-FABP), serum cystatin C (sCysC), serum NGAL (sNGAL), and interleukin-18 (IL-18) all had AUCs >= 0.700. Conclusion(s): A variety of biomarkers have been proposed as predictors of cardiac surgery-associated AKI in children, of which uNGAL was the most prominent with excellent diagnostic qualities. However, more consolidatory evidence will be required before these novel biomarkers may eventually help realize precision medicine in AKI management.What is Known:* Acute kidney injury (AKI) occurs in about 30-60% of children undergoing cardiac surgery and is associated with increased in-hospital mortality and adverse short-term outcomes. However, in current clinical practice, AKI definitions and detection often rely on changes in serum creatinine and urine output, which are late and insensitive markers of kidney injury.* Although various novel biomarkers have been studied for the diagnosis of AKI in children after cardiac surgery, it remains unclear how these compare to one another in terms of diagnostic accuracy.What is New:* Pooled analyses suggest that for the diagnosis of AKI in children who underwent cardiac surgery, NGAL is the most accurate among the most frequently studied biomarkers.* A number of other promising biomarkers have been reported, although they will require further research into their diagnostic accuracy and clinical applicability.

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384.

Clean intermittent catheterization in long-term management of neurogenic bladder in spinal cord injury: Patient perspective and experiences.
Joshi A.D., Shukla A., Chawathe V., Gaur A.K.
Embase
International Journal of Urology. 29(4) (pp 317-323), 2022. Date of Publication: April 2022.

[Article]
AN: 2014700148
Objectives: Bladder dysfunction due to spinal cord injury has a significant impact on the overall health and quality of life of an individual. Clean intermittent catheterization is the gold standard for bladder management and is recommended due to having the lowest complication rate. Transitions from intermittent catheterization to other less optimal strategies, such as indwelling catheter, are quite common. However, the research documenting patient perspectives, and epidemiological and demographic factors related to such transition is limited.
Method(s): Data from patients with spinal cord injury rehabilitated with clean intermittent catheterization were collected. Demographic and epidemiological details of the patients were documented from the inpatient records. Appropriate statistical tests were applied to the values.
Result(s): Among the 45 participants, 68.89% continued clean intermittent catheterization. In those who discontinued clean intermittent catheterization, the median duration of practicing clean intermittent catheterization was 3.5 months. The commonest difficulty among compliant patients was carrying out clean intermittent catheterization in outdoor environments due to the unavailability of toilet facilities. Urinary tract infection was the most common (17.78%) complication noted. Dependence (20.00%) was a major procedural difficulty followed by pain. Adaptations to remain continent in special conditions were diapers and condom catheters. The duration of clean intermittent catheterization practiced influenced discontinuation of clean intermittent catheterization. With an increase in the duration of clean intermittent catheterization practiced after discharge, the risk of discontinuation of clean intermittent catheterization decreased with an adjusted odds ratio of 0.773 (95% confidence interval 0.609-0.982).
Conclusion(s): People with spinal cord injury have many challenging issues in the regulation of bladder function at their level inclusive of procedural difficulties, environmental barriers and medical complications, and understanding of which will help to establish a comprehensive and a holistic program to provide remote/community care.

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385.

Nonsteroidal anti-inflammatory drugs associated acute kidney injury in hospitalized children: A systematic review and meta-analysis.

Gong J., Li M., Ma L., Chen C., Zhao S., Zhou Y., Cui Y.
Embase
Pharmacoepidemiology and Drug Safety. 31(2) (pp 117-127), 2022. Date of Publication: February 2022.
[Review]
AN: 2014291687
Introduction: Nonsteroidal anti-inflammatory drugs (NSAIDs) are regarded as nephrotoxins. Children commonly use NSAIDs and are susceptible to nephropathy, but the relationship between acute kidney injury (AKI) and use of NSAIDs is not well examined yet.
Objective(s): To evaluate the relationship between AKI and use of NSAIDs in hospitalized pediatric patients who are susceptible to nephropathy.
Method(s): We conducted this systematic review and meta-analysis of observational studies by searching PubMed, Embase, and Cochrane Database for articles published up to June 1, 2020. Reports included involved children (age < 18 years) who used NSAIDs for various reasons and were admitted in the hospital. The main outcome measure was whether AKI occurred, and pooled odds ratio (OR) and 95% confidence intervals (CI) were calculated using generic inverse variance methods.
Result(s): Seven studies reporting risk of AKI in the hospitalized pediatric patients receiving NSAIDs were included applying a random-effects model. In the hospitalized pediatric population, the pooled OR of AKI for present NSAID exposure was 1.55 (95%CI 1.26-1.92).
Conclusion(s): NSAID exposure was associated with an approximate 1.6-fold rise in the odds of developing AKI in hospitalized pediatric patients. Avoidance, cautious use of NSAIDs and further evidence are needed. This study was registered with PROSPERO (identifier: CRD42021219779).

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386.

The relationship between hyperchloremia and acute kidney injury in pediatric diabetic ketoacidosis and its impact on clinical outcomes.
Ahmed H.M., Elnaby H.R.H., El kareem R.M.A., Hodeib M.
Embase
Pediatric Nephrology. 37(6) (pp 1407-1413), 2022. Date of Publication: June 2022.
[Article]
AN: 2014126834
Introduction: Diabetic ketoacidosis (DKA) is characterized by hyperglycemia, ketogenesis, and increased anion gap metabolic acidosis. Such derangements are accompanied by volume depletion as well as electrolyte disturbances. Resuscitation using traditional saline in DKA patients can exacerbate electrolyte abnormalities, in particular the production of hyperchloremia. Severe hypovolemia can result in acute kidney injury (AKI). The link between hyperchloremia and

AKI is controversial. This study aimed to assess the relationship between hyperchloremia and AKI in pediatric patients with DKA and its impacts on clinical outcomes.
Method(s): This cross-sectional study was conducted on 70 children with DKA admitted to the pediatric intensive care unit in which all patients were subjected to detailed medical history taking and full clinical examination. Daily assessment of Na, K, urea, creatinine, chloride, arterial blood gases, and albumin/creatinine ratio (ACR) was done. AKI was defined as pRIFLE stage I and F.
Result(s): Hyperchloremia was detected in 65.7% of patients at admission and in 52.9% after 24 h (p = 0.17). AKI was documented in 28% of patients. At admission hyperchloremia was detected in 56% of patients without AKI versus 90% of patients with AKI (p = 0.007). After 24 h, hyperchloremia was detected in 48.4% patients without versus 100% of patients with AKI. Chloride was significantly positively correlated to duration of admission, creatinine, ACR, and negatively correlated to eGFR.
Conclusion(s): The development of AKI in patients with DKA was accompanied by hyperchloremia, increased time to DKA resolution, and longer hospital stay. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information[Figure not available: see fulltext.]

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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
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387.

Abnormal magnesium levels and their impact on death and acute kidney injury in critically ill children.
Morooka H., Tanaka A., Kasugai D., Ozaki M., Numaguchi A., Maruyama S.
Embase
Pediatric Nephrology. 37(5) (pp 1157-1165), 2022. Date of Publication: May 2022.
[Article]
AN: 2014058002
Background: The prevalence of magnesium imbalance in critically ill children is very high. However, its significance in the development of acute kidney injury (AKI) and mortality remains unknown.
Method(s): In this retrospective observational study from 2010 to 2018, the pediatric-specific intensive care database was analyzed. We included critically ill children aged > 3 months and those without chronic kidney disease. Patients were diagnosed with AKI, according to the Kidney Disease Improving Global Outcomes (KDIGO) study. We calculated the initial corrected magnesium levels (cMg) within 24 h and used a spline regression model to evaluate the cut-off values for cMg. We analyzed 28-day mortality and its association with AKI. The interaction between AKI and magnesium imbalance was evaluated.

Result(s): The study included 3,669 children, of whom 105 died within 28 days, while 1,823 were diagnosed with AKI. The cut-off values for cMg were 0.72 and 0.94 mmol/L. Both hypermagnesemia and hypomagnesemia were associated with 28-day mortality (odds ratio [OR] = 2.99, 95% confidence interval [CI] = 1.89-4.71, p < 0.001; OR = 2.80, 95% CI = 1.60-4.89, p < 0.001). Hypermagnesemia was associated with AKI (OR = 1.52, 95% CI = 1.27-1.82, p < 0.001), while neither hypermagnesemia nor hypomagnesemia interacted with the AKI stage on the 28-day mortality.
Conclusion(s): Abnormal magnesium levels were associated with 28-day mortality in critically ill children. AKI and hypermagnesemia had a strong association. Graphical abstract: "A higher resolution version of the Graphical abstract is available as Supplementary information". [Figure not available: see fulltext.]

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388.

Epidemiology and outcomes of dialysis requiring acute kidney injury: A single-center study.
Jaryal A., Vikrant S., Gupta D.
Embase
Therapeutic Apheresis and Dialysis. 26(3) (pp 594-600), 2022. Date of Publication: June 2022.
[Article]
AN: 2013902091
Objectives: Acute kidney injury (AKI) is a common diagnosis in hospitalized patients. Dialysis requiring AKI (AKI-D) is associated with adverse outcomes. This study aims to know the clinical profile and short-term outcomes at 3 months, in patients with AKI-D, at our center.
Method(s): A prospective observational study was done of all the patients admitted with AKI-D for 2 years, from July 2018 to June 2020. We recorded clinical parameters at baseline and postdischarge follow-up at 3 months.
Result(s): One hundred twenty-eight patients had AKI-D over 2 years. Then, 116 (90.6%) patients had community-acquired AKI (CAAKI), and 12 (9.4%) patients had hospital-acquired AKI. The underlying causes of AKI-D were: toxins in 48 (37.5%), sepsis in 31 (24.2%), acute kidney disease in 15 (11.7%), acute gastroenteritis (AGE) in 9 (7%), and cardiogenic shock in 7 (5.5%) patients. The mean values of intact parathyroid hormone (available in 32% of patients) were 268 pg/mL. Intermittent hemodialysis was the commonest mode of dialysis (85.2%). A kidney biopsy was done in 23 (18%) patients. The most common diagnosis on kidney biopsy was

glomerulonephritis (GN) in 12 patients (crescentic GN-9 and IgA nephropathy-3), followed by acute tubule-interstitial nephritis in 6 patients. In-hospital mortality was 29.7%. Overall, 39% regained serum creatinine in the normal range at 3 months, 36.7% died, 14.1% reached chronic kidney disease (CKD), 7.8% lost to follow-up, and 2.3% had reached end-stage renal disease. Conclusion(s): The majority of AKI-D at our center was CAAKI. A significant chunk of AKI-D (68.7%) was caused by preventable causes like toxins, sepsis, and AGE. Dysregulation of mineral metabolism was conspicuous. In chemical toxin vs. biological toxins and undifferentiated sepsis vs. the identifiable cause of sepsis, formers had significantly more in-hospital mortality than the latter ones. AKI-D is associated with high in-hospital mortality, total mortality, and risk of progression to CKD at 3 months.

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389.

Early biochemical markers in the assessment of acute kidney injury in children after cardiac surgery.
Galic S., Milosevic D., Filipovic-Grcic B., Rogic D., Vogrinc Z., Ivancan V., Matic T., Rubic F., Cvitkovic M., Bakos M., Premuzic V.
Embase
Therapeutic Apheresis and Dialysis. 26(3) (pp 583-593), 2022. Date of Publication: June 2022.
[Article]
AN: 2013763914
Our aim was to evaluate biochemical markers in plasma (NGAL, CysC) and urine (NGAL, KIM-1) in children's early onset of acute kidney injury after congenital heart defect surgery using cardiopulmonary bypass. This study prospectively included 100 children with congenital heart defects who developed AKI. Patients with acute kidney injury had significantly higher CysC levels 6 and 12 h after cardiac surgery and plasma NGAL levels 2 and 6 h after cardiac surgery. The best predictive properties for the development of acute kidney injury are the combination (+CysCpl or +NGALu) after 12 h and a combination (+CysCpl and +NGALu) 6 and 24 h after cardiac surgery. We showed that plasma CysC and urinary NGAL could reliably predict the development of acute kidney injury. Measurement of early biochemical markers in plasma and urine, individually and combination, may predict the development of cardiac surgery-associated acute kidney injury in children.

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390.

Incidence, Predictors, and Impact of Postoperative Acute Kidney Injury Following Fontan Conversion Surgery in Young Adult Fontan Survivors.
Patel S.R., Costello J.M., Andrei A.-C., Backer C.L., Krawczeski C.D., Deal B.J., Langman C.B., Marino B.S.
Embase
Seminars in Thoracic and Cardiovascular Surgery. 34(2) (pp 631-639), 2022. Date of Publication: Summer 2022.
[Article]
AN: 2011578587
Acute kidney injury (AKI) is a common complication following single ventricle congenital heart surgery. Data regarding AKI following Fontan conversion (FC) surgery are limited. This study evaluated the incidence, predictors of, and prognostic value of AKI following FC. Single-center retrospective cohort study, including consecutive FC patients from December 1994 to December 2016. Medical records were reviewed. AKI was classified into AKI-1/AKI-2/AKI-3 using Kidney Disease: Improving Global Outcomes criteria. Multivariable logistic regression identified risk factors for AKI>=2. Chi-square and 2-sample t-tests assessed associations between AKI>=2 and postoperative outcomes. Mid-term heart-transplant-free survival among AKI0-1 vs AKI2-3 groups was compared using Kaplan-Meier curves and log-rank test. We included 139 FC patients: age at FC 24 (25th-75th, 19-31) years; 81% initial atrio-pulmonary Fontan; follow-up 8.3 +/- 5.3 years following FC. Post-FC, 63 patients (45%) developed AKI (AKI-1 = 37 [27%]; AKI-2 = 10 [7%]; AKI-3 = 16 [11%]). AKI recovered by hospital discharge in 86%, 80%, and 19% of patients with AKI-1/AKI-2/AKI-3, respectively. Independent risk factors for AKI>=2 included older age (OR 1.07, 95%CI 1.01-1.15; P = 0.027); >=3 prior sternotomies (OR = 6.11; 95%CI = 1.59-23.47; P = 0.009); greater preoperative right atrial pressure (OR 1.19; 1.02-1.38; P = 0.024), and prior catheter ablation procedure (OR 3.45; 1.17-10.18; P = 0.036). AKI>=2 was associated with: longer chest tube duration (9 [5-57] vs 7 [3-28] days; P = 0.01); longer mechanical ventilation time (2 [1-117] vs 1 [1-6] days; P = 0.01); greater need for dialysis (31% v s0%; P < 0.001); and longer

postoperative length of stay (18 [8-135] vs 10 [6-58] days; P < 0.001). AKI 2-3 patients had worse mid-term heart-transplant-free survival. Half of the patients undergoing FC develop AKI. AKI 2-3 is associated with worse early postoperative outcomes and reduced mid-term transplant-free survival following FC. Knowledge of AKI predictors may allow for improved FC risk stratification, patient selection, and perioperative management in this high-risk population.

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391.

Acute kidney injury in the pediatric intensive care unit: outpatient follow-up.
Robinson C., Hessey E., Nunes S., Dorais M., Chanchlani R., Lacroix J., Jouvet P., Phan V., Zappitelli M.
Embase
Pediatric Research. 91(1) (pp 209-217), 2022. Date of Publication: January 2022.
[Article]
AN: 2010842176
BACKGROUND: Few studies have characterized follow-up after pediatric acute kidney injury (AKI). Our aim was to describe outpatient AKI follow-up after pediatric intensive care unit (PICU) admission.
METHOD(S): Two-center retrospective cohort study (0-18 years; PICU survivors (2003-2005); noncardiac surgery; and no baseline kidney disease). Provincial administrative databases were used to determine outcomes. Exposure: AKI (KDIGO (Kidney Disease: Improving Global Outcomes) definitions).
Outcome(s): post-discharge nephrology, family physician, pediatrician, and non-nephrology specialist visits. Regression was used to evaluate factors associated with the presence of nephrology follow-up (Cox) and the number of nephrology and family physician or pediatrician visits (Poisson), among AKI survivors.

RESULT(S): Of n = 2041, 355 (17%) had any AKI; 64/355 (18%) had nephrology; 198 (56%) had family physician or pediatrician; and 338 (95%) had family physician, pediatrician, or non-nephrology specialist follow-up by 1 year post discharge. Only 44/142 (31%) stage 2-3 AKI patients had nephrology follow-up by 1 year. Inpatient nephrology consult (adjusted hazard ratio (aHR) 7.76 [95% confidence interval (CI) 4.89-12.30]), kidney admission diagnosis (aHR 4.26 [2.21-8.18]), and AKI non-recovery by discharge (aHR 2.65 [1.55-4.55]) were associated with 1-year nephrology follow-up among any AKI survivors.
CONCLUSION(S): Nephrology follow-up after AKI was uncommon, but nearly all AKI survivors had follow-up with non-nephrologist physicians. This suggests that AKI follow-up knowledge translation strategies for non-nephrology providers should be a priority. Impact: Pediatric AKI survivors have high long-term rates of chronic kidney disease (CKD) and hypertension, justifying regular kidney health surveillance after AKI.However, there is limited pediatric data on follow-up after AKI, including the factors associated with nephrology referral and extent of non-nephrology follow-up.We found that only one-fifth of all AKI survivors and one-third of severe AKI (stage 2-3) survivors have nephrology follow-up within 1 year post discharge.However, 95% are seen by a family physician, pediatrician, or non-nephrology specialist within 1 year post discharge.This suggests that knowledge translation strategies for AKI follow-up should be targeted at non-nephrology healthcare providers.

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392.

Advances in pediatric acute kidney injury.
Raina R., Chakraborty R., Tibrewal A., Sethi S.K., Bunchman T.
Embase
Pediatric Research. 91(1) (pp 44-55), 2022. Date of Publication: January 2022.
[Review]
AN: 2010842143

Abstract: The objective of this study was to inform the pediatric nephrologists of recent advances in acute kidney injury (AKI) epidemiology, pathophysiology, novel biomarkers, diagnostic tools, and management modalities. Studies were identified from PubMed, EMBASE, and Google Scholar for topics relevant to AKI. The bibliographies of relevant studies were also reviewed for potential articles. Pediatric (0-18 years) articles from 2000 to May 2020 in the English language were included. For epidemiological outcomes analysis, a meta-analysis on data regarding AKI incidence, mortality, and proportion of kidney replacement therapy was performed and an overall pooled estimate was calculated using the random-effects model. Other sections were created highlighting pathophysiology, novel biomarkers, changing definitions of AKI, evolving tools for AKI diagnosis, and various management modalities. AKI is a common condition seen in hospitalized children and the diagnosis and management have shown to be quite a challenge. However, new standardized definitions, advancements in diagnostic tools, and the development of novel management modalities have led to increased survival benefits in children with AKI. Impact: This review highlights the recent innovations in the field of AKI, especially in regard to epidemiology, pathophysiology, novel biomarkers, diagnostic tools, and management modalities.

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393.

Does ureteral access sheath have an impact on ureteral injury?.
Asutay M.K., Lattarulo M., Liourdi D., Al-Aown A.M., Pagonis K., Nedal N., Pietropaolo A., Emiliani E., Liatsikos E., Kallidonis P.
Embase
Urology Annals. 14(1) (pp 1-7), 2022. Date of Publication: January-March 2022.
[Review]
AN: 637198103
Objective: To present a well-organized review about ureteral access sheath impact on ureteral injury.
Material(s) and Method(s): Systemic search on literature was done. Total of 3766 studies observed by two urologists and results were unified. A Prisma diagram was used for eliminating irrelevant studies and at the end of elimination process 28 studies were found eligible for this review.

Result(s): Not only clinical studies but also comparative experimental animal studies show that there is no significant data to claim that ureteral access sheath insertion causes more ureteral injury. Pre-stented patients were found to be at lower risk for ureteral injury. Risk of progression to ureteral injury seems to be low even if ureteral injury occurs with insertion of ureteral access sheath.
Conclusion(s): Summary of studies' results indicate that use of ureteral access sheath doesn't increase ureteral injury. This review may help understanding safety profile of ureteral access sheath on evidence-based level. There is not enough data to make a statement that ureteral access sheath prevents ureteral injury.

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394.

Use of non-conventional biomarkers in the early diagnosis of acute kidney injury in preterm newborns with sepsis. Biomarcadores nao tradicionais de lesao renal aguda em recem-nascidos prematuros com sepse: Diagnostico precoce <Biomarcadores nao tradicionais de lesao renal aguda em recem-nascidos prematuros com sepse: Diagnostico precoce.>
da Silva Barbosa J., da Silva G.B., Meneses G.C., Martins A.M.C., De Francesco Daher E., Machado R.P.G., Lemes R.P.G.
Embase
Jornal Brasileiro de Nefrologia. 44(1) (pp 97-108), 2022. Date of Publication: January 2022.
[Review]
AN: 2017665875
Acute kidney injury (AKI) is a common finding in Neotatal Intensive Care Units (NICU). Sepsis is one the main causes of AKI in preterm newborns. AKI has been associated with significant death rates. Early detection of the condition is the first step to improving prevention, treatment, and outcomes, while decreasing length of hospitalization, care costs, and morbimortality. AKI may progress to chronic kidney disease (CKD), a condition linked with dialysis and greater risk of cardiovascular disease. This review article aims to discuss cases of AKI in preterm newborns with

sepsis, the use of biomarkers in lab workup, and the use of non-conventional biomarkers for the early identification of AKI.

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Year of Publication
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395.

Acute kidney injury is associated with subtle but quantifiable neurocognitive impairments.
Vanderlinden J.A., Semrau J.S., Silver S.A., Holden R.M., Scott S.H., Gordon Boyd J.
Embase
Nephrology Dialysis Transplantation. 37(2) (pp 285-297), 2022. Date of Publication: 01 Feb 2022.
[Article]
AN: 2017324552
Background: Acute kidney injury (AKI) is associated with long-term morbidity and mortality. The effects of AKI on neurocognitive functioning remain unknown. Our objective was to quantify neurocognitive impairment after an episode of AKI.
Method(s): Survivors of AKI were compared with age-matched controls, as well as a convenience sample of patients matched for cardiovascular risk factors with normal kidney function (active control group). Patients with AKI completed two assessments, while the active control group completed one assessment. The assessment included a standardized test: the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS), and a robotic assessment: Kinarm.
Result(s): The cohort consisted of 21 patients with AKI, 16 of whom completed both assessments, and 21 active control patients. The majority of patients with AKI had Kidney Disease: Improving Global Outcomes Stage 3 AKI (86%), 57% received dialysis and 43% recovered to <=25% of their baseline serum creatinine by their first assessment. Compared with the RBANS, which detected little impairment, the Kinarm categorized patients as impaired in visuomotor (10/21, 48%), attention (10/20, 50%) and executive tasks (11/21, 52%) compared with healthy controls. Additionally, patients with AKI performed significantly worse in attention and visuomotor domains when compared with the active controls. Neurocognitive performance was generally not impacted by the need for dialysis or whether kidney function recovered.
Conclusion(s): Robotic technology identified quantifiable neurocognitive impairment in survivors of AKI. Deficits were noted particularly in attention, visuomotor and executive domains. Further investigation into the downstream health consequences of these neurocognitive impairments is warranted.

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Publisher
Oxford University Press
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396.

Evaluating TIMP-2 and IGFBP-7 as a predictive tool for kidney injury in ureteropelvic junction obstruction.
Mello M.F., de Bessa Junior J., Reis S.T., Kondo E.Y., Yu L., Denes F.T., Lopes R.I.
Embase
International Braz J Urol. 48(2) (pp 284-293), 2022. Date of Publication: March 2022.
[Article]
AN: 2017233899
A major challenge in the management of ureteropelvic junction obstruction (UPJO) is the selection of patients who would benefit from surgical treatment. Tissue inhibitor metalloproteinase-2 (TIMP-2) and insulin-like growth factor-binding protein 7 (IGFBP7) indicate renal cell stress and are associated with cell cycle arrest. The [TIMP-2] [IGFBP7] ratio (Nephrocheck) has been recently applied in patients in intensive care units patients to predict the development of acute kidney injury. In this study, we evaluated the performance of these biomarkers performance to distinguishing obstructive hydronephrosis (HN) from non-obstructive HN.
Material(s) and Method(s): Consecutive patients with UPJO were enrolled in this study. Urinary [TIMP-2] [IGFBP7] and clinical characteristics (hydronephrosis grade, differential renal function, and drainage half-time) were measured in the following groups: 26 children with obstructive HN at initial diagnosis (group 1A) and after six months of dismembered pyeloplasty (group 1B); 22 children with non-obstructive HN (group 2), and 26 children without any urinary tract condition, as the control group (group 3).
Result(s): Comparing the initial samples, [TIMP-2] [IGFBP7] had higher levels in the HN groups and lower levels in the control group; however, no difference was observed between the HN groups (obstructive vs. non-obstructive). After six months of followup, patients who underwent dismembered pyeloplasty showed stability in the urinary concentration of [TIMP-2] [IGFBP7]. All patients with [TIMP-2] [IGFBP7] higher than 1.0 (ng/mL)2/1000 had diffuse cortical atrophy on ultrasonography.
Conclusion(s): We showed that urinary levels of urinary [TIMP-2] [IGFBP7] are higher in children with HN than controls. Nephrocheck is not reliable in predicting the need for surgical intervention for pediatric patients with UPJO.

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Publisher
Brazilian Society of Urology
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397.

Comparative transcriptome analysis of miRNA in hydronephrosis male children caused by ureteropelvic junction obstruction with or without renal functional injury.
Liu G., Liu X., Yang Y.
Embase
PeerJ. 10 (no pagination), 2022. Article Number: e12962. Date of Publication: February 2022.
[Article]
AN: 2017202008
MicroRNAs (miRNAs or miRs) are non-coding RNAs that contribute to pathological processes of various kidney diseases. Renal function injury represents a final common outcome of congenital obstructive nephropathy and has attracted a great deal of attention. However the molecular mechanisms are still not fully established. In this study, we compared transcriptome sequencing data of miRNAs of renal tissues from congenital hydronephrosis children with or without renal functional injury, in order to better understand whether microRNAs could play important roles in renal functional injury after ureteropelvic junction obstruction. A total of 22 microRNAs with significant changes in their expression were identified. Five microRNAs were up-regulated and 17 microRNAs were down-regulated in the renal tissues of the hydronephrosis patients with renal function injury compared with those without renal function injury. MicroRNA target genes were predicted by three major online miRNA target prediction algorithms, and all these mRNAs were used to perform the gene ontology analysis and Kyoto Encyclopedia of Gene and Genomes pathway analysis. Then, twelve candidate human and rat homologous miRNAs were selected for validation using RT-qPCR in vitro and in vivo; only miR-187-3p had a trend identical to that detected by the sequencing results among the human tissues, in vivo and in vitro experimental models. In addition, we found that the change of miR-187-3p in vivo was consistent with results in vitro models and showed a decrease trend in time dependence. These results provided a detailed catalog of candidate miRNAs to investigate their regulatory role in renal injury of congenital hydronephrosis, indicating that they may serve as candidate biomarkers or therapeutic targets in the future.

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398.

Safety and efficacy of Endovascular Management of high-grade blunt renal injury.
Wang B., Wen C., Song S., Li G., Yan Y., Cheng S., Zeng J., Lin Z., Wang Y.
Embase
Journal of Interventional Medicine. 5(1) (pp 23-27), 2022. Date of Publication: February 2022.
[Article]
AN: 2016526333
Objectives: To provide data on the safety and efficacy of renal arterial embolization (RAE) in patients with high-grade blunt renal injury.
Material(s) and Method(s): Fifteen patients with high-grade blunt renal injury (AAST grades IV-V) admitted to our hospital from July 2014 to December 2019 were retrospectively reviewed in this study. Their clinical success rate and complications were investigated accordingly.
Result(s): Fifteen patients with high-grade blunt renal injury, 13 men and 2 women with an average age of 41.6 years, including 11 hemodynamically unstable patients and 4 stable patients, were treated with RAE. Among these patients, 73.3% (11 of 15) had grade IV, and 26.7% (4 of 15) had grade V injuries, while 53.3% (8 of 15) patients had concomitant injuries. One patient received main RAE and 14 patients received selective RAE. The clinical success rate after the first embolization was 93.3% (14 of 15). RAE was repeated and was successfully performed in one patient with sustained hematuria. No significant difference in creatinine levels was found before and after embolization. During the follow-up period of 2-82 months, two patients required tube drainage due to urine leaks, one patient developed renal failure requiring renal replacement therapy, and one patient developed secondary hypertension.
Conclusion(s): RAE can provide a high success rate of hemostasis for both hemodynamically stable and unstable patients with high-grade blunt renal injury, and only minor complications are observed with this procedure.

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399.

Pathophysiology of Acute Kidney Injury in Malaria and Non-Malarial Febrile Illness: A Prospective Cohort Study.
Hawkes M.T., Leligdowicz A., Batte A., Situma G., Zhong K., Namasopo S., Opoka R.O., Kain K.C., Conroy A.L.
Embase
Pathogens. 11(4) (no pagination), 2022. Article Number: 436. Date of Publication: April 2022.
[Article]
AN: 2016444371
Acute kidney injury (AKI) is a life-threatening complication. Malaria and sepsis are leading causes of AKI in low-and-middle-income countries, but its etiology and pathogenesis are poorly understood. A prospective observational cohort study was conducted to evaluate pathways of immune and endothelial activation in children hospitalized with an acute febrile illness in Uganda. The relationship between clinical outcome and AKI, defined using the Kidney Disease: Improving Global Outcomes criteria, was investigated. The study included 967 participants (mean age 1.67 years, 44.7% female) with 687 (71.0%) positive for malaria by rapid diagnostic test and 280 (29.1%) children had a non-malarial febrile illness (NMFI). The frequency of AKI was higher in children with NMFI compared to malaria (AKI, 55.0% vs. 46.7%, p = 0.02). However, the frequency of severe AKI (stage 2 or 3 AKI) was comparable (12.1% vs. 10.5%, p = 0.45). Circulating markers of both immune and endothelial activation were associated with severe AKI. Children who had malaria and AKI had increased mortality (no AKI, 0.8% vs. AKI, 4.1%, p = 0.005), while there was no difference in mortality among children with NMFI (no AKI, 4.0% vs. AKI, 4.6%, p = 0.81). AKI is a common complication in children hospitalized with acute infections. Immune and endothelial activation appear to play central roles in the pathogenesis of AKI.

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400.

Frequency of Acute Kidney Injury (AKI) in Neonates with Birth Asphyxia at a Tertiary Care Hospital.

Quddus H.A., Farid M.N., Goheer L., Lehrasab W., Murtaza H.M., Maryam S.
Embase
Pakistan Paediatric Journal. 46(1) (pp 3-8), 2022. Date of Publication: March 2022.
[Article]
AN: 2016187705
Objective: To determine the frequency of Acute Kidney Injury in perinatal asphyxia.
Study Design: Cross-sectional study Place and Duration of Study: The Neonatal Intensive Care Unit, Pediatrics Department, Combined Military Hospital, Multan; from 26th August 2017 To 25th February 2018.
Material(s) and Method(s): Total 120 patients were included with suspected birth asphyxia. Serum Lactate was sent within 30 min of birth. Blood samples were collected from the neonates at 24 hours of life and sent for serum creatinine analysis to ascertain acute kidney injury in these neonates.
Result(s): There were 56.7% male and 43.3% female neonates. Mean gestational age was 38.05 +/- 1.22 weeks. Mean 5 minutes APGAR score was 4.64 +/- 1.32. Mean serum lactate and serum creatinine were 5.15 +/- 0.63 mmol/L and 128.03 +/- 6.17 micromol/L respectively. Fetal distress on CTG was found in 47.5% cases while delayed cry was observed in 56.7% neonates. Most common grade of HIE was grade II in 57.55% neonates. Of these 120 patients, 13.3% neonates were found to have acute kidney injury.
Conclusion(s): Current study demonstrates 13.3% AKI among patients with perinatal asphyxia. Gender, gestational age, and mode of delivery were found to have significant association with AKI.

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Publisher
Pakistan Pediatric Journal
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401.

Intraoperative Hypotension and Acute Kidney Injury after Noncardiac Surgery in Infants and Children: A Retrospective Cohort Analysis.
Schacham N.Y., Chhabada S., Efune P.N., Pu X., Liu L., Yang D., Raza P.C., Szmuk P., Sessler D.I.
Embase
Anesthesiology. 136(1) (pp 93-103), 2022. Date of Publication: 01 Jan 2022.
[Article]
AN: 2016121791
Background: Age- and sex-specific reference nomograms for intraoperative blood pressure have been published, but they do not identify harm thresholds. The authors therefore assessed the relationship between various absolute and relative characterizations of hypotension and acute kidney injury in children having noncardiac surgery.
Method(s): The authors conducted a retrospective cohort study using electronic data from two tertiary care centers. They included inpatients 18 yr or younger who had noncardiac surgery with general anesthesia. Postoperative renal injury was defined using the Kidney Disease Improving Global Outcomes definitions, based on serum creatinine concentrations. The authors evaluated potential renal harm thresholds for absolute lowest intraoperative mean arterial pressure (MAP)

or largest MAP reduction from baseline maintained for a cumulative period of 5 min. Separate analyses were performed in children aged 2 yr or younger, 2 to 6 yr, 6 to 12 yr, and 12 to 18 yr. Result(s): Among 64,412 children who had noncardiac surgery, 4,506 had creatinine assessed preoperatively and postoperatively. The incidence of acute kidney injury in this population was 11% (499 of 4,506): 17% in children under 6 yr old, 11% in children 6 to 12 yr old, and 6% in adolescents, which is similar to the incidence reported in adults. There was no association between lowest cumulative MAP sustained for 5 min and postoperative kidney injury. Similarly, there was no association between largest cumulative percentage MAP reduction and postoperative kidney injury. The adjusted estimated odds for kidney injury was 0.99 (95% CI, 0.94 to 1.05) for each 5-mmHg decrease in lowest MAP and 1.00 (95% CI, 0.97 to 1.03) for each 5% decrease in largest MAP reduction from baseline.
Conclusion(s): In distinct contrast to adults, the authors did not find any association between intraoperative hypotension and postoperative renal injury. Avoiding short periods of hypotension should not be the clinician's primary concern when trying to prevent intraoperative renal injury in pediatric patients.

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402.

Incidence and risk factors for acute kidney injury associated to surgery for congenital heart disease. Incidencia y factores de riesgo de falla renal aguda asociados a la correccion quirurgica de cardiopatias congenitas <Incidencia y factores de riesgo de falla renal aguda asociados a la correccion quirurgica de cardiopatias congenitas.>
Restrepo-De Rovetto C., Llanos C., Silva G., Martinez A., Torres M., Munoz C., Fragozo C., Daza J., Cantor E.
Embase
Revista Colombiana de Cardiologia. 29(1) (pp 70-76), 2022. Date of Publication: January/February 2022.
[Article]
AN: 2016004521

Background: Acute kidney injury (AKI) occurs frequently after cardiac surgery for congenital heart disease and it has a great impact on patient's prognosis.
Objective(s): The aims of this study were to determine the incidence and risk factors for AKI in children undergoing cardiac surgery and its impact on mortality, duration of mechanical ventilation, ICU and total hospital length of stay.
Method(s): This was a historical cohort study of children 0-18 years of age who underwent cardiac surgery between 2012 and 2014. We used the Risk Adjustment for Congenital Heart Surgery-1 (RACHS) scale to evaluate risk of the surgery. AKI was defined in accordance to the Acute Kidney Injury Network (AKIN) criteria.
Result(s): A total of 485 patients were included. AKI occurred in 89 (18.3%) patients during the study period. Risk factors for AKI were age < 2 years, cardiopulmonary bypass (CPB) time > 120 min and RACHS score > 3. AKI increased the mortality risk (OR: 5.82, 95% CI: 2.24-15.10) and the time in mechanical ventilation and ICU stay from 1 to 5 days and 6 to 12 days, respectively.
Conclusion(s): Risk factors for AKI are younger age, higher RACHS score, and time of CPB greater than 120 minutes. AKI increases mortality, days on MV and ICU stay. In the present study AKIN scale allowed us to classify the severity of AKI and it correlated with prognosis after cardiac surgery.

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403.

Routine repeat imaging may be avoidable for asymptomatic pediatric patients with renal trauma.
Schmidt J., Loftus C.J., Skokan A., Hagedorn J.C.
Embase
Journal of Pediatric Urology. 18(1) (pp 76.e1-76.e8), 2022. Date of Publication: February 2022.
[Article]
AN: 2015853604
Introduction: AUA Urotrauma guidelines for renal injury recommend initial nonoperative management followed by repeat CT imaging for stable patients with deep lacerations or clinical signs of complications. Particularly in pediatric patients where caution is taken to limit radiation exposure, it is not known whether routine repeat imaging affects clinical outcomes.
Objective(s): Our objective was to determine whether routine repeat imaging is associated with urologic intervention or complications in nonoperatively managed pediatric renal trauma.
Method(s): We retrospectively analyzed 337 pediatric patients with blunt and penetrating renal trauma from a prospectively collected database from 2005 to 2019 at a Level I trauma center. Exclusion criteria included age >18 years old, death during admission (N = 39), immediate operative intervention (N = 28), and low-grade renal injury (AAST grades I-II, N = 91). Routine repeat imaging was defined as reimaging in asymptomatic patients within 72 h of initial injury. Patients were placed into three imaging groups consisting of: (A) those with routine repeat imaging, (B) those reimaged for symptoms, or (C) those not reimaged. Comparisons were made using logistic regression controlling for grade of renal injury.

Result(s): Of the included 179 children, 44 (25%) underwent routine repeat imaging, 20 (11%) were reimaged for symptoms, and 115 patients (64%) were managed without reimaging. Compared to patients who were reimaged for symptoms, asymptomatic patients in the routine repeat imaging group and without reimaging group were significantly less likely to develop a complication (16% and 7% vs. 55%, p < 0.001) or require delayed urologic procedure (5% and 1% vs. 25%, p = 0.007). Comparing the routine repeat imaging group to those without reimaging, we found no difference in complications (p = 0.47), readmissions (p = 0.75), or urologic interventions (p = 0.50).
Conclusion(s): Despite suffering high-grade (III-IV) renal injuries, the majority of pediatric patients who remained asymptomatic during the first three days of hospitalization did not require a urologic intervention. Foregoing repeat imaging was not associated with a higher rate of complications or delayed procedures, supporting that routine repeat imaging may expose these children to unnecessary radiation and may be avoidable in the absence of signs or symptoms of concern.

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404.

Smad3 deficiency improves islet-based therapy for diabetes and diabetic kidney injury by promoting beta cell proliferation via the E2F3-dependent mechanism.
Wang H.-L., Wei B., He H.-J., Huang X.-R., Sheng J.-Y., Chen X.-C., Wang L., Tan R.-Z., Li J.-C., Liu J., Yang S.-J., Ma R.C.W., Lan H.-Y.
Embase
Theranostics. 27(1) (pp 379-395), 2022. Date of Publication: 2022.
[Article]
AN: 2015769143
Rationale: Poor beta cell proliferation is one of the detrimental factors hindering islet cell replacement therapy for patients with diabetes. Smad3 is an important transcriptional factor of TGF-beta signaling and has been shown to promote diabetes by inhibiting beta cell proliferation. Therefore, we hypothesize that Smad3-deficient islets may be a novel cell replacement therapy for diabetes.
Method(s): We examined this hypothesis in streptozocin-induced type-1 diabetic mice and type-2 diabetic db/db mice by transplanting Smad3 knockout (KO) and wild type (WT) islets under the renal capsule, respectively. The effects of Smad3KO versus WT islet replacement therapy on diabetes and diabetic kidney injury were examined. In addition, RNA-seq was applied to identify

the downstream target gene underlying Smad3-regulated beta cell proliferation in Smad3KO-db/db versus Smad3WT-db/db mouse islets.
Result(s): Compared to Smad3WT islet therapy, treatment with Smad3KO islets produced a much better therapeutic effect on both type-1 and type-2 diabetes by significantly lowering serum levels of blood glucose and HbA1c and protected against diabetic kidney injuries by preventing an increase in serum creatinine and the development of proteinuria, mesangial matrix expansion, and fibrosis. These were associated with a significant increase in grafted beta cell proliferation and blood insulin levels, resulting in improved glucose intolerance. Mechanistically, RNA-seq revealed that compared with Smad3WT-db/db mouse islets, deletion of Smad3 from db/db mouse islets markedly upregulated E2F3, a pivotal regulator of cell cycle G1/S entry. Further studies found that Smad3 could bind to the promoter of E2F3, and thus inhibit beta cell proliferation via an E2F3-dependent mechanism as silencing E2F3 abrogated the proliferative effect on Smad3KO beta cells.
Conclusion(s): Smad3-deficient islet replacement therapy can significantly improve both type-1 and type-2 diabetes and protect against diabetic kidney injury, which is mediated by a novel mechanism of E2F3-dependent beta cell proliferation.

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405.

Risk of Acute Kidney Injury After Hypertensive Disorders of Pregnancy: A Population-Based Cohort Study.
Shapiro J., Ray J.G., McArthur E., Jeyakumar N., Chanchlani R., Harel Z., Arora R., Meraz-Munoz A., Garg A.X., Hladunewich M., Wald R.

Embase
American Journal of Kidney Diseases. 79(4) (pp 561-569), 2022. Date of Publication: April 2022.
[Article]
AN: 2015593368
Rationale & Objective: Even though studies have demonstrated a relationship between hypertensive disorders of pregnancy (HDPs) and chronic kidney disease, there are limited data on the risk of acute kidney injury (AKI) following HDPs. We examined the risk of AKI following the occurrence of HDPs.
Study Design: Retrospective population-based cohort study.
Setting & Participants: Pregnant women in Ontario, Canada, aged 14-50 years, who delivered at >=20 weeks' gestation between April 1, 2002, and March 31, 2015. Exposure: Preeclampsia, gestational hypertension, or neither.
Outcome(s): The primary outcome was AKI with receipt of dialysis (AKI-D) >=90 days after delivery. The main secondary outcome was AKI based on a hospitalization with a diagnostic code for AKI >=90 days after delivery. Analytical Approach: Time-dependent Cox proportional and cause-specific hazards models were used to evaluate the relationship between HDP and outcomes of interest. Models were adjusted for baseline and time-varying covariates.
Result(s): Our cohort comprised 1,142,656 women and 1,826,235 deliveries, of which 1.7% were associated with gestational hypertension and 4.4% with preeclampsia. After a mean follow-up of 6.7 years, there were 322 episodes of AKI-D (0.41 per 10,000 person-years) and 1,598 episodes of AKI based on diagnostic codes (2.04 per 10,000 person-years). After adjustment, neither preeclampsia nor gestational hypertension was associated with AKI-D. Preeclampsia was associated with AKI (HR, 1.22 [95% CI, 1.03-1.45]), but gestational hypertension was not.
Limitation(s): Retrospective design and possible unmeasured confounding. Cases of HDPs and AKI may have been undetected.
Conclusion(s): Preeclampsia was a risk factor for AKI occurring >=90 days after delivery. Our findings suggest the potential importance of obtaining a pregnancy history as part of a comprehensive risk profile for acute kidney disease and suggest that women with a history of HDP may benefit from monitoring of kidney function.

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406.

Long-term follow-up of patients after acute kidney injury in the neonatal period: abnormal ambulatory blood pressure findings.
Akkoc G., Duzova A., Korkmaz A., Oguz B., Yigit S., Yurdakok M.
Embase
BMC Nephrology. 23(1) (no pagination), 2022. Article Number: 116. Date of Publication: December 2022.
[Article]
AN: 2015390113
Background: Data on the long-term effects of neonatal acute kidney injury (AKI) are limited.
Method(s): We invited 302 children who had neonatal AKI and survived to hospital discharge; out of 95 patients who agreed to participate in the study, 23 cases were excluded due to primary kidney, cardiac, or metabolic diseases. KDIGO definition was used to define AKI. When a newborn had no previous serum creatinine, AKI was defined as serum creatinine above the mean plus two standard deviations (SD) (or above 97.5th percentile) according to gestational age, weight, and postnatal age. Clinical and laboratory features in the neonatal AKI period were recorded for 72 cases; at long-term evaluation (2-12 years), kidney function tests with glomerular filtration rate (eGFR) by the Schwartz formula, microalbuminuria, office and 24-h ambulatory blood pressure monitoring (ABPM), and kidney ultrasonography were performed.
Result(s): Forty-two patients (58%) had stage I AKI during the neonatal period. Mean age at long-term evaluation was 6.8 +/- 2.9 years (range: 2.3-12.0); mean eGFR was 152.3 +/- 26.5 ml/min/1.73 m2. Office hypertension (systolic and/or diastolic BP >= 95th percentile), microalbuminuria (> 30 mg/g creatinine), and hyperfiltration (> 187 ml/min/1.73 m2) were present in 13.0%, 12.7%, and 9.7% of patients, respectively. ABPM was performed on 27 patients, 18.5% had hypertension, and 40.7% were non-dippers; 48.1% had abnormal findings. Female sex was associated with microalbuminuria; low birth weight (< 1,500 g) and low gestational age (< 32 weeks) were associated with hypertension by ABPM. Twenty-three patients (33.8%) had at least one sign of microalbuminuria, office hypertension, or hyperfiltration. Among 27 patients who had ABPM, 16 (59.3%) had at least one sign of microalbuminuria, abnormal ABPM (hypertension and/or non-dipping), or hyperfiltration.
Conclusion(s): Even children who experienced stage 1 and 2 neonatal AKI are at risk for subclinical kidney dysfunction. Non-dipping is seen in four out of 10 children. Long-term follow-up of these patients is necessary.

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407.

Clinical course of neonatal acute kidney injury: multi-center prospective cohort study.
Pantoja-Gomez O.C., Realpe S., Cabra-Bautista G., Restrepo J.M., Prado O.L., Velasco A.M., Martinez G.E., Leal S., Vallejo A., Calvache J.A.
Embase
BMC Pediatrics. 22(1) (no pagination), 2022. Article Number: 136. Date of Publication: December 2022.
[Article]
AN: 2015310871
Background: Neonatal acute kidney injury (AKI) has been associated with unfavorable outcomes, including increased mortality. We aimed to describe the clinical course and outcomes during the first 7 days after diagnosis in newborns with AKI in three neonatal intensive care units in Popayan-Colombia.
Method(s): Multi-center prospective cohort study conducted between June 2019 and December 2020 in three NICUs after ethical approval. We included newborns between 2 and 28 days of life, first diagnosed with AKI using the KDIGO classification modified for newborns which consider increased serum creatinine values over baseline values as well as urine output over time in hours or both. Patients with chromosomal abnormalities, major kidney malformations, and complex congenital heart disease were excluded. Patients were followed for up to 7 days after diagnosis and the maximum KDIGO stage, recovery of kidney function, need for renal replacement therapy and cumulative incidence of death were evaluated.
Result(s): Over the 18 months of the study, 4132 newborns were admitted to the NICUs, and 93 patients (2.25, 95% CI 1.82-2.75%) developed neonatal AKI. 59.1% of the newborns were premature and there were no differences in severity according to gestational age. During follow-up, the maximum KDIGO was 64.5% for AKI-stage 1, 11.8% for AKI-stage 2, and 23.7% for AKI-stage 3. Kidney function recovery was higher in AKI-stage 1 patients vs. AKI-severe (AKI-stage 2 and 3) (95% vs. 48.5%). Five patients (5.4%) received renal replacement therapy and 15 died (16.1%), four in AKI-stage 1 vs. 11 in AKI-severe (6.7% vs 33.3%).
Conclusion(s): Newborns admitted to the NICUs can develop AKI regardless of gestational age, and it is more frequent between the second and ninth days of life. More patients whit AKI-stage 1 recover and die less than those in a severe stage.

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408.

Risk of acute kidney injury requiring hemodialysis after contrast-enhanced imaging after traumatic injury: A National Trauma Databank analysis.
Schneider A., Gallaher J., Purcell L.N., Raff L., Eckert M., Charles A.
Embase
Surgery (United States). 171(4) (pp 1085-1091), 2022. Date of Publication: April 2022.
[Article]
AN: 2015298345
Background: Trauma patients undergo routine contrast administration for diagnostic and therapeutic purposes. The aim of this study is to investigate the incidence and predictors of contrast-induced nephropathy requiring acute hemodialysis in the trauma population.
Method(s): Adult patients (age >=16) were identified from the National Trauma Databank (2017-2018) and were grouped based on contrast received. The defined groups included no contrast, computed tomography intravascular contrast only, and angiography contrast. Patient demographic and clinical variables collected included vital signs (systolic blood pressure, pulse rate) recorded upon arrival to the emergency room, injury severity score, shock index, Glasgow Coma Scale, and mechanism. Outcome measures included mortality, hospital discharge disposition, intensive care unit and hospital length of stay, and need for hemodialysis. We performed a Poisson regression to assess relative risk for undergoing hemodialysis during hospital admission.
Result(s): In total, 1,850,460 patients were included in the analysis (no contrast: 1,189,209; computed tomography intravascular contrast only: 621,846; angiography: 39,405); 3,135 patients required hemodialysis during the admission. Patients with reduced Glasgow Coma Scale, higher injury severity score, higher shock index, and preexisting diabetes mellitus and hypertension were more likely to require hemodialysis. Poisson regression revealed the relative risk of requiring hemodialysis as 1.49 with computed tomography intravascular contrast only, 4.33 with angiography only, and 5.35 with consecutive computed tomography intravascular and angiography.
Conclusion(s): Intravascular contrast administration through computed tomography and or angiography is independently associated with increased risk of requiring hemodialysis after a traumatic injury. Trauma surgeons should consider the necessity of contrast for each clinical situation and understand the potential for contrast-induced nephropathy.

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409.

Study of neonatal acute kidney injury based on KDIGO criteria.
Gohiya P., Nadkarni J., Mishra M.
Embase
Pediatrics and Neonatology. 63(1) (pp 66-70), 2022. Date of Publication: January 2022.
[Article]
AN: 2014723464
Background: Significant advancement has occurred over the years in diagnosis, recognition, intervention and impact of acute kidney injury (AKI) on morbidity and mortality in critically-ill neonates. However an increased risk of chronic kidney disease (CKD) is still observed among neonates who survive an episode of AKI. Therefore, preventing and adequately managing AKI in neonates could help in controlling long-term renal morbidity in neonates who develop AKI. Thus, this study was undertaken with the aim of studying the incidence, contributing factors and outcomes of AKI in at-risk term neonates admitted to the neonatal intensive care unit (NICU).
Method(s): One hundred and ninety-six term neonates admitted to the NICU with sepsis, hypoxic ischemic encephalopathy (HIE), dehydration and respiratory distress were enrolled and evaluated over a period of one year. Detailed maternal history along with neonatal history, anthropometry, vitals and clinical signs of neonates were recorded in a pretested proforma. Urine output was measured in all at-risk neonates. Serum creatinine was estimated to categorize AKI into stages as per modified KDIGO criteria.
Result(s): Incidence of AKI was 21%, (n = 107 out of 510 admissions) in the study. Mortality was significantly higher in AKI stage III neonates (88.9%) ($p < 0.001$). Multivariate analysis revealed that hypoxic ischemic encephalopathy (HIE) had 35.293 ($p < 0.001$) times higher risk, while sepsis had 35.701 ($p < 0.001$), dehydration had 30.260 times ($p < 0.001$) and respiratory distress had 10.366 times ($p < 0.001$) higher risk of developing AKI.
Conclusion(s): Our study recorded a high incidence of AKI among at-risk neonates. KDIGO criteria for diagnosing AKI is feasible to apply in the at-risk neonates and helps in its early identification. Early diagnosis and timely intervention in neonates with HIE, sepsis, dehydration and respiratory can prevent the progression of AKI and thus improve prognoses.

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410.

Perioperative albuminuria and clinical model to predict acute kidney injury in paediatric cardiac surgery.
Nautiyal A., Sethi S.K., Sharma R., Raina R., Tibrewal A., Akole R., Gupta A., Bhan A., Bansal S.B.
Embase
Pediatric Nephrology. 37(4) (pp 881-890), 2022. Date of Publication: April 2022.
[Article]

AN: 2013742947
Background: AKI is an important complication post cardiac surgery in children. An early diagnosis can help in mitigating complications and allow for prognostication. Urinary albumin:creatinine ratio (ACR) as a biomarker can provide a cheaper and more accessible AKI risk assessment and prediction. There is a paucity of paediatric literature regarding its utility.
Method(s): This was a prospective observational study, enrolling all children aged 1 month to 18 years, who underwent cardiac surgery, with use of cardiopulmonary bypass. Cohort was divided into groups < 2 years and >= 2 years for analyses to account for differences in physiological albumin excretion with age.
Result(s): Of 143 children enrolled in the study, 36 developed AKI. In both age groups, the post-operative ACR was higher than pre-operative ACR among patients with and without AKI. In the group aged >= 2 years, the highest first post-operative ACR tertile (> 75.8 mg/g) predicted post-operative AKI after adjusting for clinical variables (adjusted RR, 11.71; 1.85-16.59). In the group aged < 2 years, the highest first post-operative ACR tertile (> 141.3 mg/g) predicted post-operative AKI in unadjusted analysis but not after adjusting for clinical variables (RR, 2.78; 0.70-6.65). For AKI risk prediction, AUC (95% CI) was highest after combining clinical model and pre-operative ACR for groups aged < 2 years [0.805 (0.713-0.896)] and >= 2 years [0.872 (0.772-0.973)].
Conclusion(s): This study provides evidence for use of albuminuria as a feasible biomarker in AKI prediction in children post cardiac surgery, especially when added to a clinical model. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information.[Figure not available: see fulltext.]

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411.

Blood pressure variability during pediatric cardiac surgery is associated with acute kidney injury.
Fishbein J.E., Barone M., Schneider J.B., Meyer D.B., Hagen J., Bakar A., Grammatikopoulos K., Sethna C.B.
Embase
Pediatric Nephrology. 37(4) (pp 871-879), 2022. Date of Publication: April 2022.
[Article]
AN: 2013540210

Background: Blood pressure variability (BPV), defined as the degree of variation between discrete blood pressure readings, is associated with poor outcomes in acute care settings. Acute kidney injury (AKI) is a common and serious postoperative complication of cardiac surgery with cardiopulmonary bypass (CPB) in children. No studies have yet assessed the association between intraoperative BPV during cardiac surgery with CPB and the development of AKI in children.
Method(s): A retrospective chart review of children undergoing cardiac surgery with CPB was performed. Intraoperative BPV was calculated using average real variability (ARV) and standard deviation (SD). Multiple regression models were used to examine the association between BPV and outcomes of AKI, hospital and intensive care unit (PICU) length of stay, and length of mechanical ventilation.
Result(s): Among 231 patients (58% males, median age 8.6 months) reviewed, 51.5% developed AKI (47.9% Stage I, 41.2% Stage II, 10.9% Stage III). In adjusted models, systolic and diastolic ARV were associated with development of any stage AKI (OR 1.40, 95% CI 1.08-1.8 and OR 1.4, 95% CI 1.05-1.8, respectively). Greater diastolic SD was associated with longer PICU length of stay (beta 0.94, 95% CI 0.62-1.2). When stratified by age, greater systolic ARV and SD were associated with AKI in infants <= 12 months, but there was no relationship in children > 12 months.
Conclusion(s): Greater BPV during cardiac surgery with CPB was associated with development of postoperative AKI in infants, suggesting that BPV is a potentially modifiable risk factor for AKI in this high-risk population. Graphical abstract: [Figure not available: see fulltext.]

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412.

Urinary beta-2 microglobulin as an early predictive biomarker of acute kidney injury in neonates with perinatal asphyxia.
Abdullah, Kadam P., Yachha M., Srivastava G., Pillai A., Pandita A.
Embase
European Journal of Pediatrics. 181(1) (pp 281-286), 2022. Date of Publication: January 2022.
[Article]

AN: 2013195448
To evaluate the role of urinary beta-2 microglobulin (B2mG) as an early predictive biomarker of acute kidney injury (AKI) in neonates with perinatal asphyxia. In this prospective cohort study, 80 term infants with perinatal asphyxia were included. The neonates were divided into AKI and no-AKI groups. Urinary B2mG levels were measured at 24 h of life. The diagnostic efficacy of the biomarker was determined using receiver operating characteristic (ROC) curves. Compared to infants without AKI, infants with AKI had higher levels of urinary B2mG (mean 6.8 versus 2.6 mg/L, $p < 0.001$). Area under the receiver operating characteristic curve (ROC curve) was 0.944. The balanced sensitivity/specificity trade-off was found at a cut-off value of 3.8 mg/L (81% sensitive and 81.6% specific). Conclusion Urinary B2mG can be useful to predict AKI early in term neonates with perinatal asphyxia.What is Known:* AKI is seen in 20-40% of neonates with asphyxia.* AKI affects the treatment plan and the prognosis of such neonates.What is New:* Urinary biomarkers are the easiest way to diagnose AKI in asphyxiated neonates.* Beta 2 microglobulin is the cheapest and readily available one such urinary biomarker with good sensitivity and specificity.

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413.

Acute kidney injury: epidemiology and course in critically ill children.
Tai C.W., Gibbons K., Schibler A., Schlapbach L.J., Raman S.
Embase
Journal of Nephrology. 35(2) (pp 559-565), 2022. Date of Publication: March 2022.
[Article]
AN: 2012307541
Background: Acute kidney injury (AKI) is a major cause of morbidity and mortality in critically ill children. The aim of this paper was to describe the prevalence and course of AKI in critically ill children and to compare different AKI classification criteria.
Method(s): We conducted a retrospective observational study in our multi-disciplinary Pediatric Intensive Care Unit (ICU) from January 2015 to December 2018. All patients from birth to 16 years of age who were admitted to the pediatric ICU were included. The Kidney Disease Improving Global Outcomes (KDIGO) definition was considered as the reference standard. We compared the incidence data assessed by KDIGO, pediatric risk, injury, failure, loss of kidney

function and end- stage renal disease (pRIFLE) and pediatric reference change value optimised for AKI (pROCK).
Result(s): Out of 7505 patients, 9.2% developed AKI by KDIGO criteria. The majority (59.8%) presented with stage 1 AKI. Recovery from AKI was observed in 70.4% of patients within 7 days from diagnosis. Both pRIFLE and pROCK were less sensitive compared to KDIGO criteria for the classification of AKI. Patients who met all three-KDIGO, pRIFLE and pROCK criteria had a high mortality rate (35.0%).
Conclusion(s): Close to one in ten patients admitted to the pediatric ICU met AKI criteria according to KDIGO. In about 30% of patients, AKI persisted beyond 7 days. Follow-up of patients with persistent kidney function reduction at hospital discharge is needed to reveal the long-term morbidity due to AKI in the pediatric ICU. Graphic abstract: [Figure not available: see fulltext.]

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Publisher
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414.

Translational insights into mechanisms and preventive strategies after renal injury in neonates.
Voggel J., Mohr J., Nusken K.-D., Dotsch J., Nusken E., Alejandre Alcazar M.A.
Embase
Seminars in Fetal and Neonatal Medicine. 27(1) (no pagination), 2022. Article Number: 101245. Date of Publication: February 2022.
[Article]
AN: 2012040138
Adverse perinatal circumstances can cause acute kidney injury (AKI) and contribute to chronic kidney disease (CKD). Accumulating evidence indicate that a wide spectrum of perinatal conditions interferes with normal kidney development and ultimately leads to aberrant kidney structure and function later in life. The present review addresses the lack of mechanistic knowledge with regard to perinatal origins of CKD and provides a comprehensive overview of pre- and peri-natal insults, including genetic predisposition, suboptimal nutritional supply, obesity and maternal metabolic disorders as well as placental insufficiency leading to intrauterine growth restriction (IUGR), prematurity, infections, inflammatory processes, and the need for life-saving treatments (e.g. oxygen supplementation, mechanical ventilation, medications) in neonates. Finally, we discuss future preventive, therapeutic, and regenerative directions. In summary, this

review highlights the perinatal vulnerability of the kidney and the early origins of increased susceptibility toward AKI and CKD during postnatal life. Promotion of kidney health and prevention of disease require the understanding of perinatal injury in order to optimize perinatal micro- and macro-environments and enable normal kidney development.

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Publisher
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415.

Association Between Unbalanced Solutions and Acute Kidney Injury During Fluid Resuscitation in Children With Sepsis.
Fernandez-Sarmiento J., Alcala-Lozano C., Barrera P.A., Erazo Vargas S.C., Gomez Cortes L.B., Martha Reyes C.
Embase
Journal of Intensive Care Medicine. 37(5) (pp 625-632), 2022. Date of Publication: May 2022.
[Article]
AN: 2011473893
Objective: To evaluate the outcomes of patients with sepsis-associated organ dysfunction and septic shock who receive fluid resuscitation with balanced and unbalanced solutions in a middle-income country.
Design(s): An observational, analytical cohort study with propensity score matching (PSM) in children admitted to a pediatric intensive care unit (PICU). Patients from one month to 17 years old who required fluid boluses due to hemodynamic instability were included. The primary outcome was the presence of acute kidney injury and the secondary outcomes were the need to begin continuous renal replacement therapy (CRRT), metabolic acidosis, PICU length of stay and mortality.
Measurements and Main Results: Out of the 1,074 admissions to the PICU during the study period, 99 patients had sepsis-associated organ dysfunction and septic shock. Propensity score matching was performed including each patient's baseline characteristics. The median age was 9.9 months (IQR 4.9-22.2) with 55.5% of the patients being male. Acute kidney injury was seen less frequently in children who received a balanced solution than in those who received an unbalanced solution (20.3% vs 25.7% P = 0.006 ORa, 0.75; 95% CI, 0.65-0.87), adjusted for

disease severity. In addition, the group that received balanced solutions had less need for CRRT (3.3 % vs 6.5%; P = 0.02 ORa 0.48; 95% CI, 0.36-0.64) and a shorter PICU stay (6 days IQR 4.4-20.2 vs 10.2 days IQR 4.7-26; P < 0.001) than the group with unbalanced solutions. We found no difference in the frequency of metabolic acidosis (P = 0.37), hyperchloremia (P = 0.11) and mortality (P = 0.25) between the 2 groups.
Conclusion(s): In children with sepsis-associated organ dysfunction and septic shock, the use of unbalanced solutions for fluid resuscitation is associated with a higher frequency of acute kidney injury, a greater need for continuous renal support and a longer PICU stay compared to the use of balanced solutions, in a middle-income country.

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416.

Subclinical nephrotoxicity in patients with beta-thalassemia: role of urinary kidney injury molecule.
Nafea O.E., Zakaria M., Hassan T., El Gebaly S.M., Salah H.E.
Embase
Drug and Chemical Toxicology. 45(1) (pp 93-102), 2022. Date of Publication: 2022.
[Article]
AN: 2002761620
We aimed to investigate the role of urinary kidney injury molecule-1 (KIM-1) in detection of subclinical nephrotoxicity in patients with Beta-thalassemia (beta-TM) in relation to chelation therapy and to correlate the urinary KIM-1 level with other clinical and laboratory findings. We conducted a cross-sectional study on 66 thalassemic patients. Their ages range from 7 to 22 years. Routine kidney indices and novel urinary KIM/creatinine ratio (UKIM-1/Cr) were measured. Estimated glomerular filtration rate (eGFR) was calculated. Results indicate that the level of serum creatinine was significantly higher in patients on deferasirox therapy than patients on deferoxamine and deferiprone therapy [median(IQR), 0.85(0.63-0.99), 0.50(0.34-0.58) and 0.44(0.36-0.45)] mg/dL, respectively, p < 0.001]. The median(IQR) level of eGFR was significantly lower in patients on deferasirox therapy than patients on deferoxamine and deferiprone therapy [63.3(56.5-92.1), 117.3(91.9-162) and 136.7(109.4-157.6)] ml/min/1.73 m2, respectively, p < 0.001]. The mean level of UKIM-1/Cr was significantly higher in patients on deferasirox therapy than patients on deferoxamine and deferiprone therapy (7.0 +/- 1.9, 4.1 +/-

1.7 and 4.2 +/- 1.5) ng/mg creatinine, respectively, p < 0.001). We concluded that urinary KIM-1 is an early predictive biomarker for decline in eGFR in patients with beta-TM on deferasirox therapy. The appropriate chelation therapy and good monitoring of those patients are intensely needed for early detection of renal dysfunction and timely intervention.

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Publisher
Taylor and Francis Ltd.
Year of Publication
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417.

Association of Acute Kidney Injury during Diabetic Ketoacidosis with Risk of Microalbuminuria in Children with Type 1 Diabetes.
Huang J.X., Casper T.C., Pitts C., Myers S., Loomba L., Ramesh J., Kuppermann N., Glaser N.
Embase
JAMA Pediatrics. 176(2) (pp 169-175), 2022. Date of Publication: February 2022.
[Article]
AN: 636551850
Importance: Diabetic kidney disease is among the most important causes of end-stage kidney disease worldwide. Risk factors for diabetic kidney disease remain incompletely defined. Recent studies document a high frequency of acute kidney injury (AKI) during diabetic ketoacidosis (DKA) in children, raising the question of whether these AKI episodes might contribute to future risk of diabetic kidney disease.
Objective(s): To determine whether episodes of AKI occurring during DKA in children are associated with increased risk of development of microalbuminuria.
Design, Setting, and Participant(s): This retrospective review of medical records included children with type 1 diabetes with 1 or more urine albumin levels measured during routine diabetes care from 2 university-affiliated urban tertiary children's hospitals in the United States from January 2006 to December 2019. Age at diagnosis of diabetes, hemoglobin A1clevels, episodes of DKA, pH and creatinine levels during DKA, and urine albumin and creatinine measurements were analyzed. Cox proportional hazards regression models were used to identify variables affecting the hazard rate for microalbuminuria development. Analyses began January 2021 and ended May 2021. Exposures: Episodes of DKA and episodes of AKI occurring during DKA Main Outcomes and Measures: AKI occurrence and AKI stage were determined from serum creatinine measurements during DKA using Kidney Disease: Improving Global Outcomes criteria. Microalbuminuria was defined as urine albumin-to-creatinine ratio of 30 mg/g or more or excretion of 30 mg or more of albumin in 24 hours.
Result(s): Of 2345 children, the mean (SD) age at diagnosis was 9.4 (4.4) years. One or more episodes of DKA occurred in 963 children (41%), and AKI occurred during DKA in 560 episodes (47%). In multivariable models adjusting for the associations of age at diagnosis and mean hemoglobin A1clevel since diagnosis, each episode of AKI during DKA was associated with a hazard ratio of 1.56 (95% CI, 1.3-1.87) for development of microalbuminuria. Four or more

episodes increased the hazard rate by more than 5-fold. DKA episodes without AKI did not significantly increase the hazard rate for microalbuminuria development after adjusting for other covariates.
Conclusions and Relevance: These data demonstrate that episodes of AKI occurring during DKA in children with type 1 diabetes are significantly associated with risk of developing microalbuminuria. Greater efforts are necessary to reduce the frequency of DKA..

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Publisher
American Medical Association
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418.

Kidney injury biomarkers and parasitic loads of Schistosoma mansoni in a highly endemic area in northeastern Brazil.
Galvao R.L.D.F., Meneses G.C., Pinheiro M.C.C., Martins A.M.C., Daher E.D.F., Bezerra F.S.M.
Embase
Acta Tropica. 228 (no pagination), 2022. Article Number: 106311. Date of Publication: April 2022. [Article]
AN: 2016690180
Schistosomiasis affects approximately 240 million people worldwide. In Brazil, it is estimated that 1.5 million people are infected with Schistosoma mansoni and up to 15% of diagnosed individuals develop kidney damage. Renal involvement in schistosomiasis mansoni is characterized by glomerular lesions, with a high incidence, especially in chronically infected patients living in areas of high endemicity. Renal damage occurs slowly and is often asymptomatic, with a long-term manifestation of chronic kidney disease, with progressive loss of kidney functions, and early detection of subclinical kidney disease is of great importance. The aim of this study was to investigate kidney damage in patients infected with S. mansoni through urinary biomarkers of kidney injury and their association with the different parasite loads found. The patients were divided into two groups based on the diagnosis of infection by S. mansoni by the Kato-Katz and IgG-ELISA-SEA method: group of individuals infected by S. mansoni, Kato-Katz positive (PG); and group of individuals not infected by S. mansoni, Kato-Katz-negative (NG). Urinary creatinine and albuminuria were determined by immunoturbidimetry and proteinuria by the colorimetric method. The urinary biomarkers of podocyte injury (VEGF and Nephrin) and glomerular inflammation (MCP-1) were quantified by immunoassay and expressed by the urinary creatinine ratio. Urinary VEGF showed significantly higher levels in PG compared to NG ($p = 0.004$), increasing at all intensities of infection including low parasite load ($p = 0.020$). Our results show increased signs of podocyte damage in patients with schistosomiasis mansoni regardless of the

parasite load, evidenced by increased urinary VEGF levels. However, further studies are needed since data related to schistosomiasis glomerulopathy and its association with new urinary biomarkers of kidney injury are scarce in the literature.

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Publisher
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419.

Assessing the value of serum and urinary interleukins for diagnosis of acute kidney injury in children and adolescents: A systematic review and meta-analysis.
Yousefifard M., Ahmadzadeh K., Toloui A., Ahmadzadeh H., Madani Neishaboori A., Rafiei Alavi S.N., Ghelichkhani P., Tavallaei M.J., Safari S., Ataei N., Hosseini M.
Embase
Practical Laboratory Medicine. 28 (no pagination), 2022. Article Number: e00262. Date of Publication: January 2022.
[Review]
AN: 2016447998
Introduction: Several studies have questioned the diagnostic utility of interleukins (IL) in detecting acute kidney injury (AKI) in pediatric population. Therefore, the present systematic review and meta-analysis aims to assess the diagnostic value of ILs in pediatric AKI patients.
Method(s): Two independent researchers screened records acquired through searching in Medline, Embase, Scopus, and Web of Science, until the end of 2020. Articles evaluating serum and urinary levels of ILs in AKI patients were included in this study. Data were extracted and analyzed using STATA software.
Result(s): Twenty-one studies were included. Analyses showed that AUC, sensitivity, specificity and diagnostic odds ratio of urinary IL-18 for diagnosing AKI were 0.77 (95% CI: 0.74, 0.81), 0.64 (95% CI: 0.32, 0.87), 0.75 (95% CI: 0.62, 0.85) and 6 (95% CI: 1, 23), respectively. Those values were 0.79 (95% CI: 0.75, 0.83), 0.58 (95% CI: 0.37, 0.76), 0.87 (95% CI: 0.66, 0.96), and 9 (95% CI: 4, 20) for serum IL-6, and 0.72 (95% CI: 0.68, 0.76), 0.53 (95% CI: 0.34, 0.72), 0.79 (95% CI: 0.60, 0.91) and 4 (95% CI: 2, 8) for serum IL-8, respectively. Urinary levels of ILs 6, 8 and 10 were not significantly different between AKI patients and the non-AKI control group. Serum levels of ILs 10 and 18 were not adequately evaluated in the studies.

Conclusion(s): IL-18 urinary levels and IL-6 and IL-8 serum levels are significantly higher in AKI patients compared to the non-AKI group. However, their low sensitivity and specificity in detecting AKI questions their diagnostic value.

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420.

Urine Biomarkers for the Assessment of Acute Kidney Injury in Neonates with Hypoxic Ischemic Encephalopathy Receiving Therapeutic Hypothermia.
Rumpel J., Spray B.J., Chock V.Y., Kirkley M.J., Slagle C.L., Frymoyer A., Cho S.-H., Gist K.M., Blaszak R., Poindexter B., Courtney S.E.
Embase
Journal of Pediatrics. 241 (pp 133-140.e3), 2022. Date of Publication: February 2022.
[Article]
AN: 2015004996
Objective: To evaluate the predictive performance of urine biomarkers for acute kidney injury (AKI) in neonates with hypoxic ischemic encephalopathy (HIE) receiving therapeutic hypothermia.
Study design: We performed a multicenter prospective observational study of 64 neonates. Urine specimens were obtained at 12, 24, 48, and 72 hours of life and evaluated for neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1), cystatin C, interleukin-18 (IL-18), tissue inhibitor of metalloproteinases 2 (TIMP2), and insulin-like growth factor-binding protein 7 (IGFBP7). Logistic regression models with receiver operating characteristics for area under the curve (AUC) were used to assess associations with neonatal modified KDIGO (Kidney Disease: Improving Global Outcomes) AKI criteria.
Result(s): AKI occurred in 16 of 64 infants (25%). Neonates with AKI had more days of vasopressor drug use compared with those without AKI (median [IQR], 2 [0-5] days vs 0 [0-2]

days; P = .026). Mortality was greater in neonates with AKI (25% vs 2%; P = .012). Although NGAL, KIM-1, and IL-18 were significantly associated with AKI, the AUCs yielded only a fair prediction. KIM-1 had the best predictive performance across time points, with an AUC (SE) of 0.79 (0.11) at 48 hours of life. NGAL and IL-18 had AUCs (SE) of 0.78 (0.09) and 0.73 (0.10), respectively, at 48 hours of life.
Conclusion(s): Urine NGAL, KIM-1, and IL-18 levels were elevated in neonates with HIE receiving therapeutic hypothermia who developed AKI. However, wide variability and unclear cutoff levels make their clinical utility unclear.

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421.

The urinary exosomes derived from premature infants attenuate cisplatin-induced acute kidney injury in mice via microRNA-30a-5p/ mitogen-activated protein kinase 8 (MAPK8).
Ma M., Luo Q., Fan L., Li W., Li Q., Meng Y., Yun C., Wu H., Lu Y., Cui S., Liu F., Hu B., Guan B., Liu H., Huang S., Liang W., Morgera S., Kramer B., Luan S., Yin L., Hocher B.
Embase
Bioengineered. 13(1) (pp 1650-1665), 2022. Date of Publication: 2022.
[Article]
AN: 2014686380
Acute kidney injury (AKI) is a susceptible factor for chronic kidney disease (CKD). There is still a lack of effective prevention methods in clinical practice. This study investigated the protective effect of the urinary exosomes from premature infants on cisplatin-induced acute kidney injury. Here we isolated exosomes from the fresh urine of premature infants. A C57BL/6 mice model of

cisplatin-induced acute kidney injury was given 100 ug urinary exosomes 24 hours after model establishment. The kidneys were collected for pathological examination and the evaluation of renal tubular damage and apoptosis. In the in vitro experiment, human renal cortex/proximal tubular cells (HK-2) were induced by cisplatin to assess the effect of the urine exosomes from premature infants. Exosome microRNA (miRNA) sequencing technology was applied to investigate the miRNAs enriched in exosomes and the dual-luciferase gene reporter system to examine the targeting relationship of the miRNA with target genes. The results indicated that the urinary exosomes could decrease the serum creatinine level and the apoptosis of renal tubular cells, and reduce mice mortality. In addition, miR-30a-5p was the most abundant miRNA in the exosomes. It protected HK-2 cells from cisplatin-induced apoptosis by targeting and down-regulating the mitogen-activated protein kinase 8 (MAPK8). Together, our findings identified that the urinary exosomes derived from premature infants alleviated cisplatin-induced acute kidney injury and inhibited the apoptosis of HK-2 via miR-30a-5p, which could target MAPK8. These findings implied that urinary exosomes from premature infants riched in miR-30a-5p might become a potential treatment for AKI.

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Publisher
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422.

Acute kidney injury in infants with hypothermia-treated hypoxic-ischaemic encephalopathy: An observational population-based study.
Robertsson Grossmann K., Barany P., Blennow M., Chromek M.
Embase
Acta Paediatrica, International Journal of Paediatrics. 111(1) (pp 86-92), 2022. Date of Publication: January 2022.
[Article]
AN: 2013568807
Aim: To describe incidence and outcome of acute kidney injury (AKI) in infants with hypothermia-treated hypoxic-ischaemic encephalopathy (HIE).
Method(s): This observational population-based study included all term and near-term infants with hypothermia-treated HIE born between 2007 and 2009 in greater Stockholm. The KDIGO definition modified for neonatal patients was used to identify infants with AKI. We analysed

association between AKI and neonatal morbidity/mortality. Furthermore, we calculated estimated glomerular filtration rate (eGFR) at the age of 10-12 years.
Result(s): Out of 83,939 live births in the Stockholm region, 66 infants underwent hypothermia treatment due to HIE. Out of 65 included infants, 45% suffered AKI. Degree of AKI correlated with HIE severity. One infant needed kidney replacement therapy; others were treated conservatively. AKI was associated with increased mortality and need for blood products ($p < 0.05$). eGFR at age 10-12 years was available for 72% of survivors. Nine children (21%) had subnormal eGFR, with no difference between those with and without a history of neonatal AKI.
Conclusion(s): Despite therapeutic hypothermia, AKI remains a common complication in infants with HIE and is associated with increased neonatal mortality. Twenty-one per cent of children had subnormal eGFR at 10-12 years, highlighting the need for long-term follow-up of renal function.

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423.

Acute Kidney Injury in Pediatric Cardiac Intensive Care Children: Not All Admissions Are Equal: A Retrospective Study.
Ricci Z., Raggi V., Marinari E., Vallesi L., Di Chiara L., Rizzo C., Gist K.M.
Embase
Journal of Cardiothoracic and Vascular Anesthesia. 36(3) (pp 699-706), 2022. Date of Publication: March 2022.
[Article]
AN: 2012039698
Objectives: To describe the incidence, associated characteristics, and outcomes of the maximum severity of acute kidney injury (AKI) in a heterogeneous population of critically ill children with cardiac disease.
Design(s): Retrospective cohort study.
Setting(s): Pediatric cardiac intensive care unit (PCICU).
Participant(s): Patients admitted to the PCICU.
Intervention(s): None.
Measurements and Main Results: From January 2018 to July 2020 all patients admitted to a tertiary PCICU were included. Only the first admission was considered. Neonates <=seven days old were excluded. Of 742 patients, 53 were medical cases, 69 catheterization laboratory cases, and 620 surgical cases (with five subgroups). The median age was 2.47 years (interquartile range

[IQR], 0.38-9.85 years), with a median Society of Thoracic Surgeons-European Association for Cardio-Thoracic Surgery score of 2 (IQR, 1-3). Median PCICU length of stay was three days (IQR, 2-7 days), and 21 (2.8%) patients died. Any incidence of AKI occurred in 70% of patients, 26% of which were classified as mild (stage 1) and 43% as severe (stages 2 and 3). AKI was diagnosed by urine output criteria in 56%, serum creatinine in 28%, and both in 16% of patients. Severe AKI occurred in subgroups as follows: medical (38%), catheterization laboratory (45%), correction (35%), palliation (55%), transplantation (85%), mechanical assistance (70%), and redo surgery (58%). Severe AKI patients were significantly older (p = 0.004), had a higher Pediatric Index of Mortality 3 score (p = 0.0004), had a higher cumulative fluid balance (p < 0.0001), and had a longer cardiopulmonary bypass time (p < 0.0001). Early AKI (<=24 hours from admission) was the most frequent presentation, with a greater proportion of severe cases in the early group compared with the intermediate (>24 and <=48 hours) and late (>48 hours) (p < 0.0001) groups. Presentation of late severe AKI had a higher mortality (odds ratio, 4.9; 95% confidence interval, 1.8-15; p = 0.001).
Conclusion(s): Severe AKI occurs in 43% of cardiac children and is diagnosed early, most often by urine output criteria. Severe AKI incidence varies significantly within subgroups of cardiac patients. Late AKI is associated with worse outcomes.

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424.

Nadir Oxygen Delivery During Pediatric Bypass as a Predictor of Acute Kidney Injury.
Zhang Y., Wang B., Zhou X.-J., Guo L.-J., Zhou R.-H.
Embase
Annals of Thoracic Surgery. 113(2) (pp 647-653), 2022. Date of Publication: February 2022.
[Article]
AN: 2011556185
Background: Cardiac surgery-associated acute kidney injury (CS-AKI) is common in infants and is associated with negative outcomes. Nadir indexed oxygen delivery (DO2i) during cardiopulmonary bypass (CPB) is associated with the occurrence of postoperative CS-AKI, with

critical thresholds for DO2i reported to be 262 to 300 mL/min/m2 in adults. However, given that infants have a higher metabolic rate and oxygen demand, the critical DO2i in infants is not comparable with existing adult standards. This study aimed to explore the critical DO2i threshold during pediatric CPB.
Method(s): Between March 2019 and April 2020, 106 consecutive infants undergoing cardiac surgery with CPB were admitted to this prospective observational cohort study. The DO2i levels of each patient were monitored during CPB. Pre- and intraoperative factors were tested for independent association with CS-AKI. The postoperative outcomes of patients with or without CS-AKI were compared.
Result(s): In our patient population (n = 83), we identified 25 patients (38.5%) with postoperative CS-AKI. Multivariate analysis revealed 2 independent risk factors for onset of CS-AKI: CPB duration and nadir DO2i. The lowest suitable DO2i during CPB in the present population was 353 mL/min/m2 (sensitivity, 65.6%; specificity, 74.5%). CS-AKI during pediatric CPB remained significantly associated with an increased morbidity, related mainly to a postoperative low cardiac output syndrome, but not to mortality.
Conclusion(s): The lowest suitable DO2i during CPB in the infant population undergoing cardiac surgery was 353 mL/min/m2. Below this threshold, there was a high probability of inducing CS-AKI.

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425.

Prediction value of regional oxygen saturation in intestine and kidney for acute kidney injury in children with congenital heart disease after surgery.
Liu L., Zhang M., Chen X., Wang L., Xu Z.
Embase
Zhejiang da xue xue bao. Yi xue ban = Journal of Zhejiang University. Medical sciences. 51(3) (pp 334-340), 2022. Date of Publication: 25 Jun 2022.
[Article]
AN: 639215868
OBJECTIVE: To study the prediction value of regional oxygen saturation (rSO 2) in brain, intestine and kidney for acute kidney injury (AKI) in children with congenital heart disease after surgery.
METHOD(S): Fifty-seven children with congenital heart disease (CHD), whose weight >2.5 kg and age<=1 year were treated in Shanghai Children's Medical Center, Shanghai Jiao Tong University School of Medicine from January 2020 to December 2020. The rSO 2 of brain, intestine and kidney were monitored with near-infrared spectroscopy continuously for 48 h after surgery. The predictive values of cerebral, intestinal and renal rSO 2 for occurrence and severity of postoperative AKI were analyzed.
RESULT(S): Among 57 patients, postoperative AKI developed in 38 cases (66.7%), including 18 cases of AKI-1 (47.4%), 9 cases of AKI-2 (23.7%) and 11 cases of AKI-3 (28.9%). There was no

significant difference in cerebral rSO 2 between AKI group and non-AKI group (F=0.012, P>0.05), while the intestinal rSO 2 and renal rSO 2 in AKI group were significantly lower than those in non-AKI group (F=5.017 and 5.003, both P<0.05). There was no significant difference in brain rSO 2 between children with or without AKI-2 and above (F=0.311, P>0.05), but the intestinal rSO 2 and renal rSO 2 in children with AKI-2 and above were lower than other children (F=6.431 and 14.139, both P<0.05). The area under ROC curve (AUC) of intestinal rSO 2 3 h after surgery for predicting AKI was 0.823, and with intestinal rSO 2 3 h after surgery <85%, the sensitivity and specificity were 66.7% and 89.5%, respectively. The AUC of renal rSO 2 for the diagnosis of AKI at 31 h after surgery was 0.918, and with intestinal rSO 2 31 h after surgery <84%, the sensitivity and specificity were 72.2% and 84.2%, respectively. The AUC of intestinal rSO 23 h after surgery for the diagnosis of AKI-2 and above was 0.829, and with intestinal rSO 2 3 h after surgery <84%, the sensitivity and specificity were 62.2% and 90.0%, respectively. The AUC of renal rSO 2 for the diagnosis of AKI-2 and above was 0.826 at 34 h postoperatively, and with intestinal rSO 2 34 h after surgery <71%, the sensitivity and specificity were 91.9% and 55.0%, respectively.
CONCLUSION(S): The monitoring of intestinal and renal rSO 2 can predict the occurrence and severity of postoperative AKI in children with congenital heart disease after surgery.
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426.

Extracellular DNA concentrations in various aetiologies of acute kidney injury.
Gaal Kovalcikova A., Janovicova L., Hodosy J., Babickova J., Vavrincova-Yaghi D., Vavrinec P., Boor P., Podracka L., Sebekova K., Celec P., Tothova L.
Embase
Scientific reports. 12(1) (pp 16812), 2022. Date of Publication: 07 Oct 2022.
[Article]
AN: 639215640
Extracellular DNA (ecDNA) in plasma is a non-specific biomarker of tissue damage. Urinary ecDNA, especially of mitochondrial origin, is a potential non-invasive biomarker of kidney damage. Despite prominent tissue damage, ecDNA has not yet been comprehensively analysed in acute kidney injury (AKI). We analysed different fractions of ecDNA, i.e. total, nuclear and mitochondrial, in plasma and urine of children, and different animal models of AKI. We also analysed the activity of the deoxyribonuclease (DNase), which is contributes to the degradation of ecDNA. Patients with AKI had higher total and nuclear ecDNA in both, plasma and urine (sixfold and 12-fold in plasma, and 800-fold in urine, respectively), with no difference in mitochondrial ecDNA. This was mainly found for patients with AKI due to tubulointerstitial nephritis and atypical haemolytic uremic syndrome. Increased plasma ecDNA was also found in animal models of AKI, including adenine nephropathy (fivefold), haemolytic uremic syndrome (fourfold), and ischemia-reperfusion injury (1.5-fold). Total urinary ecDNA was higher in adenine nephropathy and ischemia-reperfusion injury (1300-fold and twofold, respectively). DNase activity in urine was significantly lower in all animal models of AKI in comparison to controls. In conclusion, plasma total and nuclear ecDNA and urinary total ecDNA is increased in patients and animals with particular entities of AKI, suggesting a mechanism-dependent release of ecDNA during AKI. Further studies should focus on the dynamics of ecDNA and its potential role in the pathogenesis of AKI.

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427.

Nephrotoxic Exposures and Acute Kidney Injury in Noncritically Ill Children Stratified by Service.
Holsteen P.E., Gist K.M., Brinton J.T., Hebert M., Iwanowski M., Kim A., Leath A., Shah A., Soranno D.E., Marschner M.N.
Embase
Hospital pediatrics. 12(10) (pp 866-877), 2022. Date of Publication: 01 Oct 2022.
[Article]
AN: 639028584
OBJECTIVE: The Nephrotoxic Injury Negated by Just-in-Time Action (NINJA) program is a multicenter, quality improvement initiative that identifies patients at risk for nephrotoxic medication-associated acute kidney injury (NTMx-AKI). The purpose of this study was to (1) evaluate the prevalence and types of NTMx exposures and (2) determine the prevalence of NTMx-AKI categorized by service. Exploratory analysis evaluated potential associations between hospital measures and NTMx-AKI.
METHOD(S): This is a single-center, retrospective chart review of NTMx exposures from January 2019 to June 2020 in noncritically ill children. High NTMx exposures were defined as >=3 simultaneous nephrotoxins or >=3 days of either intravenous vancomycin or aminoglycoside. Prevalence of high NTMx and NTMx-AKI rate were normalized to 1000 patient days. A retrospective case-control analysis assessed for potential associations with development of NTMx-AKI.
RESULT(S): There were 609 NTMx exposures in 565 patients and 44 (7.2%) episodes of NTMx-AKI. The NTMx prevalence rate per 1000 patient days was highest among liver, neurosurgery, and gastroenterology services. The most commonly used NTMx were vancomycin, intravenous contrast, and nonsteroidal antiinflammatory drugs. The NTMx-AKI rate in exposed patients ranged from 0% to 14% across service lines. AKI was most often attributable to vancomycin. Univariable analyses suggest type and duration of NTMx exposure are associated with development of NTMx-AKI but not with severity.
CONCLUSION(S): NTMx exposures and NTMx-AKI are variable across services. Partnerships with antimicrobial stewardship and multicenter studies are needed to modify NTMx-AKI risk.

Ongoing surveillance is needed in patients who do not have normalization of creatinine before discharge.

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428.

Perioperative acetaminophen is associated with reduced acute kidney injury after cardiac surgery.
Young A.M., Strobel R.J., Rotar E.P., Kleiman A., McNeil J.S., Teman N.R., Hawkins R.B., Raphael J., Mehaffey J.H.
Embase
Journal of Thoracic and Cardiovascular Surgery. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2020553696
Background: Cardiac surgery-associated acute kidney injury (AKI) is associated with increased postoperative morbidity and mortality. Evidence suggests an association between perioperative acetaminophen administration and decreased incidence of postoperative AKI in pediatric cardiac surgery patients; however, an effect in adults is unknown.
Method(s): All patients (n = 6192) undergoing coronary and/or valve surgery with a recorded Society of Thoracic Surgeons (STS) risk score at our institution between 2010 and 2018 were stratified by acetaminophen exposure on the day of surgery using institutional pharmacy records. AKI was determined using the Kidney Disease: Improving Global Outcomes (KDIGO) staging criteria. Logistic regression was used to analyze the association between perioperative acetaminophen and postoperative kidney injury or STS major morbidity. A sensitivity analysis using propensity score matching on the STS predicted risk of renal failure and cardiopulmonary bypass time was performed to account for time bias.
Result(s): Perioperative acetaminophen exposure was associated with lower odds of stage 1 to 3 acute kidney injury (odds ratio [OR], 0.68; 95% CI, 0.56-0.83; P <.001) and decreased prolonged postoperative ventilation (OR, 0.53; 95% CI, 0.37-0.76; P <.001). A sensitivity analysis provided well-balanced (standard mean difference <0.10) groups of 401 pairs, in which acetaminophen was associated with a decreased incidence of postoperative AKI (OR, 0.7; 95% CI, 0.52-0.94; P =.016).
Conclusion(s): Exposure to acetaminophen on the day of surgery was associated with a decreased incidence of AKI in our patients undergoing cardiac surgery. These data serve as a measure of effect size to further explore the therapeutic potential of acetaminophen to reduce postoperative AKI after cardiac surgery and to elucidate the mechanisms involved.

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429.

Acute kidney injury during cisplatin therapy and associations with kidney outcomes 2 to 6 months post-cisplatin in children: a multi-centre, prospective observational study.
McMahon K.R., Lebel A., Rassekh S.R., Schultz K.R., Blydt-Hansen T.D., Cuvelier G.D.E., Mammen C., Pinsk M., Carleton B.C., Tsuyuki R.T., Ross C.J.D., Huynh L., Yordanova M., Crepeau-Hubert F., Wang S., Palijan A., Lee J., Boyko D., Zappitelli M.
Embase
Pediatric Nephrology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2019660153
Background: Few studies describe acute kidney injury (AKI) burden during paediatric cisplatin therapy and post-cisplatin kidney outcomes. We determined risk factors for and rate of (1) AKI during cisplatin therapy, (2) chronic kidney disease (CKD) and hypertension 2-6 months post-cisplatin, and (3) whether AKI is associated with 2-6-month outcomes.
Method(s): This prospective cohort study enrolled children (aged < 18 years at cancer diagnosis) treated with cisplatin from twelve Canadian hospitals. AKI during cisplatin therapy (primary exposure) was defined based on Kidney Disease: Improving Global Outcomes (KDIGO) serum creatinine criteria (>= stage one). Severe electrolyte abnormalities (secondary exposure) included >= grade three hypophosphatemia, hypokalemia, or hypomagnesemia (National Cancer Institute Common Terminology Criteria for Adverse Events v4.0). CKD was albuminuria or decreased kidney function for age (KDIGO guidelines). Hypertension was defined based on the 2017 American Academy of Pediatrics guidelines.
Result(s): Of 159 children (median [interquartile range [IQR]] age: 6 [2-12] years), 73/159 (46%) participants developed AKI and 55/159 (35%) experienced severe electrolyte abnormalities during cisplatin therapy. At median [IQR] 90 [76-110] days post-cisplatin, 53/119 (45%) had CKD and 18/128 (14%) developed hypertension. In multivariable analyses, AKI was not associated with 2-6-month CKD or hypertension. Severe electrolyte abnormalities during cisplatin were associated with having 2-6-month CKD or hypertension (adjusted odds ratio (AdjOR) [95% CI]: 2.65 [1.04-6.74]). Having both AKI and severe electrolyte abnormalities was associated with 2-6-month hypertension (AdjOR [95% CI]: 3.64 [1.05-12.62]).
Conclusion(s): Severe electrolyte abnormalities were associated with kidney outcomes. Cisplatin dose optimization to reduce toxicity and clear post-cisplatin kidney follow-up guidelines are needed. Graphical abstract: [Figure not available: see fulltext.]

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430.

Acute kidney injury requiring kidney replacement therapy in childhood lupus nephritis: a cohort study of the Pediatric Nephrology Research Consortium and Childhood Arthritis and Rheumatology Research Alliance.
Stotter B.R., Cody E., Gu H., Daga A., Greenbaum L.A., Duong M.D., Mazo A., Goilav B., Boneparth A., Kallash M., Zeid A., Seeherunvong W., Scobell R.R., Alhamoud I., Carter C.E.,

Shah S., Straatmann C.E., Dixon B.P., Cooper J.C., Nelson R.D., Levy D.M., Brunner H.I., Verghese P.S., Wenderfer S.E.
Embase
Pediatric Nephrology. (no pagination), 2022. Date of Publication: 2022.
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AN: 2019640287
Background: Acute kidney injury (AKI) is common in lupus nephritis (LN) and a risk factor for development of chronic kidney disease. In adults with LN, AKI severity correlates with the incidence of kidney failure and patient survival. Data on AKI outcomes in children with LN, particularly those requiring kidney replacement therapy (KRT), are limited.
Method(s): A multicenter, retrospective cohort study was performed in children diagnosed between 2010 and 2019 with LN and AKI stage 3 treated with dialysis (AKI stage 3D). Descriptive statistics were used to characterize demographics, clinical data, and kidney biopsy findings; treatment data for LN were not included. Logistic regression was used to examine the association of these variables with kidney failure.
Result(s): Fifty-nine patients (mean age 14.3 years, 84.7% female) were identified. The most common KRT indications were fluid overload (86.4%) and elevated blood urea nitrogen/creatinine (74.6%). Mean follow-up duration was 3.9 +/- 2.9 years. AKI recovery without progression to kidney failure occurred in 37.3% of patients. AKI recovery with later progression to kidney failure occurred in 25.4% of patients, and there was no kidney recovery from AKI in 35.6% of patients. Older age, severe (> 50%) tubular atrophy and interstitial fibrosis, and National Institutes of Health (NIH) chronicity index score > 4 on kidney biopsy were associated with kidney failure.
Conclusion(s): Children with LN and AKI stage 3D have a high long-term risk of kidney failure. Severe tubular atrophy and interstitial fibrosis at the time of AKI, but not AKI duration, are predictive of kidney disease progression. Graphical abstract: A higher resolution version of the Graphical abstract is available as Supplementary information[Figure not available: see fulltext.]

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431.

Acute kidney injury in critically ill children: predictive value of renal arterial Doppler assessment.
de Carvalho A.V., Ferraz I.S., de Souza F.M., Brandao M.B., Nogueira R.J.N., Alves D.F.S., de Souza T.H.
Embase
Pediatric Research. (no pagination), 2022. Date of Publication: 2022.
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AN: 2018972943
Background: Renal resistive index (RRI) and renal pulsatility index (RPI) are Doppler-based variables proposed to assess renal perfusion at the bedside in critically ill patients. This study aimed to assess the accuracy of such variables to predict acute kidney injury (AKI) in mechanically ventilated children.
Method(s): Consecutive children aged <14 years underwent kidney Doppler ultrasound examination within 24 h of invasive mechanical ventilation. Renal resistive index (RRI) and renal pulsatility index (RPI) were measured. The primary outcome was severe AKI (KDIGO stage 2 or 3) on day 3.
Result(s): On day 3, 22 patients were classified as having AKI, of which 12 were severe. RRI could effectively predict severe AKI (area under the ROC curve [AUC] = 0.94) as well as RPI (AUC = 0.86). The optimal cut-off for RRI was 0.85 (sensitivity, 91.7%; specificity, 84.7%; PPV, 50.0%; and NPV, 98.4%). Similar results were obtained when the accuracy to predict AKI on day 5 was assessed. Significant correlations were observed between RRI and estimated glomerular filtration rate at enrollment (rho = -0.495) and on day 3 (rho = -0.467).
Conclusion(s): Renal Doppler ultrasound may be a promising tool to predict AKI in critically ill children under invasive mechanical ventilation. Impact: Early recognition of acute kidney injury (AKI) is essential to promptly initiate supportive care aimed at restoring renal perfusion, which may prevent or attenuate acute tubular necrosis.Renal arterial Doppler-based parameters are rapid, noninvasive, and repeatable variables that may be promising for the prediction of AKI in children.To the best of our knowledge, this is the first study to evaluate the use of renal Doppler-based variables to predict AKI in critically ill children.The present study found that Doppler-based variables could accurately predict the occurrence of severe AKI and were correlated with urinary output and diuretic use.

PMID
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432.

Serum myo-inositol oxygenase levels at hospital discharge predict progression to chronic kidney disease in community-acquired acute kidney injury.
Kakkanattu T.J., Kaur J., Nagesh V., Kundu M., Kamboj K., Kaur P., Sethi J., Kohli H.S., Gupta K.L., Ghosh A., Kumar V., Yadav A.K., Jha V.
Embase
Scientific reports. 12(1) (pp 13225), 2022. Date of Publication: 02 Aug 2022.
[Article]
AN: 638659328
Acute kidney injury (AKI) increases the risk of morbidity, mortality, and progression to chronic kidney disease (CKD). There are few data on the risk of CKD following community-acquired AKI (CA-AKI) and its predictors from developing countries. We evaluated the association of a panel of serum and urine biomarkers at the time of hospital discharge with 4-month renal outcome in CA-AKI. Patients of either sex, aged between 18 and 70 years, with no underlying CKD, and with CA-AKI were recruited at the time of discharge from hospital in this prospective observational study. Levels of serum and urine biomarkers were analyzed and association between these markers and development of CKD, defined as eGFR<60 ml/min/1.73 m2 or dialysis dependence at 4 month after discharge, were analyzed using multivariate logistic regression analysis and penalized least absolute shrinkage and selection operator logistic regression. Out of a total 126 patients followed up for 4 months, 25 developed CKD. Those who developed CKD were older (p=0.008), had higher serum creatinine (p<0.001) and lower serum albumin (p=0.001) at discharge. Adjusted logistic regression showed that each 10% increase in standardized serum myo-inositol oxygenase (MIOX) level increased the odds of progression to CKD by 13.5%. With 10% increase in standardized urine Neutrophil gelatinase-associated lipocalin (NGAL), serum creatinine and urine protein creatinine ratio (uPCR), increase in the odds of progression to CKD was 10.5%, 9.6% and 8%, respectively. Multivariable logistic model including serum MIOX, discharge serum creatinine and discharge uPCR, was able to predict the progression of CKD [AUC ROC 0.88; (95% CI 0.81, 0.95)]. High level serum MIOX levels at the time of discharge from hospital are associated with progression to CKD in patients with CA-AKI.

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35918463 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35918463]
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Publisher
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433.

Maternal Hypertension Disorders and Neonatal Acute Kidney Injury: Results from the AWAKEN Study.
Defreitas M.J., Griffin R., Sanderson K., Nada A., Charlton J.R., Jetton J.G., Kent A.L., Guillet R., Askenazi D., Abitbol C.L.
Embase
American Journal of Perinatology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 637912419
Objective a This study aimed to examine the association between maternal hypertension (HTN) exposure and neonatal acute kidney injury (AKI). Study Design a Retrospective cohort study of 2,162 neonates admitted to 24 neonatal intensive care units (NICUs). Neonates were classified into the following exposure groups: any maternal HTN, chronic maternal HTN, preeclampsia/eclampsia, both, or neither. Demographics, clinical characteristics, and AKI status were compared using Chi-square and analysis of variance. General estimating logistic regression was used to estimate adjusted odds ratios and included a stratified analysis for site of delivery. Result a Neonates exposed to any maternal HTN disorder had a tendency toward less overall and early AKI. When stratified by inborn versus outborn, exposure to both maternal HTN disorders was associated with a significantly reduced odds of early AKI only in the inborn neonates. Conclusion a Exposure to maternal HTN, especially preeclampsia/eclampsia superimposed on chronic HTN, was associated with less likelihood of early AKI in the inborn group. Key Points Maternal HTN is associated with less neonatal AKI. Maternal HTN category is variably associated with AKI. Inborn status is an important contributor to this association.

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Publisher
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2022

434.

Nocturnal bladder emptying and Quality of Life in patients with spinal cord injury.
Viaene A.M., Roggeman S., Vanhaute O.A., Raes A., Colman R., Everaert K.
Embase
European journal of physical and rehabilitation medicine. 58(3) (pp 397-404), 2022. Date of Publication: 01 Jun 2022.
[Article]
AN: 636400600
BACKGROUND: Little is known about the relationship between sleep disruption due to nocturnal bladder emptying and Quality of Life in patients with spinal cord injury. AIM: The aim of this study was to evaluate the possible influence of number of nocturnal bladder emptying, bladder emptying method and nocturnal incontinence on the Quality of Life of patients with spinal cord injury. DESIGN: The design of this paper is a cross-sectional descriptive study. SETTING: The setting is in- and outpatient. POPULATION: Seventy-nine patients aged between 18 and 77 years with SCI in a first rehabilitation period or follow-up.
METHOD(S): Patients were asked to complete Short Form-36 and Incontinence Quality of Life questionnaires and a medical information form. Independent samples t-tests and ANOVA were used to compare scores between groups.
RESULT(S): The response rate was 71 out of 79 (89%; 51 males and 20 females). 16 paraplegic and 4 tetraplegic patients were chronic, 29 paraplegic and 22 tetraplegic patients were in rehabilitation therapy or had finished this treatment recently. The paraplegic group had a significantly better Short Form-36 total score and emotional function score, while the tetraplegic group had a significantly better Incontinence Quality of Life total score and avoidance and limiting behavior score. The paraplegic patients with 0-1 nocturnal bladder emptying had better Short Form-36-derived Quality of Life than those with >=2 emptying. Quality of Life score was not associated with gender, leg oedema, incontinence, or acute/chronic group. Incontinence Quality of Life score was significantly better for patients with incomplete spinal cord injury. Fully completed questionnaires were returned by 36 patients; at least 1 item was missing for 35 participants.
CONCLUSION(S): General Short Form-36-derived Quality of Life was better for the paraplegic population. Incontinence-related Quality of Life was better in tetraplegic patients, most of whom used suprapubic catheterization. Paraplegic patients had compromised sleep and Quality of Life when the patient had to wake up two or more times at night to empty the bladder by voiding or intermittent catheterization. The high number of incomplete responders indicates the shortcomings of Quality-of-Life questionnaires for wheelchair-bound patients with spinal cord injury. CLINICAL REHABILITATION IMPACT: The use of suprapubic catheterization should be considered to improve Quality of Life for tetraplegic patients. For paraplegic patients, we must

focus urological policy on aiming to reduce the number of nighttime bladder emptying to one or none.
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34652085 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34652085]
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Publisher
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Year of Publication
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435.

Oxygen delivery in pediatric cardiac surgery and its association with acute kidney injury using machine learning.
Hayward A., Robertson A., Thiruchelvam T., Broadhead M., Tsang V.T., Sebire N.J., Issitt R.W.
Embase
Journal of Thoracic and Cardiovascular Surgery. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2019248216
Objective: Acute kidney injury (AKI) after pediatric cardiac surgery with cardiopulmonary bypass (CPB) is a frequently reported complication. In this study we aimed to determine the oxygen delivery indexed to body surface area (DO2i) threshold associated with postoperative AKI in pediatric patients during CPB, and whether it remains clinically important in the context of other known independent risk factors.
Method(s): A single-institution, retrospective study, encompassing 396 pediatric patients, who underwent heart surgery between April 2019 and April 2021 was undertaken. Time spent below DO2i thresholds were compared to determine the critical value for all stages of AKI occurring within 48 hours of surgery. DO2i threshold was then included in a classification analysis with known risk factors including nephrotoxic drug usage, surgical complexity, intraoperative data, comorbidities and ventricular function data, and vasoactive inotrope requirement to determine DO2i predictive importance.
Result(s): Logistic regression models showed cumulative time spent below a DO2i value of 350 mL/min/m2 was associated with AKI. Random forest models, incorporating established risk factors, showed DO2i threshold still maintained predictive importance. Patients who developed post-CPB AKI were younger, had longer CPB and ischemic times, and required higher inotrope support postsurgery.
Conclusion(s): The present data support previous findings that DO2i during CPB is an independent risk factor for AKI development in pediatric patients. Furthermore, the data support previous suggestions of a higher threshold value in children compared with that in adults and indicate that adjustments in DO2i management might reduce incidence of postoperative AKI in the pediatric cardiac surgery population.

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Publisher
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436.

Feasibility and Efficacy of Sustained Low-Efficiency Dialysis in Critically Ill Children with Severe Acute Kidney Injury.
Yadav M., Tiwari A.N., Lodha R., Sankar J., Khandelwal P., Hari P., Sinha A., Bagga A.
Embase
Indian Journal of Pediatrics. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2018138950
Objectives: To examine the feasibility, efficacy, and safety of sustained low-efficiency dialysis (SLED) in hemodynamically unstable, critically ill children.
Method(s): Critically ill patients, 1-18 y old with hemodynamic instability (>= 1 vasoactive drugs) and severe acute kidney injury (AKI) requiring kidney replacement therapy (KRT) in a tertiary care pediatric intensive care unit were prospectively enrolled. Patients weighing <= 8 kg or with mean arterial pressure < 5th percentile despite > 3 vasoactive drugs, were excluded. Patients underwent SLED until hemodynamically stable and off vasoactive drugs, or lack of need for dialysis. The primary outcome was the proportion of patients in whom the first session of SLED was initiated within 12 h of its indication and completed without premature (< 6 h) termination. Efficacy was estimated by ultrafiltration, urea reduction ratio (URR), and equilibrated Kt/V. Other outcomes included: changes in hemodynamic scores, circuit clotting, adverse events, and changes in indices on point-of-care ultrasonography and echocardiography.
Result(s): Between November 2018 and March 2020, 18 patients with median age 8.6 y and vasopressor dependency index of 83.2, underwent 41 sessions of SLED. In 16 patients, SLED was feasible within 12 h of indication. No session was terminated prematurely. Ultrafiltration achieved was 4.0 +/- 2.2 mL/kg/h, while URR was 57.7 +/- 16.2% and eKt/V 1.17 +/- 0.56. Hemodynamic scores did not change significantly. Asymptomatic hypokalemia was the chief adverse effect. Sessions were associated with a significant improvement in indices on ultrasound and left ventricular function. Fourteen patients died.
Conclusion(s): SLED is feasible, safe, and effective in enabling KRT in hemodynamically unstable children with severe AKI.

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Publisher
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437.

Correction to: Low albumin levels are independently associated with neonatal acute kidney injury: a report from AWAKEN Study Group (Pediatric Nephrology, (2022), 37, 7, (1675-1686), 10.1007/s00467-021-05295-2).
Nada A., Askenazi D., Kupferman J.C., Mhanna M., Mahan J.D., Boohaker L., Li L., Griffin R.L.
Embase
Pediatric Nephrology. 37(7) (pp 1699-1700), 2022. Date of Publication: July 2022.
[Erratum]
AN: 2015324282
The original version of this article unfortunately contained a mistake. During the process of typesetting, the list of participating collaborators from the AWAKEN Study Group cited in this article was not properly updated. The original article was updated.

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Publisher
Springer Science and Business Media Deutschland GmbH
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438.

Outcome prediction for acute kidney injury among hospitalized children via eXtreme Gradient Boosting algorithm.
Deng Y.-H., Luo X.-Q., Yan P., Zhang N.-Y., Liu Y., Duan S.-B.
Embase
Scientific reports. 12(1) (pp 8956), 2022. Date of Publication: 27 May 2022.
[Article]
AN: 638114532
Acute kidney injury (AKI) is common among hospitalized children and is associated with a poor prognosis. The study sought to develop machine learning-based models for predicting adverse outcomes among hospitalized AKI children. We performed a retrospective study of hospitalized AKI patients aged 1 month to 18 years in the Second Xiangya Hospital of Central South University in China from 2015 to 2020. The primary outcomes included major adverse kidney events within 30 days (MAKE30) (death, new renal replacement therapy, and persistent renal dysfunction) and 90-day adverse outcomes (chronic dialysis and death). The state-of-the-art machine learning algorithm, eXtreme Gradient Boosting (XGBoost), and the traditional logistic regression were used to establish prediction models for MAKE30 and 90-day adverse outcomes. The models' performance was evaluated by split-set test. A total of 1394 pediatric AKI patients were included in the study. The incidence of MAKE30 and 90-day adverse outcomes was 24.1% and 8.1%, respectively. In the test set, the area under the receiver operating characteristic curve (AUC) of the XGBoost model was 0.810 (95% CI 0.763-0.857) for MAKE30 and 0.851 (95% CI 0.785-0.916) for 90-day adverse outcomes, The AUC of the logistic regression model was 0.786 (95% CI 0.731-0.841) for MAKE30 and 0.759 (95% CI 0.654-0.864) for 90-day adverse outcomes. A web-based risk calculator can facilitate the application of the XGBoost models in daily clinical practice. In conclusion, XGBoost showed good performance in predicting MAKE30 and 90-day adverse outcomes, which provided clinicians with useful tools for prognostic assessment in hospitalized AKI children.

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Publisher
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439.

An audit of a decade of acute peritoneal dialysis in children with acute kidney injury: A single-center experience.

Ezeh G.O., Oniyangi O., Nwatah V.E., Oyinwola O.I., Ekaidem I.B., Okonkwo F.O., Aikhionbare H.A.
Embase
Nigerian journal of clinical practice. 25(5) (pp 690-694), 2022. Date of Publication: 01 May 2022.
[Article]
AN: 638051566
Background: Acute peritoneal dialysis (PD) is the modality of choice to manage children with acute kidney injury (AKI). However, its use remains underutilized, despite the unquestionable advantages.
Aim(s): This study, therefore, aimed to audit the complications, outcomes, and challenges encountered with PD as well as indications for PD and causes of AKI among under-5 children that had PD in a Nigerian tertiary hospital over a decade. .
Patients and Methods: : A retrospective study of children with AKI, aged 0 to 5 years, managed with PD. In all the children, a PD catheter was inserted at the bedside by surgeons. PD was performed manually. Data were presented in descriptive statistics and a P value <0.05 was considered significant.
Result(s): Twenty-nine (29) children had PD over a decade (January 2009 to December 2018). There were 12 males and 17 females aged 4-60 months (mean +/- SD 18.8 +/- 16.9). The PD yearly frequency was 2-7 times/year, mean of 2.9/year. The major identified indication for PD was difficulty of vascular access (86.2%) while the causes of AKI were sepsis 21 (43.8%); gastroenteritis 11 (22.9%); severe malaria 9 (18.8%); toxins/herbal medications 5 (10.4%); multiple congenital anomalies 2 (4.2%). Multiple causes of AKI occurred in some children. The major observed PD complications were catheter lockage 9 (37.5%); dialysate fluid retention 4 (16.7%); and peritonitis 4 (16.7%). The short-term outcome of the 29 children that had PD showed 20 (69%) discharged and 9 (31%) deaths over the period. The major challenge encountered was PD-related sepsis evidenced by the prevalence of peritonitis and catheter site infection.
Conclusion(s): The predominant PD complications were catheter-related, mostly catheter blockage in a manually performed PD while the leading cause of AKI in our center was sepsis, affecting a large population of children requiring PD.
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35593614 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35593614]
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Publisher
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440.

Comparison Of Two Definitions (P-Rifle And Kdigo) For Prevalence Of Acute Kidney Injury And In Hospital Mortality In A Paediatric Intensive Care Unit Of Pakistan.
Usman P., Qaisar H., Haque A.U., Abbas Q.
Embase
Journal of Ayub Medical College, Abbottabad : JAMC. 34(1) (pp 112-117), 2022. Date of Publication: 01 Jan 2022.
[Article]
AN: 637852894

BACKGROUND: To compare the Paediatric RIFLE (p-RIFLE) and Kidney Disease Improving Global Outcomes (KDIGO) definitions of acute kidney injury (AKI) for frequency of (AKI) and in-hospital mortality in critically ill children.
METHOD(S): Retrospective review of medical records of all patients (aged 1 month - 16 years) admitted in Paediatric Intensive Care Unit from January 2015-December 2016, with length of stay >48 hours, was done. Patients with chronic kidney disease were excluded. Receiver operating characteristic (ROC) curves were used to evaluate the performance of the p-RIFLE and KDIGO criteria to predict the AKI related mortality. Logistic regression analysis was done to determine the association of different variables with mortality in AKI patient based on p-RIFLE, KDIGO. A p-value of <0.05 was considered significant.
RESULT(S): Out of total 823 patients admitted during the study period, 562 patients were included in the study. Median age was 2 years (Interquartile range 8 years). Acute kidney injury frequency according to p-RIFLE and KDIGO were 391 (70%), and 372 (66%) respectively. Overall, 106/823 (12.8%) children died during study period, 78 (19.9%) in AKI by p-RIFLE and 76 (20.4%) in AKI by KDIGO died. The area-under- curve for in-hospital mortality for p-RIFLE and KDIGO criteria were 0.525 (p=0.427), and 0.534 (p=0.276), respectively.
CONCLUSION(S): P-RIFLE is more sensitive compared to KDIGO in diagnosing AKI in critically ill children; identifying a greater number of moderate staged AKI cases. Greater AKI severity is associated with higher mortality in critically ill children.
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35466638 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35466638]
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Year of Publication
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441.

Acute Kidney Injury After Pediatric Cardiac Surgery.
Neumayr T.M., Alge J.L., Afonso N.S., Akcan-Arikan A.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. 23(5) (pp e249-e256), 2022. Date of Publication: 01 May 2022.
[Article]
AN: 637746751
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35405732 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35405732]
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Publisher
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Year of Publication

2022

442.

Accuracy of Liver-Type Fatty Acid-Binding Protein in Predicting Acute Kidney Injury: A Meta-Analysis.
Chiang T.-H., Yo C.-H., Lee G.H., Mathew A., Sugaya T., Li W.-Y., Lee C.-C.
Embase
The journal of applied laboratory medicine. 7(2) (pp 421-436), 2022. Date of Publication: 02 Mar 2022.
[Article]
AN: 636103878
BACKGROUND: Liver-type fatty acid-binding protein (L-FABP) is a promising biomarker for the early prediction of acute kidney injury (AKI). However, the clinical utility of L-FABP in different populations or settings remains unclear. We present a meta-analysis of studies evaluating the performance of L-FABP in AKI prediction.
METHOD(S): We performed a literature search in MEDLINE, EMBASE, and Cochrane library, using search terms "acute kidney injury" and "L-FABP." Studies investigating the performance characteristics of L-FABP for the early diagnosis of AKI were included. Data about patient characteristics, diagnostic criteria of AKI, quantitative data required for construction of a 2 x 2 table (number of participants, sensitivity, specificity, and case number), study settings, and outcomes were extracted. The bivariable model was applied to calculate the estimated sensitivity and specificity of L-FABP. A summary ROC curve was created by plotting the true-positive rate against the false-positive rate at various cutoff values from different studies.
RESULT(S): We found 27 studies reporting measurement of urine (n=25 studies) or plasma (n=2 studies) L-FABP. Overall, the estimated sensitivity was 0.74 (95% CI: 0.69-0.80) and specificity was 0.78 (95% CI: 0.71-0.83). L-FABP demonstrated a stable area under the ROC of 0.82 (95% CI: 0.79-0.85) in variable clinical settings including intensive care unit, surgery, and contrast-induced AKI. In subgroup analysis excluding pediatric and post radiocontrast exposure cohorts, L-FABP had comparative diagnostic performance with neutrophil gelatinase associated lipocalin (NGAL).
CONCLUSION(S): Despite broad prevalence, L-FABP is a clinically useful marker with moderate accuracy in variable clinical settings as demonstrated in our subgroup analysis. Except for pediatric patients and those post-radiocontrast exposure, L-FABP has comparable discriminative capability as NGAL.

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Publisher
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Year of Publication
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443.

Clinical and subclinical acute kidney injury in children with mild-to-moderate COVID-19.
Saygili S., Canpolat N., Cicek R.Y., Agbas A., Yilmaz E.K., Sakalli A.A.K., Aygun D., Akkoc G., Demirbas K.C., Konukoglu D., Cokugras H., Caliskan S., Sever L.
Embase
Pediatric Research. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2017863139
Background: Our aim was to identify acute kidney injury (AKI) and subacute kidney injury using both KDIGO criteria and urinary biomarkers in children with mild/moderate COVID-19.
Method(s): This cross-sectional study included 71 children who were hospitalized with a diagnosis of COVID-19 from 3 centers in Istanbul and 75 healthy children. We used a combination of functional (serum creatinine) and damage (NGAL, KIM-1, and IL-18) markers for the definition of AKI and subclinical AKI. Clinical and laboratory features were evaluated as predictors of AKI and subclinical AKI.
Result(s): Patients had significantly higher levels of urinary biomarkers and urine albumin-creatinine ratio than healthy controls ($p < 0.001$). Twelve patients (16.9%) developed AKI based on KDIGO criteria, and 22 patients (31%) had subclinical AKI. AKI group had significantly higher values of neutrophil count on admission than both subclinical AKI and non-AKI groups ($p < 0.05$ for all). Neutrophil count was independently associated with the presence of AKI ($p = 0.014$).
Conclusion(s): This study reveals that even children with a mild or moderate disease course are at risk for AKI. Association between neutrophil count and AKI may point out the role of inflammation in the development of AKI. Impact: The key message of our article is that not only children with severe disease but also children with mild or moderate disease have an increased risk for kidney injury due to COVID-19.Urinary biomarkers enable the diagnosis of a significant number of patients with subclinical AKI in patients without elevation in serum creatinine.Our findings reveal that patients with high neutrophil count may be more prone to develop AKI and should be followed up carefully.We conclude that even children with mild or moderate COVID-19 disease courses should be evaluated for AKI and subclinical AKI, which may improve patient outcomes.

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444.

Correction: Neonatal acute kidney injury risk stratification score: STARZ study (Pediatric Research, (2022), 91, 5, (1141-1148), 10.1038/s41390-021-01573-9).
Wazir S., Sethi S.K., Agarwal G., Tibrewal A., Dhir R., Bajaj N., Gupta N.P., Mirgunde S., Sahoo J., Balachandran B., Afzal K., Shrivastava A., Bagla J., Krishnegowda S., Konapur A., Soni K., Rana A., Bunchman T., Raina R.
Embase
Pediatric Research. 91(5) (pp 1302-1304), 2022. Date of Publication: April 2022.
[Erratum]
AN: 2013690801
Unfortunately, several errors occurred in Tables 1 and 3, Fig. 5 and the "Discussion" section. The corrected Tables 1 and 3 and Fig. 5 are given below. In the "Discussion" section the information on urine output has been changed to <1.32 ml/kg/h. The original article has been corrected.

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445.

Neonatal acute kidney injury risk stratification score: STARZ study.
Wazir S., Sethi S.K., Agarwal G., Tibrewal A., Dhir R., Bajaj N., Gupta N.P., Mirgunde S., Sahoo J., Balachandran B., Afzal K., Shrivastava A., Bagla J., Krishnegowda S., Konapur A., Soni K., Rana A., Bunchman T., Raina R.
Embase
Pediatric Research. 91(5) (pp 1141-1148), 2022. Date of Publication: April 2022.
[Article]
AN: 2011560078
Background: Neonates admitted in the neonatal intensive care unit are vulnerable to acute kidney injury leading to worse outcomes. It is important to identify "at-risk" neonates for early preventive measures.
Method(s): The study was a multicenter, national, prospective cohort study done in 11 centers in India. A multivariable logistic regression technique with step-wise backward elimination method was used, and a "Risk Prediction Scoring" was devised [the STARZ score].
Result(s): The neonates with admission in the NICU within <25.5 h of birth, requirement of positive pressure ventilation in the delivery room, <28 weeks gestational age, sepsis, significant cardiac disease, urine output <1.32 ml/kg/h or serum creatinine >=0.98 mg/dl during the first 12 h post admission, use of nephrotoxic drugs, use of furosemide, or use of inotrope had a significantly higher risk of AKI at 7 days post admission in the multivariate logistic regression model. This scoring model had a sensitivity of 92.8%, specificity of 87.4% positive predictive value of 80.5%, negative predictive value of 95.6%, and accuracy of 89.4%.
Conclusion(s): The STARZ neonatal score serves to rapidly and quantitatively determine the risk of AKI in neonates admitted to the neonatal intensive care unit. Impact: The STARZ neonatal score serves to rapidly and quantitatively determine the risk of AKI in neonates admitted to the neonatal intensive care unit.These neonates with a higher risk stratification score need intense monitoring and daily kidney function assessment.With this intensification of research in the field of AKI risk stratification prediction, there is hope that we will be able to decrease morbidity and mortality associated with AKI in this population.

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446.

Acute kidney injury in paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) is not associated with progression to chronic kidney disease.
Stewart D.J., Mudalige N.L., Johnson M., Shroff R., du Pre P., Stojanovic J.
Embase
Archives of disease in childhood. 107(3) (pp e21), 2022. Date of Publication: 01 Mar 2022.
[Article]
AN: 636846439
BACKGROUND: Paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) is a rare complication of SARS-CoV-2 associated with single or multiorgan dysfunction.
OBJECTIVE(S): We aimed to evaluate the incidence of acute kidney injury (AKI) and risk factors for kidney dysfunction in PIMS-TS, with reporting of 6-month renal follow-up data. We also evaluated renal involvement between first and second waves of the SARS-CoV-2 pandemic in the UK, the latter attributed to the Alpha variant. DESIGN: A single-centre observational study was conducted through patient chart analysis. SETTING: Data were collected from patients admitted to Great Ormond Street Hospital, London, UK, between April 2020 and March 2021. PATIENTS: 110 patients <18 years of age. MAIN OUTCOME MEASURE: AKI during hospitalisation. AKI classification was based on upper limit of reference interval (ULRI) serum creatinine (sCr) values.
RESULT(S): AKI occurred in 33 (30%) patients. Hypotension/hypoperfusion was associated with almost all cases. In univariate analysis, the AKI cohort had higher peak levels of triglycerides (OR, 1.27 (95% CI, 1.05 to 1.6) per 1 mmol/L increase) and C reactive protein (OR, 1.06 (95% CI, 1.02 to 1.12) per 10 mg/L increase), with higher requirement for mechanical ventilation (OR, 3.8 (95% CI, 1.46 to 10.4)) and inotropic support (OR, 15.4 (95% CI, 3.02 to 2.81)). In multivariate analysis, triglycerides were independently associated with AKI stages 2-3 (adjusted OR, 1.26 (95% CI, 1.04 to 1.6)). At follow-up, none had macroalbuminuria and all had sCr values <ULRI. No discrepancy in renal involvement between pandemic waves was found.
CONCLUSION(S): Despite a high incidence of AKI in PIMS-TS, renal recovery occurs rapidly with current therapies, and no patients developed chronic kidney disease.

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447.

The characteristics, management and outcomes of high- and low-grade renal injuries in paediatric trauma patients at a major trauma centre.
Bird R., De Los Reyes T., Beno S., Siddiqui A.
Embase
Trauma (United Kingdom). (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2015199481
Introduction: Children, given anatomical variations, are at increased risk of renal injury following trauma. The management of paediatric renal injuries has, similar to other solid organ injuries, largely shifted towards conservative management; however, hemodynamically unstable patients may still warrant surgical exploration or interventional techniques. The aim of this study is to describe the local incidence, demographics, morbidity and outcomes associated with high- and low-grade renal injury in a paediatric major trauma population.
Method(s): This was a 5-year retrospective review of trauma registry data and chart analysis of all paediatric renal injuries from major trauma at a North American level 1 paediatric trauma centre between January 2016-31 December 2020. Data was analysed using SPSS v27 with $p < 0.05$ considered significant.
Result(s): Of 1334 major trauma patients, 45 suffered a kidney injury (20 high-grade and 25 low-grade injuries), of which 93.3% underwent conservative management with no difference in outcomes between groups. 80% of patients had concurrent injuries (a quarter requiring surgery for these), with a trend towards higher rates of chest injuries in high-grade renal injury patients ($p = 0.08$). Bicycle injuries were statistically more likely to cause high-grade renal injury ($p = 0.02$). Angiography was utilized infrequently (3/45 patients, 6.6%), and no patients underwent embolization in our study population. Overall mortality (4.4%) and length of stay were unaffected by grade of injury.
Conclusion(s): Paediatric renal injury is an uncommon injury in major trauma patients (3.4%). Most cases can be managed conservatively regardless of the grade of injury. Renal injury patients are likely to have concurrent injuries, often requiring surgery. Further studies are needed to measure the success and utilization of interventional radiology techniques for management in children.

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Publisher
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448.

Baseline serum cystatin C as a marker of acute kidney injury in patients with acute-on-chronic liver failure.
Jha P., Jha A.K., Dayal V.M., Jha S.K., Kumar A.
Embase
Indian Journal of Gastroenterology. (no pagination), 2022. Date of Publication: 2022.
[Article]
AN: 2014642951
Background: A creatinine-based estimation of the renal function lags behind the onset of disease process. Cystatin C is a new marker for acute kidney injury (AKI). However, data are limited in patients with acute-on-chronic liver failure (ACLF). We evaluated serum cystatin C as an early predictor of AKI in patients with ACLF.
Method(s): In a prospective observational study, patients with ACLF and normal serum creatinine level were included in the study. Serum cystatin C was analyzed with the development of AKI and the disease outcome.
Result(s): Forty-seven patients (mean age: 43.26+/-16.34 years; male:female: 2.35:1) were included in the study. AKI developed in 34% of patients during the hospital stay. Receiver operating characteristic (ROC) curve analysis revealed that the best cutoff for baseline cystatin C was 1.47 mg/L with a sensitivity of 0.94 and specificity of 0.68. The cystatin C ((area under the curve [AUC]=0.853) performance was better than that of the creatinine (AUC=0.699), Child-Turcotte-Pugh (CTP) (AUC=0.661), and model for end-stage liver disease-sodium (MELD-Na) (AUC=0.641). In the univariate analysis, age, platelet count, creatinine, estimated glomerular filtration rate (eGFR)-modification of diet in renal disease (MDRD), cystatin C, and estimated glomerular filtration rate-serum cystatin C (eGFRcysC) were significantly associated with AKI in ACLF patients. Cystatin C was an independent positive predictor of AKI. Cystatin C was positively correlated with the MELD-Na scores (r=0.374 and p=0.009).
Conclusion(s): Our study supports previous studies reporting that serum cystatin C is a better predictor for AKI development compared to serum creatinine. Cystatin C may be used as an early marker for new-onset AKI in hospitalized patients with ACLF.

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Publisher
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449.

Acute Kidney Injury Following Pediatric Liver Transplant.
Silver L.J., Pan S., Bucuvalas J.C., Reid-Adam J.A., Oishi K., Ofori-Amanfo G., Gangadharan S.
Embase
Journal of Intensive Care Medicine. 37(1) (pp 107-113), 2022. Date of Publication: January 2022.
[Article]
AN: 2007545232
Objective: To determine the incidence, severity, and risk factors of postoperative acute kidney injury in pediatric liver transplant patients with and without inborn errors of metabolism.
Design(s): Retrospective cohort study.
Setting(s): Single-center PICU.
Patient(s): All children less than or equal to 18 years old who received a liver transplant between January 2009 and July 2019.
Intervention(s): None.
Measurements and Main Results: Following exclusion criteria there were 92 transplant encounters. After excluding patients who received combined kidney-liver transplantation, acute kidney injury occurred in 57% of patients (N = 49), with 25.6% (N = 22) stage 1, 15.1% (N = 13) stage 2, and 16.3% (N = 14) stage 3. In an adjusted analysis, metabolic indication for transplant was not significantly associated with presence of acute kidney injury (p = 0.45). For the subset of patients without inborn errors of metabolism, the odds of having acute kidney injury was 1.50 (95% CI: 1.00-2.26) for each 1-unit increase in preoperative INR after adjusting for the covariates of age, preoperative albumin, CMV status of donor, and preoperative creatinine. In the full cohort, as well as the sample of children without inborn errors of metabolism, presence of acute kidney injury was associated with longer total hospital stay as well as number of ICU days.
Conclusion(s): Acute kidney injury in the early postoperative period is common in pediatric liver transplant patients (57%), 31.4% of whom had severe disease. In patients without inborn errors of metabolism, each unit increase in preoperative INR suggests a higher risk of acute kidney injury after adjusting for covariates including preoperative creatinine. This finding suggests an association between the severity of preoperative synthetic liver function and the risk of developing postoperative acute kidney injury which requires further investigation.

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450.

Erratum: Epidemiology of Acute Kidney Injury after Neonatal Cardiac Surgery: A Report from the Multicenter Neonatal and Pediatric Heart and Renal Outcomes Network(Critical Care Medicine (2021) 49 (e941-e951) DOI: 10.1097/CCM.0000000000005165).
Anonymous
Embase
Critical Care Medicine. 50(10) (pp E778), 2022. Date of Publication: 01 Oct 2022.
[Erratum]
AN: 2020368962
In the article beginning in the October 2021 issue of the Journal, one of the collaborator s names was misspelled.

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451.

The Coding Impact of Acute Kidney Injury in Pediatric Hospital Documentation.
Tierney E., Irani A., Iyer M., Riley A.A.
Embase
Perspectives in health information management. 19(3) (pp 1f), 2022. Date of Publication: 01 Jun 2022.
[Article]
AN: 638883091
Background: Acute kidney injury (AKI) increases patient morbidity and mortality. In value-based care, the documented and coded diagnoses during hospitalization influences an encounter's relative weight (RW), including severity of illness (SOI), and risk of mortality, which ultimately determines reimbursement for care. The impact of a secondary diagnosis of AKI on RW in pediatric patients has not been evaluated.
Method(s): A single-center, retrospective observational study was conducted over six months. The institutional coding database was queried for secondary diagnoses signifying AKI. The RW for each case was determined with and without an AKI secondary diagnosis. Patients were further stratified by their SOI score to evaluate change in RW and SOI.
Result(s): Over a six-month period, 372 patients had a secondary AKI diagnosis, with a mean RW 2.14 decreasing to a mean RW 1.83 without an AKI diagnosis (p = 2.2e-16). When stratified by SOI, one patient had SOI 1 with RW change -0.286; six patients had SOI 2 with mean RW change -0.0669; 189 patients had SOI 3 with mean RW change -1.862 (p=2.23E-16); and 176

patients had SOI 4 with mean RW change -0.452 (p=9.46E-14), when the AKI secondary diagnosis was removed.
Conclusion(s): Significant negative changes in RW were observed when AKI was removed, suggesting diagnostic omission may result in inaccurately lesser representation of patient medical complexity and severity of illness upon hospitalization coding, which may lower reimbursement.

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452.

Characteristics and outcomes of pediatric blunt renal trauma: a nationwide cohort study in Japan.
Nakao S., Katayama Y., Hirayama A., Hirose T., Ishida K., Umemura Y., Tachino J., Kiguchi T., Matsuyama T., Kiyohara K., Kitamura T., Nakagawa Y., Shimazu T.
Embase
European journal of trauma and emergency surgery : official publication of the European Trauma Society. 48(3) (pp 2047-2057), 2022. Date of Publication: 01 Jun 2022.
[Article]
AN: 638280069
PURPOSE: The aim of this study was to describe epidemiologic features of pediatric blunt renal trauma.
METHOD(S): We performed a retrospective analysis using the Japan Trauma Data Bank over 15 years. We included patients younger than 18 years with blunt renal trauma. We analyzed temporal trends and variations across age groups in patient characteristics, intervention, and in-hospital mortality. We also assessed factors associated with in-hospital mortality.
RESULT(S): We identified 435 pediatric patients with blunt renal trauma. Their median age was 14 years and median Injury Severity Score (ISS) was 17. The most common mechanism of injury was traffic accident in all age groups. Nephrectomy was performed in 3.2%, and the overall in-hospital mortality was 4.6%, both of which showed decreasing trends. The most common mechanism of injury by age group was a pedestrian accident in infants/toddlers/preschoolers (43.5%), pedestrian accident in middle childhood (18.5%), bicycle accident in young teens (24.7%), and motorcycle accident in teenagers (41.2%). Sports-related injury was common in young teens (23.3%) and teenagers (15.2%). Factors such as ISS, shock, concomitant injury, and nephrectomy were associated with high in-hospital mortality.
CONCLUSION(S): We described decreasing trends in nephrectomy and in-hospital mortality in pediatric blunt renal trauma and found traffic accident and sports-related injury were common in the pediatric population in Japan.

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453.

Acute kidney injury caused by ammonium acid urate crystals in diabetic ketoacidosis at the onset of type 1 diabetes mellitus.
Shimazaki S, Kazukawa I, Mori K, Kihara M, Minagawa M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Endocrinology, Diabetes & Metabolism Case Reports. 2021, 2021 Feb 26.
[Journal Article]
UI: 33865236
SUMMARY: Ammonium acid urate (AAU) crystals are rare in industrialized countries. Furthermore, the number of children with diabetic ketoacidosis (DKA) who develop severe acute kidney injury (AKI) after hospitalization is small. We encountered two patients with AKI caused by AAU crystals during the recovery phase of DKA upon admission. They were diagnosed with severe DKA and hyperuricemia. Their urine volume decreased and AKI developed several days after hospitalization; however, acidosis improved in both patients. Urine sediment analysis revealed AAU crystals. They were treated with urine alkalization and diuretics. Excretion of ammonia in the urine and urine pH levels increased after treatment of DKA, which resulted in the formation of AAU crystals. In patients with severe DKA, the urine and urine sediment should be carefully examined as AAU can form in the recovery phase of DKA.
LEARNING POINTS: Ammonium acid urate crystals could be formed in the recovery phase of diabetic ketoacidosis. Diabetic ketoacidosis patients may develop acute kidney injury caused by ammonium acid urate crystals. Urine and urine sediment should be carefully checked in patients with severe DKA who present with hyperuricemia and volume depletion.
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454.

The association of rs187238, rs19465518 and rs1946519 IL-8 polymorphisms with acute kidney injury in preterm infants.
Kadi FA, Yuniati T, Sribudiani Y, Rachmadi D
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BioMedicine. 11(4):43-50, 2021.
[Journal Article]
UI: 35223418
BACKGROUND: Interleukin 18 (IL-18) promoter polymorphisms (-656G > T, -607C > A, and -137G > C) affect serum IL- 18 (sIL-18) levels and are associated with renal injury.
PURPOSE: This study aimed to determine the diagnostic utility of sIL-18 and urine IL-18 (uIL-18) as biomarkers for acute kidney injury (AKI) and analyse the association of IL-18 polymorphisms to AKI in preterm infants.
METHODS: Blood and urine samples were collected from 56 preterm infants with AKI and 56 without AKI to measure serum creatinine (SCr), sIL-18, and uIL-18. Genotyping of polymorphisms was performed and analysed, with AUC-ROCs analysis used to evaluate the diagnostic utility of s-/uIL-18 levels.
RESULTS: The median sIL-18 and uIL-18 levels were significantly higher than those without AKI. For a cutoff of >132 pg/mL, the sIL-18 expression had sensitivity and specificity of 80.36% and 60.71%, respectively, while for uIL-18, a cutoff of >900.7 pg/mL had sensitivity and specificity of 51.79% and 78.57%, respectively. The odds ratio of sIL-18 and uIL-18 to predict AKI in preterm infants was 5.89 (95%CI:2.31-15.02) and 4.15 (95%CI:1.58-10.89), respectively. The polymorphisms -137G > C and -656G > T were significantly associated with sIL-18 expression.
CONCLUSION: Serum and urine IL-18 levels are risk factors for and a moderate predictor of AKI in preterm infants.

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1
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455.

Frequency of Drug Induced Acute Kidney Injury in Pediatric Intensive Care Unit.
Gowa MA, Yamin R, Murtaza H, Nawaz H, Jamal G, Lohano PD
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cureus. 13(11):e19689, 2021 Nov.
[Journal Article]
UI: 34950540
BACKGROUND: Acute kidney injury (AKI) is known to complicate one-third of cases in pediatric intensive care units (PICU), and almost one-fourth of these are due to nephrotoxic drugs (NTDs). Although stopping NTDs seems the most obvious option, it is not practically applicable. Many NTDs are the only existing option, and their potential benefits outweigh the risk of drug-induced AKI.
OBJECTIVES: To assess the proportion of children receiving NTDs in the PICU and highlight the children who developed AKI.
METHODS: A prospective observational study was conducted in the PICU of the National Institute of Child Health, Karachi. All children admitted to the PICU for at least 72 hours not diagnosed with any acute or chronic kidney disease were included. Serum creatinine (SCr) was done at admission and then after 72 hours. Data was entered and analyzed using IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.
RESULTS: Of 99 children, 53 (53.5%) were male. NTD exposure was positive in 97 (97.9%), and 72 (72.7%) had high exposure (>=3 NTDs). Drug-induced AKI was diagnosed in 46 (46.5%). It was significantly related to high SCr even at admission and high NTDs exposure. The mortality rate in the AKI group was 17% compared to 4% in the non-AKI (p=0.02).
CONCLUSION: Almost half of all PICU admissions were infants. Almost all patients were exposed to NTDs, and three-fourth experienced high exposure. AKI developed in 46% of patients and may be predicted by raised creatinine at the time of admission. Children exposed to >=3 NTDs had a higher chance of drug-induced AKI.

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1
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456.

Risk Factors and Outcomes of Acute Kidney Injury in Neonates with Persistent Pulmonary Hypertension of the Newborn.
Ustun N, Ovali F
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Medeniyet Medical Journal. 36(3):193-200, 2021.
[Journal Article]
UI: 34915676
Objective: To identify the incidence of and risk factors for acute kidney injury (AKI) in neonates with persistent pulmonary hypertension of the newborn (PPHN) and to evaluate its association with neonatal outcomes.
Method: A total of 78 newborns with confirmed PPHN admitted to the neonatal intensive care unit of a university hospital between 2016 and 2020 were retrospectively analyzed. AKI was defined according to the modified neonatal Kidney Disease: Improving Global Outcomes criteria.
Results: Of 78 PPHN infants, AKI was found in 29.5% (23/78). Multivariate analysis indicated that male sex (OR 3.43 95% CI 1.03-11.48, p=0.04) and severe PPHN (OR 5.67 95% CI 1.55- 20.68, p<0.01) were independently associated with increased risk for AKI. Infants with AKI had significantly higher mortality rate than infants without AKI (43.5% vs. 9.1%, p<0.01). Mortality rates in stage 1, stage 2 and stage 3 AKI were similar (36.4%, 57.1%, and 40%, respectively, p=0.68). Among survivors, AKI infants had significantly longer mechanical ventilation and lenght of stay than infants without AKI.
Conclusion: In infants with PPHN, AKI is a common complication and is associated with increased mortality, and longer mechanical ventilation and lenght of stay. Careful monitoring of kidney function in infants with PPHN, especially in males and those who had severe PPHN can help to improve patient outcomes.

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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8565581

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Amac: Yenidoganin persistan pulmoner hipertansiyonu (PPHN) olan yenidoganlarda akut bobrek hasari (ABH) insidansini ve risk faktorlerini belirlemek, ve yenidogan sonuclari ile iliskisini degerlendirmek.Yontem: 2016-2020 yillari arasinda bir universite hastanesinin yenidogan yogun bakim unitesine yatirilan dogrulanmis PPHN'si olan 78 yenidogan retrospektif olarak incelendi. ABH tanisi, modifiye neonatal Kidney Disease: Improving Global Outcomes (KDIGO) kriterlerine gore konuldu.Bulgular: 78 PPHN bebeginin %29.5'inde (23/78) ABH saptandi. Cok degiskenli analiz, erkek cinsiyetin (OR 3,43 %95 CI 1,03-11,48, p=0,04) ve siddetli PPHN'nin (OR 5,67 %95 CI 1,55- 20,68, p<0,01) bagimsiz olarak ABH riskinde artis ile iliskili oldugunu gosterdi. ABH olan bebeklerde olum orani ABH olmayanlara gore anlamli olarak daha yuksekti (%43,5'e karsi %9,1, p<0,01). Evre 1, Evre 2 ve Evre 3 ABH'deki olum oranlari benzerdi (sirasiyla, %36,4, %57,1 ve %40, p=0,68). Hayatta kalanlar arasinda, ABH olan bebeklerin mekanik ventilator ve hastanede yatis sureleri, ABH olmayan bebeklere gore daha uzun idi.Sonuc: PPHN'li bebeklerde ABH yaygin bir komplikasyondur ve artan mortalite, daha uzun mekanik ventilasyon ve hastanede kalis suresi ile iliskilidir. PPHN'li bebeklerde, ozellikle erkeklerde ve siddetli PPHN'si olanlarda bobrek fonksiyonunun dikkatli bir sekilde izlenmesi hasta sonuclarini iyilestirmeye yardimci olabilir.
Language: Turkish
Year of Publication
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457.

Outpatient Nephrotoxic Medication Prescription after Pediatric Intensive Care Acute Kidney Injury.
Lefebvre C, Dorais M, Hessey E, Zappitelli M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Children. 8(11), 2021 Oct 21.
[Journal Article]
UI: 34828661
BACKGROUND: Nephrotoxic medication (NTM) avoidance may prevent further kidney damage in children with acute kidney injury (AKI). We compared outpatient NTM prescriptions in children with or without AKI during pediatric intensive care (PICU) hospitalization. We hypothesize that children with AKI are prescribed NTMs at the same rate as those without it.
METHODS: This was a retrospective administrative data study of children <18 years, admitted to two PICUs in Montreal, Canada, from 2003 to 2005, with >=30 days of provincial drug coverage. We evaluated the presence of >=3 outpatient NTM prescriptions during the first year and 5 years after PICU discharge.
RESULTS: Of 970 children, 23% had PICU AKI. In the 1st-5th years after discharge, 18% AKI vs. 10% non-AKI and 13% AKI vs. 4% non-AKI patients received >=3 NTM prescriptions, respectively. There was no association between PICU AKI and prescription of >=3 NTMs during the first year (adjusted RR 1.02 [95% CI 0.95-1.10]) nor in the first 5 years post-discharge (adjusted RR 1.04 [95%CI 0.96-1.12]).
CONCLUSIONS: By offering a better understanding of the current state of outpatient NTM prescription to children with AKI, our study is a step toward considering strategies such as knowledge translation interventions for decreasing NTM exposure and improving outcomes in children with AKI.
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1
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458.

Design and Methods of the Validating Injury to the Renal Transplant Using Urinary Signatures (VIRTUUS) Study in Children.
Kumar J, Contrepois K, Snyder M, Grimm PC, Moudgil A, Smith JM, Bobrowski AE, Verghese PS, Hooper D, Ingulli E, Lestz R, Weng P, Reason JL, Blydt-Hansen TD, Suthanthiran M, Keating B, Amaral S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Transplantation Direct. 7(12):e791, 2021 Dec.
[Journal Article]
UI: 34805493
Lack of noninvasive diagnostic and prognostic biomarkers to reliably detect early allograft injury poses a major hindrance to long-term allograft survival in pediatric kidney transplant recipients. METHODS: Validating Injury to the Renal Transplant Using Urinary Signatures Children's Study, a North American multicenter prospective cohort study of pediatric kidney transplant recipients, aims to validate urinary cell mRNA and metabolite profiles that were diagnostic and prognostic of acute cellular rejection (ACR) and BK virus nephropathy (BKVN) in adult kidney transplant recipients in Clinical Trials in Organ Transplantation-4. Specifically, we are investigating: (1) whether a urinary cell mRNA 3-gene signature (18S-normalized CD3epsilon, CXCL10 mRNA, and 18S ribosomal RNA) discriminates biopsies with versus without ACR, (2) whether a combined metabolite profile with the 3-gene signature increases sensitivity and specificity of diagnosis and prognostication of ACR, and (3) whether BKV-VP1 mRNA levels in urinary cells are diagnostic of BKVN and prognostic for allograft failure.
RESULTS: To date, 204 subjects are enrolled, with 1405 urine samples, including 144 biopsy-associated samples. Among 424 urine samples processed for mRNA, the median A260:280 ratio (RNA purity) was 1.91, comparable with Clinical Trials in Organ Transplantation-4 (median 1.82). The quality control failure rate was 10%. Preliminary results from urine supernatant showed that our metabolomics platform successfully captured a broad array of metabolites. Clustering of pool samples and overlay of samples from various batches demonstrated platform robustness. No study site effect was noted.

CONCLUSIONS: Multicenter efforts to ascertain urinary biomarkers in pediatric kidney transplant recipients are feasible with high-quality control. Further study will inform whether these signatures are discriminatory and predictive for rejection and infection.

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1
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459.

Longitudinal Changes in Serum Creatinine Levels and Urinary Biomarkers in Late Preterm Infants during the First Postnatal Week: Association with Acute Kidney Injury and Treatment with Aminoglycoside.
Lee SY, Moon JE, Park SH
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Children. 8(10), 2021 Oct 09.
[Journal Article]

UI: 34682161
We aimed to determine the incidence of acute kidney injury (AKI) and longitudinal changes in SCr levels and urinary biomarkers associated with AKI and aminoglycoside (AG) medication during the first week of life of late preterm infants. Urine biomarkers and SCr were measured in thirty late preterm infants on days one, two, five, and seven postnatal. Urine biomarkers included neutrophil gelatinase-associated lipocalin (NGAL), monocyte chemotactic protein-1 (MCP-1), epidermal growth factor (EGF), Tamm-Horsfall glycoprotein (THP), and liver fatty-acid-binding protein (L-FABP). Gestational age was positively correlated with SCr levels at birth, but inversely correlated with SCr levels at day five and day seven. Eighteen (60%) infants had stage 1 AKI, and twenty (67%) infants were treated with AGs. Infants with AKI had lower gestational age and lower birth weight than those without AKI. Urinary biomarkers adjusted according to uCr levels in infants with AKI were not statistically different from those in infants without AKI. There were no significant differences in incidence of AKI, and SCr levels during and after cessation of AG treatment. The uMCP-1/Cr ratio at days five and seven was higher in infants treated with AG than in non-treated infants.
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1
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Year of Publication
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460.

Spontaneous Bladder Rupture after Normal Vaginal Delivery: Description of a Rare Complication and Systematic Review of the Literature. [Review]
Stabile G, Cracco F, De Santo D, Zinicola G, Romano F, De Manzini N, Scomersi S, Ricci G
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Diagnostics. 11(10), 2021 Oct 13.
[Journal Article. Review]
UI: 34679583

OBJECTIVE: To identify the possible causes of spontaneous bladder rupture after normal vaginal delivery and to propose a diagnostic and therapeutic algorithm.
MATERIAL AND METHODS: MEDLINE (PubMed), Web of Science and Scopus databases were searched up to August 2020. Manuscripts considered were published from 1990 and only English articles were included. The research strategy adopted included the following terms: (bladder rupture) AND (spontaneous) AND (delivery). 103 studies were identified. Duplicates were found through an independent manual screening. Subsequently, two authors independently screened the full text of articles and excluded those not pertinent to the topic. Discrepancies were resolved by consensus. Finally, thirteen studies were included.
RESULTS: PRISMA guidelines were followed. For each study, fetal weight, catheterization during labor, parity, maternal age, occurrence time, previous abdominal or pelvic surgery, symptoms complained of, diagnostic methods, and treatment were considered. Median age was 26.0 (range 20-34 years); median presentation time was 3.0 days after delivery (range 1-20 days); and median newborn weight was 3227.0 g (range 2685-3600 g). Catheterization during labor was reported only in four of the thirteen cases (30.8%) identified. The symptoms most frequently complained of were abdominal pain and distension, fever, oliguria, haematuria and vomiting. Instrumental diagnosis was performed using X-rays in five cases and computerized tomography in six cases. Ultrasound was chosen in five cases as a first diagnostic tool. In two cases, cystography was performed. Treatment was always laparotomic repair of the visceral defect.
CONCLUSION: Abdominal pain, increased creatinine and other signs of kidney failure on blood tests should lead to suspicion of this complication. Cystourethrography is regarded as a procedure of choice, but a first ultrasound approach is recommended. The main factor for the therapeutic choice is the intraperitoneal or extraperitoneal rupture of the bladder. Classical management for intraperitoneal rupture of the bladder is surgical repair and urinary rest.
Version ID
1
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461.

Solving an unusual case of acute kidney injury: Answers.
Garg U, Taboada E, Kurzinski KL, Frazee CC, Weidemann DK, Srivastava T
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Pediatric Nephrology. 36(12):4137-4140, 2021 12.
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462.

Solving an unusual case of acute kidney injury: Questions.

Garg U, Taboada E, Kurzinski KL, Frazee CC, Weidemann DK, Srivastava T
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Pediatric Nephrology. 36(12):4135-4136, 2021 12.
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UI: 34606003
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463.

Urinary Biomarkers of Renal Injury KIM-1 and NGAL: Reference Intervals for Healthy Pediatric Population in Sri Lanka.
De Silva PMCS, Gunasekara TDKSC, Gunarathna SD, Sandamini PMMA, Pinipa RAI, Ekanayake EMDV, Thakshila WAKG, Jayasinghe SS, Chandana EPS, Jayasundara N
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Children. 8(8), 2021 Aug 09.
[Journal Article]

UI: 34438575
Emerging renal biomarkers (e.g., kidney injury molecule-1 (KIM-1) and neutrophil gelatinase-associated lipocalin (NGAL)) are thought to be highly sensitive in diagnosing renal injury. However, global data on reference intervals for emerging biomarkers in younger populations are lacking. Here, we aimed to determine reference intervals for KIM-1 and NGAL across a pediatric population in Sri Lanka; a country significantly impacted by the emergence of chronic kidney disease of unexplained etiology (CKDu). Urine samples were collected from children (10-18 years) with no prior record of renal diseases from the dry climatic zone of Sri Lanka (N = 909). Urinary KIM-1 and NGAL concentrations were determined using the enzyme-linked immunosorbent assay (ELISA) and adjusted to urinary creatinine. Biomarker levels were stratified by age and gender, and reference intervals derived with quantile regression (2.5th, 50th, and 97.5th quantiles) were expressed at 95% CI. The range of median reference intervals for urinary KIM-1 and NGAL in children were 0.081-0.426 ng/mg Cr, 2.966-4.850 ng/mg Cr for males, and 0.0780-0.5076 ng/mg Cr, 2.0850-3.4960 ng/mg Cr for females, respectively. Renal biomarkers showed weak correlations with age, gender, ACR, and BMI. Our findings provide reference intervals to facilitate screening to detect early renal damage, especially in rural communities that are impacted by CKDu.
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1
Status
PubMed-not-MEDLINE
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464.

Enalapril and Acute Kidney Injury in a Hypertensive Premature Newborn - Should It Be Used or Not?.
Kanic Z, Kanic V, Hojnik T
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
The Journal of Pediatric Pharmacology & Therapeutics. 26(6):638-642, 2021.
[Journal Article]
UI: 34421415
Extremely low birth weight infants (birth weight <=1000 g) have a significantly lower nephron number. The glomerular filtration rate (GFR) is usually sufficient under normal conditions but is unable to meet the needs during stress, which results in acute kidney injury (AKI). We describe the case of an extremely low birth weight infant (970 g) with a gestational age of 27 weeks (immature preterm) who was mechanically ventilated because of hyaline membrane disease. AKI with anuria and a rise in serum creatinine to 3.4 mg/dL developed in the second week. Diuresis was restored after diuretics and dopamine were administered intravenously and kidney function recovered in the next two weeks. However, he slowly became hypertensive, so intravenous enalapril was introduced in the 6th week. After the third dose, he suffered another AKI. After cessation of enalapril, kidney function recovered over the next few days. Although angiotensin-converting enzyme inhibitors (ACEi) may cause kidney injury, it can be used with great caution in the treatment of hypertension or heart failure in preterm infants. There remains a real dilemma of whether enalapril should be used in extremely low birth weight immature infants.

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Kanic, Zlatka, Kanic, Vojko, Hojnik, Tina
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465.

Long-Term Renal Outcomes in Children With Acute Kidney Injury Post Cardiac Surgery.
Sethi SK, Sharma R, Gupta A, Tibrewal A, Akole R, Dhir R, Soni K, Bansal SB, Jha PK, Bhan A, Kher V, Raina R
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
KI Reports. 6(7):1850-1857, 2021 Jul.
[Journal Article]
UI: 34307979
INTRODUCTION: The long-term renal outcomes of survivors of pediatric acute kidney injury (AKI) are varied within the current literature, and we aim to establish long-term renal outcomes for

pediatric patients after cardiac surgery. We studied long-term renal outcomes and markers of kidney injury in pediatric patients after congenital cardiac surgery.
METHODS: In a prospective case-control observational study (the Renal Outcomes in Children with acute Kidney injury post cardiac Surgery [ROCKS] trial) we reviewed all children who underwent cardiac surgery on cardiopulmonary bypass (December 2010-2017).
RESULTS: During the study period, 2035 patients underwent cardiac surgery, of whom 9.8% developed AKI postoperatively. Forty-four patients who had postoperative AKI had a long-term follow-up, met our inclusion criteria, and were compared with 49 control subjects. We conducted a univariate analysis of reported parameters. At a median follow-up of 41 months, the cases had significantly higher urine levels of neutrophil gelatinase-associated lipocalin (NGAL), interleukin-18 (IL-18), and kidney injury molecule-1 (KIM-1). The biomarkers remained higher after adjusting for the urine creatinine, and the ratio of urine KIM-1/urine creatinine was significantly higher among cases. None of the patients had proteinuria or hypertension on follow-up. The presence of AKI, AKI stage, and younger age were not associated with the occurrence of low glomerular filtration rate (GFR) at follow-up.
CONCLUSIONS: Urinary biomarker abnormalities persist years after a congenital cardiac surgery in children, who may have a low GFR on follow-up. The presence of AKI, AKI stage, and younger age at surgery are not associated with the occurrence of low GFR at follow-up. Children with a higher surgical complexity score have lower GFR on follow-up.
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1
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466.

Poor Glycemic Control Can Increase the Plasma Kidney Injury Molecule-1 Concentration in Normoalbuminuric Children and Adolescents with Diabetes Mellitus.
Ahn MB, Cho KS, Kim SK, Kim SH, Cho WK, Jung MH, Suh JS, Suh BK
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Children. 8(5), 2021 May 19.
[Journal Article]
UI: 34069734
Diabetic nephropathy (DN) is a serious microvascular complication in childhood diabetes and microalbuminuria has been a solid indicator in the assessment of DN. Nevertheless, renal injury may still occur in the presence of normoalbuminuria (NA) and various tubular injury biomarkers have been proposed to assess such damage. This case-controlled study aimed to evaluate plasma and urinary neutrophil gelatinase-associated lipocalin and kidney injury molecule-1 (KIM-1) levels in diabetic children particularly in those with normo- and high-NA stages and determine their role in predicting DN. Fifty-four children/adolescents with type 1 and 2 diabetes and forty-four controls aged 7-18 years were included. The baseline clinical and laboratory characteristics including plasma and urinary biomarkers were compared. The plasma KIM-1 levels were significantly higher in diabetic children than in the controls and in high-NA children than normo-NA children. Glycosylated hemoglobin (HbA1c) was identified as a significant risk factor for increased plasma KIM-1. The optimal cutoff for HbA1c when the plasma KIM-1 was > 23.10 pg/mL was 6.75% with an area under the curve of 0.77. For diabetic children with mildly increased albuminuria, the plasma KIM-1 complementary to MA may help increase the yield of detecting DN. Our findings also suggested an HbA1c cutoff of 6.75% correlated with increased plasma KIM-1.
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PMID

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Year of Publication
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467.

Acute Tramadol Ingestion With Transient Acute Kidney Injury in an Adolescent Female.
Mike TB, DeVault H, Blackford MG
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
The Journal of Pediatric Pharmacology & Therapeutics. 26(4):411-413, 2021.
[Journal Article]
UI: 34035687
Renal toxicity has been described with tramadol overdoses; however, it is typically associated with rhabdomyolysis, multiorgan failure and/or mortality. Our patient was a 16-year-old female who was evaluated following an intentional tramadol ingestion, estimated 27.8 to 37 mg/kg, and had a seizure prior to arriving at our health care facility. Her symptoms were consistent with a tramadol ingestion; however, she developed transient acute renal impairment (peak serum creatinine, 4.04 mg/dL), which improved over 6 days with minimal intervention. No other causes were identified to explain her acute renal impairment thus it was attributed to the tramadol overdose. Providers should be aware that transient acute renal impairment could occur with an intentional tramadol ingestion and may not require aggressive intervention.

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1
Status
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Mike, Thomas B, DeVault, Heather, Blackford, Martha G
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Year of Publication
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468.

Review of acute kidney injury and continuous renal replacement therapy in pediatric extracorporeal membrane oxygenation. [Review]
Jenks C, Raman L, Dhar A
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Indian Journal of Thoracic & Cardiovascular Surgery. 37(Suppl 2):254-260, 2021 Apr.
[Journal Article. Review]
UI: 33967449
PURPOSE: To review the relevant literature of acute kidney injury (AKI) and continuous renal replacement therapy (CRRT) as it relates to pediatric extracorporeal membrane oxygenation (ECMO).

METHODS: Available online relevant literature.
RESULTS: ECMO is a therapeutic modality utilized to support patients with refractory respiratory and/or cardiac failure. AKI and fluid overload (FO) are frequently observed in this patient population. There are multiple modalities that can be utilized for AKI and FO which include the following: diuretics, in-line hemofiltration, and CRRT. There are multiple considerations when using CRRT with ECMO including access, CRRT flows, hemolysis, anticoagulation, and CRRT termination.
CONCLUSION: While each ECMO center has its own set of equipment, experiences, and practices, it is imperative that the international ECMO community continues to work together to provide an evidence-based approach to address the morbidity and mortality associated with AKI and FO.

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469.

Corrigendum to: Age appropriate reference intervals for eight kidney function and injury markers in infants, children and adolescents.
van Donge T, Staub E, Atkinson A, Gotta V, van den Anker J, Risch L, Welzel T, Pfister M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Clinical Chemistry & Laboratory Medicine. 59(5):1007, 2021 Mar 02.
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Comments
Erratum for (EFR)
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470.

Surprise diagnosis in an adolescent case with chronic kidney damage: Questions.
Dogan G, Akinci N, Sharifov R, Cakir FB, Senturk H, Turk HM
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 36(7):1995-1996, 2021 Jul.
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Year of Publication
2021

471.

A rare cause of recurrent acute kidney injury in a 3-year-old girl: Questions.
Kar S, Krishnamurthy S, Karunakar P, Maya M, Thangaraj A, Agarwal Y
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 36(7):2031-2032, 2021 Jul.
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472.

Acute Kidney Injury in Multisystem Inflammatory Syndrome in Children (MIS-C).
Ozlu SG, Bayhan GI
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
SN Comprehensive Clinical Medicine. 3(1):36-37, 2021.
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7778693
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473.

An easily overlooked cause of acute kidney injury: Questions.
Ozlu SG, Aydin Z, Ugurlu AK, Boyraz M, Bayrakci US
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 36(7):2013, 2021 Jul.
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474.

An easily overlooked cause of acute kidney injury: Answers.
Ozlu SG, Aydin Z, Ugurlu AK, Boyraz M, Bayrakci US
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 36(7):2015-2017, 2021 Jul.
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Year of Publication
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475.

Acute kidney injury in an adolescent: Answers.
Nalcacioglu H, Tekcan D, Can Meydan B, Ozkaya O
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 36(2):315-317, 2021 02.
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476.

Acute kidney injury in an adolescent: Questions.
Nalcacioglu H, Tekcan D, Can Meydan B, Ozkaya O
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
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Year of Publication

2021

477.

Acute Kidney Injury Requiring Dialysis and Incident Dialysis Patient Outcomes in US Outpatient Dialysis Facilities.
Dahlerus C, Segal JH, He K, Wu W, Chen S, Shearon TH, Sun Y, Pearson A, Li X, Messana JM
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Clinical Journal of The American Society of Nephrology: CJASN. 16(6):853-861, 2021 06.
[Comparative Study. Journal Article. Research Support, Non-U.S. Gov't]
UI: 34045300
BACKGROUND AND OBJECTIVES: About 30% of patients with AKI may require ongoing dialysis in the outpatient setting after hospital discharge. A 2017 Centers for Medicare & Medicaid Services policy change allows Medicare beneficiaries with AKI requiring dialysis to receive outpatient treatment in dialysis facilities. Outcomes for these patients have not been reported. We compare patient characteristics and mortality among patients with AKI requiring dialysis and patients without AKI requiring incident dialysis.
DESIGN, SETTING, PARTICIPANTS, & MEASUREMENTS: We used a retrospective cohort design with 2017 Medicare claims to follow outpatients with AKI requiring dialysis and patients without AKI requiring incident dialysis up to 365 days. Outcomes are unadjusted and adjusted mortality using Kaplan-Meier estimation for unadjusted survival probability, Poisson regression for monthly mortality, and Cox proportional hazards modeling for adjusted mortality.
RESULTS: In total, 10,821 of 401,973 (3%) Medicare patients requiring dialysis had at least one AKI claim, and 52,626 patients were Medicare patients without AKI requiring incident dialysis. Patients with AKI requiring dialysis were more likely to be White (76% versus 70%), non-Hispanic (92% versus 87%), and age 60 or older (82% versus 72%) compared with patients without AKI requiring incident dialysis. Unadjusted mortality was markedly higher for patients with AKI requiring dialysis compared with patients without AKI requiring incident dialysis. Adjusted mortality differences between both cohorts persisted through month 4 of the follow-up period (all P=0.01), then, they declined and were no longer statistically significant. Adjusted monthly mortality stratified by Black and other race between patients with AKI requiring dialysis and patients without AKI requiring incident dialysis was lower throughout month 4 (1.5 versus 0.60, 1.20 versus 0.84, 1.00 versus 0.80, and 0.95 versus 0.74; all P<0.001), which persisted through month 7. Overall adjusted mortality risk was 22% higher for patients with AKI requiring dialysis (1.22; 95% confidence interval, 1.17 to 1.27).
CONCLUSIONS: In fully adjusted analyses, patients with AKI requiring dialysis had higher early mortality compared with patients without AKI requiring incident dialysis, but these differences declined after several months. Differences were also observed by age, race, and ethnicity within both patient cohorts.

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1
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Comments
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Year of Publication
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478.

Sickle cell nephropathy. Clinical manifestations and new mechanisms involved in kidney injury. [Review]
Payan-Pernia S, Ruiz Llobet A, Remacha Sevilla AF, Egido J, Ballarin Castan JA, Moreno JA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Nefrologia. 41(4):373-382, 2021 Jul-Aug.
[Journal Article. Review]
UI: 36165106
Kidney problems are among the most common complications in sickle cell disease (SCD). They occur early in childhood and are one of the main factors related to mortality in these patients. The main underlying pathogenic mechanisms are vaso-occlusion and haemolysis. The renal medulla has ideal conditions for the sickling of red cells due to its low partial pressure of oxygen, high osmolarity and acidic pH. Initially, sickle-cell formation in the vasa recta of the renal medulla causes hyposthenuria. This is universal and appears in early childhood. Microscopic and macroscopic haematuria also occur, in part related to renal papillary necrosis when the infarcts are extensive. Release of prostaglandins in the renal medulla due to ischaemia leads to an increase in the glomerular filtration rate (GFR). Adaptively, sodium reabsorption in the proximal tubule increases, accompanied by increased creatinine secretion. Therefore, the GFR estimated from creatinine may be overestimated. Focal segmental glomerulosclerosis is the most common

glomerular disease. Albuminuria is very common and reduction has been found in 72.8% of subjects treated with ACE inhibitors or ARB. Recent evidence suggests that free haemoglobin has harmful effects on podocytes, and may be a mechanism involved in impaired kidney function in these patients. These effects need to be better studied in SCD, as they could provide a therapeutic alternative in sickle cell nephropathy.

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479.

The incidence, risk factors and impact of acute kidney injury in hospitalized patients due to COVID-19. Incidencia, factores de riesgo e impacto de la lesion renal aguda en pacientes hospitalizados por COVID-19. <Incidencia, factores de riesgo e impacto de la lesion renal aguda en pacientes hospitalizados por COVID-19.>
Fernandez P, Saad EJ, Douthat Barrionuevo A, Marucco FA, Heredia MC, Tarditi Barra A, Rodriguez Bonazzi ST, Zlotogora M, Correa Barovero MA, Villada SM, Maldonado JP, Alaye ML, Caeiro JP, Albertini RA, De la Fuente J, Douthat WG
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Medicina. 81(6):922-930, 2021.
[Journal Article]
UI: 34875589
The incidence of acute kidney injury (AKI) in hospitalized patients with COVID-19 is variable, being associated with worse outcomes. The objectives of the study were to evaluate the

incidence, risk factors (considering demographic characteristics, comorbidities, initial clinical presentation and associated complications) and impact of AKI in subjects hospitalized for COVID-19 in two third-level hospitals in Cordoba, Argentina. A retrospective cohort study was conducted. We included 448 adults who were consecutively hospitalized for COVID-19 between March 3 and October 31, 2020 and were followed throughout the hospitalization. The incidence of AKI was 19% (n = 85; stage I = 43, stage II = 17, and stage III = 25, 18 required renal replacement therapy). In the multivariate analysis, the variables that were independently associated with AKI were: age (for every 10 years, adjusted odd ratio [95%CI] = 1.30 [1.04-1.63], p = 0.022), history of chronic kidney disease -CKD- (9.92 [4.52-21.77], p < 0.001), blood neutrophil count at admission -BNCA- (for every increase of 1000 BNCA, 1.09 [1.01-1.18], p = 0.037) and requirement for mechanical ventilation -MV- (6.69 [2.24-19.90], p = 0.001). AKI was associated with longer hospitalization, higher admission (63.5 vs. 29.7%; p < 0.001) and longer stay in the intensive care unit, a positive association with respiratory bacterial superinfection, sepsis, respiratory distress syndrome, MV requirement and mortality (mortality without AK I = 12.4% vs with AKI = 47.1%; stage I = 26%, stage II = 41% and stage III = 88%; p < 0.001). AKI was independently associated with higher mortality (3.32 [1.6-6.9], p = 0.001). In conclusion, the incidence of AKI in adults hospitalized for COVID-19 was 19% and had a clear impact on morbidity and mortality. The independent risk factors for AKI were: Age, CKD, BNCA and MV.
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1
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Los objetivos del estudio fueron evaluar la incidencia, los factores de riesgo (considerando caracteristicas demograficas, comorbilidades, presentacion clinica inicial y complicaciones asociadas) y el impacto de la lesion renal aguda -LRA- en sujetos hospitalizados por COVID-19 en dos instituciones de alta complejidad de Cordoba, Argentina. Se realizo un estudio de cohorte retrospectivo. Se incluyeron 448 adultos que fueron hospitalizados por COVID-19 entre el 3 de marzo y el 31 de octubre del 2020 con seguimiento durante toda la hospitalizacion. La incidencia de LRA fue 19% (estadio I = 43, estadio II = 17 y estadio III = 25, 18 requirieron dialisis). Las variables que se asociaron de manera independiente con el LRA fueron: edad (por cada 10 anos, odd ratio ajustado [IC95%] = 1.30 [1.04-1.63], p = 0.022), enfermedad renal cronica -ERC- (9.92 [4.52-21.77], p < 0.001), recuento de neutrofilos sanguineos al ingreso -NSI- (por cada incremento de 1000 NSI, 1.09 [1.01-1.18], p = 0.037) y asistencia respiratoria mecanica -ARM- (6.69 [2.24-19.90], p = 0.001). Los sujetos con LRA presentaron una internacion mas prolongada, mayor requerimiento (63.5 vs. 29.7%; p < 0.001) y estadia mas prolongada en unidad de cuidados intensivos, una asociacion positiva con sobreinfeccion respiratoria bacteriana, sepsis, sindrome de distres respiratorio, requerimiento de ARM y mortalidad (mortalidad sin LRA 12.4% vs. con LRA 47.1%; estadio I = 26%, estadio II = 41% y estadio III = 88%; p < 0.001). LRA se asocio de manera independiente a mayor mortalidad (3.3 [1.6-6.9], p = 0.001). En conclusion, la incidencia de LRA en adultos hospitalizados por COVID-19 fue del 19% y tuvo un claro impacto en la morbi-mortalidad. Los factores de riesgo independientes de LRA fueron: edad, ERC, NSI y ARM.
Language: Spanish
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480.

Urinary C3 levels associated with sepsis and acute kidney injury-A pilot study.
Pajenda S, Zawedde F, Kapps S, Wagner L, Schmidt A, Winnicki W, O'Connell D, Gerges D
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present

PLoS ONE [Electronic Resource]. 16(11):e0259777, 2021.
[Journal Article]
UI: 34767613
Acute kidney injury (AKI) is an abrupt deterioration of renal function often caused by severe clinical disease such as sepsis, and patients require intensive care. Acute-phase parameters for systemic inflammation are well established and used in routine clinical diagnosis, but no such parameters are known for AKI and inflammation at the local site of tissue damage, namely the nephron. Therefore, we sought to investigate complement factors C3a/C3 in urine and urinary sediment cells. After the development of a C3a/C3-specific mouse monoclonal antibody (3F7E2), urine excretion from ICU sepsis patients was examined by dot blot and immunoblotting. This C3a/C3 ELISA and a C3a ELISA were used to obtain quantitative data over 24 hours for 6 consecutive days. Urine sediment cells were analyzed for topology of expression. Patients with severe infections (n = 85) showed peak levels of C3a/C3 on the second day of ICU treatment. The majority (n = 59) showed C3a/C3 levels above 20 mug/ml at least once in the first 6 days after admission. C3a was detectable on all 6 days. Peak C3a/C3 levels correlated negatively with peak C-reactive protein (CRP) levels. No relationship was found between peak C3a/C3 with peak leukocyte count, age, or AKI stage. Analysis of urine sediment cells identified C3a/C3-producing epithelial cells with reticular staining patterns and cells with large-granular staining. Opsonized bacteria were detected in patients with urinary tract infections. In critically ill sepsis patients with AKI, urinary C3a/C3 inversely correlated with serum CRP. Whether urinary C3a/C3 has a protective function through autophagy, as previously shown for cisplatin exposure, or is a by-product of sepsis caused by pathogenic stimuli to the kidney must remain open in this study. However, our data suggest that C3a/C3 may function as an inverse acute-phase parameter that originates in the kidney and is detectable in urine.
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1
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2021

481.

Spontaneous Renal Rupture During Pregnancy: A Contemporary Literature Review and Guide to Management. [Review]
Cardenas RT, Doiron TE, Ramseyer AM, Pates JA, Po WD, Magann EF
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Obstetrical & Gynecological Survey. 76(9):550-565, 2021 Sep.
[Journal Article. Review]
UI: 34586421
IMPORTANCE: Spontaneous renal rupture is a rare pregnancy complication, which requires a high index of suspicion for a timely diagnosis to prevent a poor maternal or fetal outcome.
OBJECTIVE: This review highlights risk factors, pathophysiology, symptoms, diagnosis, management, and complications of spontaneous renal rupture in pregnancy.
EVIDENCE ACQUISITION: A literature search was carried out by research librarians using the PubMed and Web of Science search engines at 2 universities. Fifty cases of spontaneous renal rupture in pregnancy were identified and are the basis of this review.
RESULTS: The first case of spontaneous renal rupture in pregnancy was reported in 1947. Rupture occurs more commonly on the right side and during the third trimester. Pain was a reported symptom in every case reviewed. Treatment usually consists of stent or nephrostomy tube placement. Conservative management has been reported.
CONCLUSIONS: When diagnosed early and managed appropriately, maternal and fetal outcomes are favorable. Preterm delivery is the most common complication.
RELEVANCE: Our aim is to increase the awareness of spontaneous renal rupture in pregnancy and its associated complications in order to improve an accurate diagnosis and maternal and fetal outcomes.
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1
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Year of Publication
2021

482.

Derivation and External Validation of a Risk Index for Predicting Acute Kidney Injury Requiring Kidney Replacement Therapy After Noncardiac Surgery.
Wilson TA, de Koning L, Quinn RR, Zarnke KB, McArthur E, Iskander C, Roshanov PS, Garg AX, Hemmelgarn BR, Pannu N, James MT
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JAMA Network Open. 4(8):e2121901, 2021 08 02.
[Journal Article. Research Support, Non-U.S. Gov't. Validation Study]
UI: 34424303
Importance: Severe acute kidney injury (AKI) is a serious postoperative complication. A tool for predicting the risk of AKI requiring kidney replacement therapy (KRT) after major noncardiac surgery might assist with patient counseling and targeted use of measures to reduce this risk.
Objective: To derive and validate a predictive model for AKI requiring KRT after major noncardiac surgery.
Design, Setting, and Participants: In this prognostic study, 5 risk prediction models were derived and internally validated in a population-based cohort of adults without preexisting kidney failure who underwent noncardiac surgery in Alberta, Canada, between January 1, 2004, and December 31, 2013. The best performing model and corresponding risk index were externally validated in a population-based cohort of adults without preexisting kidney failure who underwent noncardiac surgery in Ontario, Canada, between January 1, 2007, and December 31, 2017. Data analysis was conducted from September 1, 2019, to May 31, 2021.
Exposures: Demographic characteristics, surgery type, laboratory measures, and comorbidities before surgery.
Main Outcomes and Measures: Acute kidney injury requiring KRT within 14 days after surgery. Discrimination was assessed using the C statistic; calibration was assessed using calibration intercept and slope. Logistic recalibration was used to optimize model calibration in the external validation cohort.
Results: The derivation cohort included 92114 patients (52.2% female; mean [SD] age, 62.3 [18.0] years), and the external validation cohort included 709086 patients (50.8% female; mean [SD] age, 61.0 [16.0] years). A total of 529 patients (0.6%) developed postoperative AKI requiring KRT in the derivation cohort, and 2956 (0.4%) developed postoperative AKI requiring KRT in the external validation cohort. The following factors were consistently associated with the risk of AKI requiring KRT: younger age (40-69 years: odds ratio [OR], 2.07 [95% CI, 1.69-2.53]; <40 years: OR, 3.73 [95% CI, 2.61-5.33]), male sex (OR, 1.55; 95% CI, 1.28-1.87), surgery type (colorectal: OR, 4.86 [95% CI, 3.28-7.18]; liver or pancreatic: OR, 6.46 [95% CI, 3.85-10.83]; other abdominal: OR, 2.19 [95% CI, 1.66-2.89]; abdominal aortic aneurysm repair: OR, 19.34 [95% CI, 14.31-26.14]; other vascular: OR, 7.30 [95% CI, 5.48-9.73]; thoracic: OR, 3.41 [95% CI, 2.07-5.59]), lower estimated glomerular filtration rate (OR, 0.97; 95% CI, 0.97-0.97 per 1 mL/min/1.73 m2 increase), lower hemoglobin concentration (OR, 0.99; 95% CI, 0.98-0.99 per 0.1 g/dL increase), albuminuria (mild: OR, 1.88 [95% CI, 1.52-2.33]; heavy: OR, 3.74 [95% CI, 2.98-4.69]), history of myocardial infarction (OR, 1.63; 95% CI, 1.32-2.03), and liver disease (mild: OR, 2.32 [95% CI, 1.66-3.24]; moderate or severe: OR, 4.96 [95% CI, 3.58-6.85]). In external validation, a final model including these variables showed excellent discrimination (C statistic, 0.95; 95% CI, 0.95-0.96), with sensitivity of 21.2%, specificity of 99.9%, positive predictive value of 38.1%, and negative predictive value of 99.7% at a predicted risk threshold of 10% or greater.
Conclusions and Relevance: The findings suggest that this risk model can predict AKI requiring KRT after noncardiac surgery using routine preoperative data. The model may be feasible for implementation in clinical perioperative risk stratification for severe AKI.
Version ID
1
Status
MEDLINE
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483.

Acute kidney injury identification for pharmacoepidemiologic studies: Use of laboratory electronic acute kidney injury alerts versus electronic health records in Hospital Episode Statistics.
Savino M, Plumb L, Casula A, Evans K, Wong E, Kolhe N, Medcalf JF, Nitsch D
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Pharmacoepidemiology & Drug Safety. 30(12):1687-1695, 2021 12.
[Journal Article]
UI: 34418198
PURPOSE: A laboratory-based acute kidney injury (AKI) electronic-alert (e-alert) system, with e-alerts sent to the UK Renal Registry (UKRR) and collated in a master patient index (MPI), has

recently been implemented in England. The aim of this study was to determine the degree of correspondence between the UKRR-MPI and AKI International Classification Disease-10 (ICD-10) N17 coding in Hospital Episode Statistics (HES) and whether hospital N17 coding correlated with 30-day mortality and emergency re-admission after AKI.
METHODS: AKI e-alerts in people aged >=18 years, collated in the UKRR-MPI during 2017, were linked to HES data to identify a hospitalised AKI population. Multivariable logistic regression was used to analyse associations between absence/presence of N17 codes and clinicodemographic features. Correlation of the percentage coded with N17 and 30-day mortality and emergency re-admission after AKI were calculated at hospital level.
RESULTS: In 2017, there were 301 540 adult episodes of hospitalised AKI in England. AKI severity was positively associated with coding in HES, with a high degree of inter-hospital variability-AKI stage 1 mean of 48.2% [SD 14.0], versus AKI stage 3 mean of 83.3% [SD 7.3]. N17 coding in HES depended on demographic features, especially age (18-29 years vs. >=85 years OR 0.22, 95% CI 0.21-0.23), as well as sex and ethnicity. There was no evidence of association between the proportion of episodes coded for AKI with short-term AKI outcomes.
CONCLUSION: Coding of AKI in HES is influenced by many factors that result in an underestimation of AKI. Using e-alerts to triangulate the true incidence of AKI could provide a better understanding of the factors that affect hospital coding, potentially leading to improved coding, patient care and pharmacoepidemiologic research.

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484.

Safety, tolerability, and efficacy of LiRIS 400 mg in women with interstitial cystitis/bladder pain syndrome with or without Hunner lesions.
Evans R, Kohan A, Moldwin R, Radecki D, Geib T, Peters KM
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Neurourology & Urodynamics. 40(7):1730-1739, 2021 09.
[Journal Article. Multicenter Study. Randomized Controlled Trial. Research Support, Non-U.S. Gov't]
UI: 34288094
AIMS: Two phase 2 studies were conducted to assess the efficacy and safety of lidocaine-releasing intravesical system (LiRIS) in patients with interstitial cystitis/bladder pain syndrome (IC/BPS) with (Study 001; NCT02395042) or without, (Study 002; NCT02411110) Hunner lesions (HL).
METHODS: Both were multicenter, randomized, double-blind, placebo-controlled, and enrolled women aged >=18 years. In Study 001, patients were randomized 2:1:1 to LiRIS 400 mg/LiRIS 400 mg, placebo/LiRIS 400 mg, or placebo/placebo for a continuous 28 (2 x 14)-day period. In Study 002, patients were randomized 1:1 to LiRIS 400 mg or placebo for a continuous (single treatment) 14-day period.
RESULTS: In total, 59 and 131 patients received treatment in Studies 001 and 002, respectively. There was no statistically significant difference in the primary endpoint, the change from baseline to Week 4 of follow-up post-removal in mean daily average bladder numeric rating scale (NRS) pain score in either study (Study 001: placebo/placebo, -1.6; LiRIS/LiRIS, -2.7, p = 0.142; placebo/LiRIS, -2.5, p = 0.319; Study 002: LiRIS -1.2; placebo, -1.5, p = 0.505). There was no statistically significant difference between groups in daily worst NRS pain score, number of micturitions/day or urgency episodes/day. There was no clear trend for reduction in number of HL for LiRIS vs placebo. The frequency of treatment-emergent adverse events was similar between treatment groups in both studies; most were mild or moderate intensity.
CONCLUSION: These studies did not demonstrate a treatment effect of LiRIS 400 mg compared with placebo, either in patients with IC/BPS with HL, or in those without HL.

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1
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485.

WIncidence, risk factors, and adverse outcomes of acute kidney injury in very premature neonates: a single center experience.
Ustun N
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Turkish Journal of Medical Sciences. 51(5):2641-2648, 2021 Oct.
[Journal Article]
UI: 34284537
BACKGROUND: Acute kidney injury (AKI) is a serious morbidity in premature neonates. The aim of this study was to determine the incidence of AKI and to evaluate its impact on morbidity and mortality in very premature infants.
METHODS: This retrospective cohort study was conducted in the neonatal intensive care unit (NICU). A total of 410 preterm infants who were born before 32 gestational weeks were screened and 318 were included in this analysis. AKI was defined according to the modified neonatal Kidney Disease: Improving Global Outcomes criteria.
RESULTS: The incidence of AKI was 32.1% (102/318). Regression analyses revealed that lower gestational age, vasopressor use, and hemodynamically significant patent ductus arteriosus were significantly associated with an increased risk for AKI. After adjustment for potential confounders, those with AKI had a higher risk of death before 36 weeks of corrected gestational age (adjusted hazard ratio: 3.02, 95% confidence interval 1.47- 6.22). Additionally, the AKI group had a higher rate of bronchopulmonary dysplasia (BPD) (46% vs. 24%, $p < 0.001$) and longer hospital stay with a mean difference of 38 days.
DISCUSSION: AKI is common in very premature neonates and associated with higher mortality, longer hospital stay, and BPD. Identification of risk factors and preventive strategies for AKI may improve the outcomes in this vulnerable population.
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486.

Blunt renal trauma-induced hypertension in pediatric patients: a single-center experience.
Marcou M, Galiano M, Jungert J, Rompel O, Kuwert T, Wullich B, Hirsch-Koch K
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present

Journal of pediatric urology. 17(5):737.e1-737.e9, 2021 Oct.
[Journal Article]
UI: 34274236
PURPOSE: Children have a greater chance of sustaining a renal injury than adults and higher odds of having a high-grade renal injury. Hypertension is a rare complication of blunt renal trauma, with risk being higher in cases of major renal trauma. We reviewed the cases of pediatric blunt renal trauma-induced hypertension in our tertiary referral center in an attempt to better understand this rare condition.
STUDY DESIGN: A retrospective evaluation of children under the age of 18 who were admitted to our department during the last 20 years and were diagnosed with blunt renal trauma.
RESULTS: Twenty-three children presented with blunt renal trauma, one of whom was treated with emergency nephrectomy. Four children (18%) developed post-traumatic hypertension. All four cases were associated with a reduction in blood flow to the kidney, either through injury to the renal artery (in three cases) or through extrinsic compression of the kidney by a large perirenal hematoma (Page kidney; in one case). The Page kidney case developed hypertension during the initial hospitalization, and it resolved spontaneously after five months through the gradual resorption of the perirenal hematoma. Among the three cases of renal artery injury, hypertension during the initial hospitalization was only observed in one case, with hypertension in the other two cases manifesting after two months and four years, respectively. All three cases of renal artery injury resulted in a complete loss of function of the injured kidney, and two cases were treated with nephrectomy. Following nephrectomy, the blood pressure level returned to normal within a few days.
DISCUSSION: Development of hypertension following a blunt renal trauma can be heterogenous, with the time of manifestation stretching between days after the accident and years thereafter. Children have a higher risk of renal trauma and, according to published data out of the National Trauma Data Bank, a 20-times higher risk of renal artery injury in comparison to the adult population. Large multicenter studies are required to answer the question of whether children are therefore more prone to blunt renal trauma-induced hypertension than adults.
CONCLUSIONS: Our study highlights the importance of blood pressure monitoring in children following blunt renal trauma, as post-traumatic hypertension can develop even years after the accident. In cases of a poorly functioning kidney, nephrectomy may be regarded as a curative therapy.

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487.

Gitelman syndrome with transient renal tubular damage in early childhood.
Sado M, Takano K, Kurata K, Kitahara M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatrics International. 63(10):1256-1258, 2021 Oct.
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Year of Publication
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488.

Self-identified Race and COVID-19-Associated Acute Kidney Injury and Inflammation: a Retrospective Cohort Study of Hospitalized Inner-City COVID-19 Patients.
Charoenngam N, Ilori TO, Holick MF, Hochberg NS, Apovian CM
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of General Internal Medicine. 36(11):3487-3496, 2021 11.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 34100227
BACKGROUND: Black individuals have been disproportionately affected by the coronavirus disease 2019 (COVID-19). However, it remains unclear whether there are any biological factors that predispose Black patients to COVID-19-related morbidity and mortality.
OBJECTIVE: To compare in-hospital morbidity, mortality, and inflammatory marker levels between Black and White hospitalized COVID-19 patients.

DESIGN AND PARTICIPANTS: This single-center retrospective cohort study analyzed data for Black and White patients aged >=18 years hospitalized with a positive SARS-CoV-2 PCR test between March 1, 2020, and August 4, 2020.
MAIN MEASURES: The exposure was self-identified race documented in the medical record. The primary outcome of was in-hospital death. Secondary outcomes included intensive care unit admission, hospital morbidities, and inflammatory marker levels.
KEY RESULTS: A total of 1,424 Black and White patients were identified. The mean +/- SD age was 56.1 +/- 17.4 years, and 663 (44.5%) were female. There were 683 (48.0%) Black and 741 (52.0%) White patients. In the univariate analysis, Black patients had longer hospital stays (8.1 +/- 10.2 vs. 6.7 +/- 8.3 days, p = 0.011) and tended to have higher rates of in-hospital death (11.0% vs. 7.3%), myocardial infarction (6.9% vs. 4.5%), pulmonary embolism (PE; 5.0% vs. 2.3%), and acute kidney injury (AKI; 39.4% vs. 23.1%) than White patients (p <0.05). However, after adjusting for potential confounders, only PE (adjusted odds ratio [aOR] 2.07, 95% CI, 1.13-3.79) and AKI (aOR 2.16, 95% CI, 1.57-2.97) were statistically significantly associated with Black race. In comparison with White patients, Black patients had statistically significantly higher peak plasma D-dimer (standardized beta = 0.10), erythrocyte sedimentation rate (standardized beta = 0.13), ferritin (standardized beta = 0.09), and lactate dehydrogenase (standardized beta = 0.11), after adjusting for potential confounders (p<0.05).
CONCLUSIONS: Black hospitalized COVID-19 patients had increased risks of developing PE and AKI and higher inflammatory marker levels compared with White patients. This observation may be explained by differences in the prevalence and severity of underlying comorbidities and other unmeasured biologic risk factors between Black and White patients. Future research is needed to investigate the mechanism of these observed differences in outcomes of severe COVID-19 infection in Black versus White patients.

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1
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489.

Acute kidney injury: Incidence, risk factors, and outcomes in severe COVID-19 patients.
de Almeida DC, Franco MDCP, Dos Santos DRP, Santos MC, Maltoni IS, Mascotte F, de Souza AA, Pietrobom PM, Medeiros EA, Ferreira PRA, Machado FR, Goes MA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
PLoS ONE [Electronic Resource]. 16(5):e0251048, 2021.
[Journal Article]
UI: 34033655
BACKGROUND: COVID-19 is a multisystemic disorder that frequently causes acute kidney injury (AKI). However, the precise clinical and biochemical variables associated with AKI progression in patients with severe COVID-19 remain unclear.
METHODS: We performed a retrospective study on 278 hospitalized patients who were admitted to the ward and intensive care unit (ICU) with COVID-19 between March 2020 and June 2020, at the University Hospital, Sao Paulo, Brazil. Patients aged >= 18 years with COVID-19 confirmed on RT-PCR were included. AKI was defined according to the Kidney Disease Improving Global Outcomes (KDIGO) criteria. We evaluated the incidence of AKI, several clinical variables, medicines used, and outcomes in two sub-groups: COVID-19 patients with AKI (Cov-AKI), and COVID-19 patients without AKI (non-AKI). Univariate and multivariate analyses were performed.
RESULTS: First, an elevated incidence of AKI (71.2%) was identified, distributed across different stages of the KDIGO criteria. We further observed higher levels of creatinine, C-reactive protein (CRP), leukocytes, neutrophils, monocytes, and neutrophil-to-lymphocyte ratio (NLR) in the Cov-AKI group than in the non-AKI group, at hospital admission. On univariate analysis, Cov-AKI was associated with older age (>62 years), hypertension, CRP, MCV, leucocytes, neutrophils, NLR, combined hydroxychloroquine and azithromycin treatment, use of mechanical ventilation, and vasoactive drugs. Multivariate analysis showed that hypertension and the use of vasoactive drugs were independently associated with a risk of higher AKI in COVID-19 patients. Finally, we preferentially found an altered erythrocyte and leukocyte cellular profile in the Cov-AKI group compared to the non-AKI group, at hospital discharge.
CONCLUSIONS: In our study, the development of AKI in patients with severe COVID-19 was related to inflammatory blood markers and therapy with hydroxychloroquine/azithromycin, with vasopressor requirement and hypertension considered potential risk factors. Thus, attention to the protocol, hypertension, and some blood markers may help assist doctors with decision-making for the management of COVID-19 patients with AKI.
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490.

Long Non-Coding RNA CASC2 Overexpression Ameliorates Sepsis-Associated Acute Kidney Injury by Regulating MiR-545-3p/PPARA Axis.
Hu Q, Zen W, Zhang M, Wang Z, Cui W, Liu Y, Xu B
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Surgical Research. 265:223-232, 2021 09.
[Journal Article]
UI: 33957574
BACKGROUND: Long non-coding RNAs (lncRNAs) have been demonstrated to be involved in the progression of sepsis-induced acute kidney injury (AKI). In this study, we aimed to explore the functions of lncRNA cancer susceptibility candidate 2 (CASC2) in sepsis-induced AKI.
METHODS: The sepsis cell models were established by exposing HK2 and HEK293 cells into lipopolysaccharide (LPS). Quantitative real-time polymerase chain reaction (qRT-PCR) assay was conducted to determine the expression of CASC2, miR-545-3p and peroxisome proliferator-activated receptor-alpha (PPARA) mRNA. Cell Counting Kit-8 (CCK-8) assay, flow cytometry analysis and wound healing assay were employed for cell viability, apoptosis and migration, respectively. Western blot assay was conducted for the protein levels of E-cadherin, alpha-SMA and PPARA. The levels of superoxide dismutase (SOD) and malondialdehyde (MDA) were measured by specific kits. The relationship between miR-545-3p and CASC2 or PPARA was verified by dual-luciferase reporter assay.
RESULTS: CASC2 level was decreased in sepsis patients' serums and LPS-treated HK2 and HEK293 cells. CASC2 overexpression facilitated cell viability and restrained cell apoptosis, migration, epithelial-mesenchymal transition (EMT) and oxidative stress in LPS-triggered HK2 and HEK293 cells. CASC2 was identified as a sponge for miR-545-3p to regulate PPARA expression. MiR-545-3p overexpression restored the impact of CASC2 on LPS-induced injury in HK2 and HEK293 cells. Moreover, miR-545-3p overexpression aggravated LPS-induced cell injury in HK2 and HEK293 cells by targeting PPARA.
CONCLUSION: CASC2 overexpression relieved the damage of HK2 and HEK293 cells mediated by LPS treatment through regulating miR-545-3p/PPARA axis.

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1
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491.

Impact of diabetes mellitus on short-term prognosis, length of stay, and costs in patients with acute kidney injury: A nationwide survey in China.
Tan L, Chen L, Jia Y, Li L, Wang J, Huang X, Luo Q, Yang L, Xiong Z
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PLoS ONE [Electronic Resource]. 16(5):e0250934, 2021.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 33939742
BACKGROUND: International data suggest that people with diabetes mellitus (DM) are at increased risk for worse acute kidney injury (AKI) outcomes; however, the data in China are limited. Therefore, this study aimed to describe the association of DM with short-term prognosis, length of stay, and expenditure in patients with AKI.
METHODS: This study was based on the 2013 nationwide survey in China. According to the 2012 Kidney Disease: Improving Global Outcomes (KDIGO) and expanded criteria of AKI, 7604 patients with AKI were identified, and 1404 and 6200 patients were with and without DM, respectively. Clinical characteristics, outcomes, length of stay, and costs of these patients were compared. Multivariate regression analyses were conducted to evaluate the association of DM with mortality, failed renal recovery, length of stay, and costs.
RESULTS: Patients with AKI and DM were older, had higher male preponderance (61.9%), presented with more comorbidities, and had higher serum creatinine levels compared with those without DM. An apparent increase in all-cause in-hospital mortality, length of stay, and costs was found in patients with DM. DM was not independently associated with failed renal recovery (adjusted OR (95%CI): 1.08 (0.94-1.25)) and in-hospital mortality (adjusted OR (95%): 1.16 (0.95-1.41)) in multivariate models. However, the diabetic status was positively associated with the length of stay (beta = 0.06, $p<0.05$) and hospital expenditure (beta = 0.10, $p<0.01$) in hospital after adjusting for possible confounders.

CONCLUSION: In hospitalized AKI patients, DM (vs. no DM) is independently associated with longer length of stay and greater costs, but is not associated with an increased risk for failed renal recovery and in-hospital mortality.
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Clinical Trial Number
ISN AKF 0 by 25 China Consortium
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2021

492.

Resource Utilization and Outcomes in Isolated Low-Grade Renal Trauma at a Level 1 Trauma Center.
Iyer V, Gause E, Vavilala MS, Hagedorn JC

OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Urology. 152:91-95, 2021 06.
[Journal Article]
UI: 33798558
OBJECTIVE: To examine admission and transfer patterns of isolated low-grade renal trauma given lack of evidenced based guidelines.
METHODS: We employed a retrospective cohort design to analyze patients with low grade renal trauma from 2005 to 2018. We used an Abbreviated Injury Score (AIS) <3 for non-abdominal categories to ensure that intensive care unit admission/hospital transfer was due to renal trauma (n = 87). Treatment and discharge survival were compared.
RESULTS: Mean age for floor (n = 31) and intensive care unit (ICU) (n = 46) patients were 33 (IQR = 20) and 42 (IQR = 46) years old, respectively. Mean injury severity score (ISS) was 7.7 (IQR 4) for floor and 8 (IQR=3.75) for ICU admissions (P = .61) Mean ISS was 7.53 (IQR = 4) for transfers and 8.27 (IQR = 3.25) for non-transfers (P = .26). Blood products were administered only to 3 (6.5%) ICU patients all over 60 years old. Fourteen (45.1%) and 26 (56.5%) of floor and ICU admissions were transferred from a lower-level trauma center. ICU mean length of stay (LOS) was 37 hours (IQR = 23 h.). Mean hospital LOS was 43.4 hours and 71.9 hours for the floor and ICU patients (P = .08), and 69.02 hours and 52.58 hours for transfer vs non-transferred (P = .31). All patients were discharged alive and the majority (94%) was discharged home.
CONCLUSION: Given expedient ICU discharge, low transfusion rate, and low complication rate, inter-hospital transfer and ICU admission are unnecessary for patients under 65 years. Transfer and admission protocols for isolated renal trauma are needed to avoid resource overutilization.

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1
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Year of Publication
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493.

Acute kidney injury adversely affects the clinical course of acute myeloid leukemia patients undergoing induction chemotherapy.
Ballo O, Eladly F, Buttner S, Stratmann JA, Rudolf S, Brunnberg U, Kreisel EM, Steffen B, Wagner S, Finkelmeier F, Serve H, Brandts CH
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Annals of Hematology. 100(5):1159-1167, 2021 May.
[Journal Article]

UI: 33704529
Acute kidney injury (AKI) complicates the clinical course of hospitalized patients by increasing need for intensive care treatment and mortality. There is only little data about its impact on AML patients undergoing intensive induction chemotherapy. In this study, we analyzed the incidence as well as risk factors for AKI development and its impact on the clinical course of AML patients undergoing induction chemotherapy. We retrospectively analyzed data from 401 AML patients undergoing induction chemotherapy between 2007 and 2019. AKI was defined and stratified according to KIDGO criteria by referring to a defined baseline serum creatinine measured on day 1 of induction chemotherapy. Seventy-two of 401 (18%) AML patients suffered from AKI during induction chemotherapy. AML patients with AKI had more days with fever (7 vs. 5, $p = 0.028$) and were more often treated on intensive care unit (45.8% vs. 10.6%, $p < 0.001$). AML patients with AKI had a significantly lower complete remission rate after induction chemotherapy and, with 402 days, a significantly shorter median overall survival (OS) (median OS for AML patients without AKI not reached). In this study, we demonstrate that the KIDGO classification allows mortality risk stratification for AML patients undergoing induction chemotherapy. Relatively mild AKI episodes have impact on the clinical course of these patients and can lead to chronic impairment of kidney function. Therefore, we recommend incorporating risk factors for AKI in decision-making considering nutrition, fluid management, as well as the choice of potentially nephrotoxic medication in order to decrease the incidence of AKI.
Version ID
1
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494.

Schistocyte quantitation, thrombotic microangiopathy and acute kidney injury in Australian snakebite coagulopathy [ASP28].
Noutsos T, Currie BJ, Brown SG, Isbister GK
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
International Journal of Laboratory Hematology. 43(5):959-965, 2021 Oct.
[Journal Article. Multicenter Study]
UI: 33615713
INTRODUCTION: The major systemic manifestation of hemotoxicity in human snakebite envenoming is venom-induced consumption coagulopathy (VICC). A subset of patients with VICC develop thrombotic microangiopathy (TMA), in which acute kidney injury (AKI) occurs. We aimed to investigate the association between schistocytosis in snakebite patients with VICC and AKI, compared to non-envenomed patients.
METHODS: Serial blood films collected from a prospective cohort of snakebite patients (Australian Snakebite Project) were examined. Cases were classified a priori as non-envenomed snakebites (normal controls), envenomed without VICC, partial VICC without AKI, complete VICC without AKI, and VICC with AKI based on defined clinical and laboratory criteria. The percentage of schistocytes between groups was compared and correlated by Kendall's tau b test.
RESULTS: Seven hundred and eighty blood films from 234 snakebite cases were analyzed. There was a statistically significant correlation (tau = .69, SE .03, P < .001) for schistocytosis between the ordered groups of non-envenomed snakebites, envenomed without VICC, partial VICC without AKI, complete VICC without AKI, and VICC with AKI groups. Patients with VICC and AKI had a platelet nadir median of 42 x 109 /L (interquartile range [IQR] :25-130 x 109 /L), hemoglobin nadir of median 107 g/L (IQR 66-122 g/L), and maximum LDH median of 1128 U/L (IQR 474-3255 U/L). A 1.0% threshold for schistocytosis yielded 90% sensitivity (95% CI: 67%-98%) and 71% specificity (95% CI: 62%-79%) for predicting AKI in patients with VICC.
CONCLUSION: Schistocyte quantitation has good diagnostic utility in snakebite patients with VICC. A definition of snakebite TMA as MAHA with >=1.0% schistocytes and thrombocytopenia, would appear to be appropriate.

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495.

Neonatal acute kidney injury: a case-based approach. [Review]
Starr MC, Menon S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 36(11):3607-3619, 2021 11.
[Journal Article. Review]
UI: 33594463
Neonatal acute kidney injury (AKI) is increasingly recognized as a common complication in critically ill neonates. Over the last 5-10 years, there have been significant advancements which have improved our understanding and ability to care for neonates with kidney disease. A variety of factors contribute to an increased risk of AKI in neonates, including decreased nephron mass and immature tubular function. Multiple factors complicate the diagnosis of AKI including low glomerular filtration rate at birth and challenges with serum creatinine as a marker of kidney function in newborns. AKI in neonates is often multifactorial, but the cause can be identified with careful diagnostic evaluation. The best approach to treatment in such patients may include diuretic therapies or kidney support therapy. Data for long-term outcomes are limited but suggest an increased risk of chronic kidney disease (CKD) and hypertension in these infants. We use a case-based approach throughout this review to illustrate these concepts and highlight important evidence gaps in the diagnosis and management of neonatal AKI.

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Year of Publication
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496.

Prevalence of childhood trauma and its association with lower urinary tract symptoms in women and men in the LURN study.
Geynisman-Tan J, Helmuth M, Smith AR, Lai HH, Amundsen CL, Bradley CS, Mueller MG, Lewicky-Gaupp C, Harte SE, Jelovsek JE
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Neurourology & Urodynamics. 40(2):632-641, 2021 02.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 33508156
AIMS: To describe the association between childhood traumas (death of a family member, severe illness, sexual trauma, parental separation) reported by women and men and lower urinary tract symptoms (LUTS).
METHODS: In this secondary analysis of the Lower Urinary Tract Research Network Observational Cohort Study, participants completed the LUTS tool, childhood trauma events scale (CTES), PROMIS depression and anxiety and perceived stress scale. LUTS tool responses were combined to quantify urinary urgency, frequency, incontinence, and overall LUTS severity. Multivariable linear regression tested associations between trauma and LUTS; mental health scores were tested for potential mediation.
RESULTS: In this cohort (n = 1011; 520 women, 491 men), more women reported experiencing at least one trauma (75% vs. 64%, p < .001), greater than three traumas (26% vs. 15%, p < .001), and childhood sexual trauma (23% vs. 7%, p < .001), and reported higher impact from traumatic events compared with men (median [interquartile rnage] CTES score = 10 [5-15] vs. 6 [4-12], p < .001). The number of childhood traumatic events was not associated with severity of overall LUTS (p = .79), urinary frequency (p = .75), urgency (p = .61), or incontinence (p = .21). Childhood sexual trauma was significantly associated with higher incontinence severity (adjusted mean difference 4.5 points, 95% confidence interval= 1.11-7.88, p = .009). Mental health was a mediator between trauma and LUTS among those with at least one childhood trauma.
CONCLUSION: Although total childhood trauma is not associated with LUTS, childhood sexual trauma is associated with urinary incontinence severity. For patients with childhood trauma, half of the effect of CTE Impact score on overall LUTS severity is mediated through the association between trauma and the patient's mental health.

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Clinical Trial Number
Symptoms of Lower Urinary Tract Dysfunction Research Network (LURN) Study Group
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497.

Stimulator of interferon genes (STING) immunohistochemical expression in the spectrum of perivascular epithelioid cell (PEC) lesions of the kidney.
Calio A, Brunelli M, Gobbo S, Pedron S, Segala D, Argani P, Martignoni G
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Pathology. 53(5):579-585, 2021 Aug.
[Journal Article]
UI: 33461798
Angiomyolipoma is the prototype of renal perivascular epithelioid cell (PEC) lesions whose pathogenesis is determined by mutations affecting TSC genes, with eventual deregulation of the mTOR pathway. It is well known that mTOR complex protein is involved in autophagy, and recently the role of STING in this process has been demonstrated. Based on this background, we sought to investigate STING immunohistochemical expression in a series of PEC lesions of the kidney. Fifty classic angiomyolipomas, 14 epithelioid angiomyolipomas/pure epithelioid PEComas, two angiomyolipomas with epithelial cysts (AMLEC), and two intraglomerular PEC lesions were collected. Immunostaining for STING was carried out in all cases and FISH analysis using dual colour break apart TFE3 and TFEB probes was performed in all pure epithelioid PEComas and AMLEC. Control cases including 20 normal adult kidneys, five fetal kidneys, and 30 MiT family translocation renal cell carcinomas (the main differential diagnosis with epithelioid angiomyolipoma/pure epithelioid PEComa) were also immunohistochemically stained with STING. Strong and diffuse cytoplasmic expression of STING was observed in 100% of classic angiomyolipomas, AMLEC, and intraglomerular lesions, and in 79% (11/14) of epithelioid angiomyolipomas/pure epithelioid PEComas. TFE3 gene rearrangement was demonstrated in

two epithelioid angiomyolipomas/pure epithelioid PEComas, both completely negative for STING. None of the MiT family translocation renal cell carcinomas expressed STING. In conclusion, we demonstrate the expression of STING in almost all PEC lesions of the kidney. This result provides novel insights into the possible role of autophagy in PEC lesions of the kidney. Moreover, this finding may be useful for diagnostic purposes, particularly in distinguishing epithelioid angiomyolipoma/pure epithelioid PEComa from MiT family translocation renal cell carcinoma and detecting intraglomerular PEC lesions.

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1
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498.

Using kinetic eGFR to identify acute kidney injury risk in children undergoing cardiac transplantation.
Dasgupta MN, Montez-Rath ME, Hollander SA, Sutherland SM
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Pediatric Research. 90(3):632-636, 2021 09.
[Journal Article]
UI: 33446916
BACKGROUND: Acute kidney injury (AKI) is common following pediatric cardiac transplantation. Since no treatments exist, strategies focus on early identification and prevention. Kinetic glomerular filtration rate (kGFR) was developed to assess renal function in the non-steady state. Although used to predict AKI in adults, kGFR has not been explored in children. Our study examines AKI and the ability of kGFR to identify AKI risk in pediatric heart transplant recipients. METHODS: One hundred and seventy-five patients under 21 years who underwent cardiac transplantation at Lucile Packard Children's Hospital between September 2007-December 2017 were included. kGFR1 was calculated using pre-operative and immediate post-operative

creatinines; kGFR2 was calculated with the first two post-operative creatinines. The primary outcome was AKI as defined by the Kidney Disease: Improving Global Outcomes criteria.
RESULTS: One hundred and thirty-one (75%) and 78 (45%) patients developed AKI and severe AKI, respectively; 5 (2.9%) required dialysis. kGFR was moderately associated with post-operative AKI risk. The adjusted area under the curve (AUC) for kGFR1 was 0.72 (discovery) and 0.65 (validation). The AUC for kGFR2 was 0.72 (discovery) and 0.68 (validation).
CONCLUSIONS: AKI is pervasive in children undergoing cardiac transplant, particularly in the 24 h after surgery. kGFR moderately identifies AKI risk and may represent a novel risk stratification technique.
IMPACT: Our research suggests that kGFR, a dynamic assessment of renal function that uses readily available laboratory values, can moderately identify AKI risk in children undergoing cardiac transplantation. Current published studies on kGFR are in adult populations; this study represents the first formal study of kGFR in a pediatric population. kGFR may serve as an early AKI indicator, allowing providers to implement preventative strategies sooner in a patient's clinical course.

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Year of Publication
2021

499.

Recognition and management of community-acquired acute kidney injury in low-resource settings in the ISN 0by25 trial: A multi-country feasibility study.
Macedo E, Hemmila U, Sharma SK, Claure-Del Granado R, Mzinganjira H, Burdmann EA, Cerda J, Feehally J, Finkelstein F, Garcia-Garcia G, Jha V, Lameire NH, Lee E, Levin NW, Lewington A, Lombardi R, Rocco MV, Aronoff-Spencer E, Tonelli M, Yeates K, Remuzzi G, Mehta RL
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
PLoS Medicine / Public Library of Science. 18(1):e1003408, 2021 01.
[Journal Article. Multicenter Study. Research Support, Non-U.S. Gov't]
UI: 33444372
BACKGROUND: Acute kidney injury (AKI) is increasingly encountered in community settings and contributes to morbidity, mortality, and increased resource utilization worldwide. In low-resource settings, lack of awareness of and limited access to diagnostic and therapeutic interventions likely influence patient management. We evaluated the feasibility of the use of point-of-care (POC) serum creatinine and urine dipstick testing with an education and training program to optimize the identification and management of AKI in the community in 3 low-resource countries.

METHODS AND FINDINGS: Patients presenting to healthcare centers (HCCs) from 1 October 2016 to 29 September 2017 in the cities Cochabamba, Bolivia; Dharan, Nepal; and Blantyre, Malawi, were assessed utilizing a symptom-based risk score to identify patients at moderate to high AKI risk. POC testing for serum creatinine and urine dipstick at enrollment were utilized to classify these patients as having chronic kidney disease (CKD), acute kidney disease (AKD), or no kidney disease (NKD). Patients were followed for a maximum of 6 months with repeat POC testing. AKI development was assessed at 7 days, kidney recovery at 1 month, and progression to CKD and mortality at 3 and 6 months. Following an observation phase to establish baseline data, care providers and physicians in the HCCs were trained with a standardized protocol utilizing POC tests to evaluate and manage patients, guided by physicians in referral hospitals connected via mobile digital technology. We evaluated 3,577 patients, and 2,101 were enrolled: 978 in the observation phase and 1,123 in the intervention phase. Due to the high number of patients attending the centers daily, it was not feasible to screen all patients to assess the actual incidence of AKI. Of enrolled patients, 1,825/2,101 (87%) were adults, 1,117/2,101 (53%) were females, 399/2,101 (19%) were from Bolivia, 813/2,101 (39%) were from Malawi, and 889/2,101 (42%) were from Nepal. The age of enrolled patients ranged from 1 month to 96 years, with a mean of 43 years (SD 21) and a median of 43 years (IQR 27-62). Hypertension was the most common comorbidity (418/2,101; 20%). At enrollment, 197/2,101 (9.4%) had CKD, and 1,199/2,101 (57%) had AKD. AKI developed in 30% within 7 days. By 1 month, 268/978 (27%) patients in the observation phase and 203/1,123 (18%) in the intervention phase were lost to follow-up. In the intervention phase, more patients received fluids (observation 714/978 [73%] versus intervention 874/1,123 [78%]; 95% CI 0.63, 0.94; p = 0.012), hospitalization was reduced (observation 578/978 [59%] versus intervention 548/1,123 [49%]; 95% CI 0.55, 0.79; p < 0.001), and admitted patients with severe AKI did not show a significantly lower mortality during follow-up (observation 27/135 [20%] versus intervention 21/178 [11.8%]; 95% CI 0.98, 3.52; p = 0.057). Of 504 patients with kidney function assessed during the 6-month follow-up, de novo CKD arose in 79/484 (16.3%), with no difference between the observation and intervention phase (95% CI 0.91, 2.47; p = 0.101). Overall mortality was 273/2,101 (13%) and was highest in those who had CKD (24/106; 23%), followed by those with AKD (128/760; 17%), AKI (85/628; 14%), and NKD (36/607; 6%). The main limitation of our study was the inability to determine the actual incidence of kidney dysfunction in the health centers as it was not feasible to screen all the patients due to the high numbers seen daily.
CONCLUSIONS: This multicenter, non-randomized feasibility study in low-resource settings demonstrates that it is feasible to implement a comprehensive program utilizing POC testing and protocol-based management to improve the recognition and management of AKI and AKD in high-risk patients in primary care.
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500.

Derivation of a prediction model for emergency department acute kidney injury.
Phillips AO, Foxwell DA, Pradhan S, Zouwail S, Rainer TH
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
American Journal of Emergency Medicine. 40:64-69, 2021 02.
[Journal Article. Observational Study]
UI: 33348226
BACKGROUND AND OBJECTIVE: Quality management of Acute Kidney Injury (AKI) is dependent on early detection, which is currently deemed to be suboptimal. The aim of this study was to identify combinations of variables associated with AKI and to derive a prediction tool for detecting patients attending the emergency department (ED) or hospital with AKI (ED-AKI).
DESIGN, SETTING, PARTICIPANTS AND MEASUREMENTS: This retrospective observational study was conducted in the ED of a tertiary university hospital in Wales. Between April and August 2016 20,421 adult patients attended the ED of a University Hospital in Wales and had a serum creatinine measurement. Using an electronic AKI reporting system, 548 incident adult ED-AKI patients were identified and compared to a randomly selected cohort of adult non-AKI ED patients (n = 571). A prediction model for AKI was derived and subsequently internally validated using bootstrapping. The primary outcome measure was the number of patients with ED-AKI.
RESULTS: In 1119 subjects, 27 variables were evaluated. Four ED-AKI models were generated with C-statistics ranging from 0.800 to 0.765. The simplest and most practical multivariate model (model 3) included eight variables that could all be assessed at ED arrival. A 31-point score was derived where 0 is minimal risk of ED-AKI. The model discrimination was adequate (C-statistic 0.793) and calibration was good (Hosmer & Lomeshow test 27.4). ED-AKI could be ruled out with a score of <2.5 (sensitivity 95%). Internal validation using bootstrapping yielded an optimal Youden index of 0.49 with sensitivity of 80% and specificity of 68%.
CONCLUSION: A risk-stratification model for ED-AKI has been derived and internally validated. The discrimination of this model is objective and adequate. It requires refinement and external validation in more generalisable settings.

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1
Status
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501.

Severe glomerular C3 deposition indicates severe renal lesions and a poor prognosis in patients with immunoglobulin A nephropathy.
Wu J, Hu Z, Wang Y, Hu D, Yang Q, Li Y, Dai W, Zhu F, Yang J, Wang M, Zhu H, Liu L, He X, Han M, Yao Y, Pei G, Zeng R, Xu G
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Histopathology. 78(6):882-895, 2021 May.
[Journal Article]
UI: 33336446
AIMS: Glomerular complement 3 (C3) deposition is often observed in renal biopsies of patients with IgA nephropathy (IgAN); however, the relationship between the intensity of C3 deposition and the long-term prognosis of IgAN has rarely been reported. In this retrospective study, we aimed to evaluate the prognostic value of glomerular C3 deposition for IgAN progression.
METHODS AND RESULTS: From June 2009 to June 2010, a total of 136 adult patients with IgAN were enrolled in the study. According to the intensity of glomerular C3 deposition, patients were divided into a glomerular C3high group (34 patients) and a glomerular C3low group (102 patients). The levels of clinical parameters, glomerular immune complexes, histopathological features, and serum cytokines of the two groups were compared. On the basis of an average of 105 months of follow-up, the predictive value of glomerular C3 deposition for IgAN progression was also investigated. Patients in the C3high group had more severe glomerular IgA, IgG, IgM, and complement factor H deposition, a higher percentage of mesangial hypercellularity (M1), and higher levels of segmental glomerulosclerosis (S1), tubular atrophy/interstitial fibrosis (T2), and crescents (C2) than those in the C3low group. Renal biopsies in the C3high group showed higher densities of interstitial inflammatory cells and higher levels of serum interferon-gamma than those in the C3low group. Multivariate Cox regression analysis revealed that a higher intensity of glomerular C3 deposition remained as an independent predictor of serum creatinine doubling and end-stage renal disease.
CONCLUSIONS: A high intensity of glomerular C3 deposition is associated with the severity of renal lesions, and predicts long-term poor renal survival for IgAN patients.

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1
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502.

ERCC1 mutations impede DNA damage repair and cause liver and kidney dysfunction in patients.

Apelt K, White SM, Kim HS, Yeo JE, Kragten A, Wondergem AP, Rooimans MA, Gonzalez-Prieto R, Wiegant WW, Lunke S, Flanagan D, Pantaleo S, Quinlan C, Hardikar W, van Attikum H, Vertegaal ACO, Wilson BT, Wolthuis RMF, Scharer OD, Luijsterburg MS
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Journal of Experimental Medicine. 218(3), 2021 03 01.
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UI: 33315086
ERCC1-XPF is a multifunctional endonuclease involved in nucleotide excision repair (NER), interstrand cross-link (ICL) repair, and DNA double-strand break (DSB) repair. Only two patients with bi-allelic ERCC1 mutations have been reported, both of whom had features of Cockayne syndrome and died in infancy. Here, we describe two siblings with bi-allelic ERCC1 mutations in their teenage years. Genomic sequencing identified a deletion and a missense variant (R156W) within ERCC1 that disrupts a salt bridge below the XPA-binding pocket. Patient-derived fibroblasts and knock-in epithelial cells carrying the R156W substitution show dramatically reduced protein levels of ERCC1 and XPF. Moreover, mutant ERCC1 weakly interacts with NER and ICL repair proteins, resulting in diminished recruitment to DNA damage. Consequently, patient cells show strongly reduced NER activity and increased chromosome breakage induced by DNA cross-linkers, while DSB repair was relatively normal. We report a new case of ERCC1 deficiency that severely affects NER and considerably impacts ICL repair, which together result in

a unique phenotype combining short stature, photosensitivity, and progressive liver and kidney dysfunction.

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1
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503.

NPHS2 gene polymorphism aggravates renal damage caused by focal segmental glomerulosclerosis with COL4A3 mutation.
Sun L, Zhang X, Wang Z
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Bioscience Reports. 41(1), 2021 01 29.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 33305316
Focal segmental glomerulosclerosis (FSGS), a type of primary glomerular disease, is the leading cause of end-stage renal disease (ESRD). Several studies have revealed that certain single-gene mutations are involved in the pathogenesis of FSGS; however, the main cause of FSGS has not been fully elucidated. Homozygous mutations in the glomerular basement membrane gene can lead to early renal failure, while heterozygous carriers develop renal failure symptoms late. Here, molecular genetic analysis of clinical information collected from clinical reports and medical records was performed. Results revealed that nephrosis 2 (NPHS2) gene polymorphism aggravated renal damage in three FSGS families with heterozygous COL4A3 mutation, leading to early renal failure in index patients. Our findings suggest that COL4A3 and NPHS2 may have a synergistic effect on renal injury caused by FSGS. Further analysis of the glomerular filtration barrier could help assess the cause of kidney damage. Moreover, a detailed analysis of the glomerular basement membrane-related genes and podocyte structural proteins may help us better understand FSGS pathogenesis and provide insights into the prognosis and treatment of hereditary glomerulonephropathy.

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504.

The Pattern of Cyclosporine Nephrotoxicity and Urinary Kidney Injury Molecule 1 in Allogenic Hematopoietic Stem Cell Transplant Patients.
Karimzadeh I, Jafari M, Davani-Davari D, Ramzi M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Experimental & Clinical Transplantation: Official Journal of the Middle East Society for Organ Transplantation. 19(6):553-562, 2021 06.
[Journal Article]
UI: 33272156
OBJECTIVES: The typical immunosuppressive regimen of hematopoietic stem cell transplant includes cyclosporine. However, cyclosporine nephrotoxicity is a concern. We studied cyclosporine nephrotoxicity epidemiology in hematopoietic stem cell transplant patients and compared the pattern and urinary levels of the KIM-1 kidney injury molecule versus serum and urine creatinine levels.
MATERIALS AND METHODS: The study covered 10 months at Namazi Hospital, Shiraz, Iran. All patients met the following criteria: > 15 years old, received allogenic hematopoietic stem cell transplant without history of acute or chronic kidney disease, and scheduled for at least 1 week of cyclosporine treatment. Urinary and serum levels of creatinine, urea, sodium, potassium, magnesium, and the KIM-1 kidney injury molecule were measured on days 0, 3, 5, 7, 10, and 14 of cyclosporine treatment.
RESULTS: Of 42 patients, one-third developed cyclosporine nephrotoxicity (30.95%), and median onset time was 15 days. Hypokalemia and hypomagnesemia were reported in 76.2% and 53.4% of the cohort, respectively. None of the demographic, clinical, and paraclinical parameters was significantly associated with cyclosporine nephrotoxicity. Median duration of hospital stay for patients with cyclosporine nephrotoxicity (41 days) was significantly higher (P < .001) than those without nephrotoxicity (29 days). Area under the curve for receiver operating characteristic showed that accuracy of serum creatinine (0.267; 95% CI, 0.11-0.43) at day 0 of cyclosporine treatment was significantly lower (P = .017) than the accuracy of urine creatinine (0.477; 95% CI, 0.28-0.67) and urine levels of the KIM-1 kidney injury molecule (0.594; 95% CI, 0.41-0.78).
CONCLUSIONS: Cyclosporine nephrotoxicity is a common adverse effect in the setting of hematopoietic stem cell transplant and occurs mostly within the first 2 weeks of cyclosporine treatment. Urine KIM-1 kidney injury molecule measurement had no overall superiority and no improved accuracy over serum or urine creatinine measurements for prediction or detection of cyclosporine nephrotoxicity.
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1
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Year of Publication
2021

505.

Hypoalbuminemia is associated with increased risk of acute kidney injury in hospitalized patients: A meta-analysis.
Hansrivijit P, Yarlagadda K, Cheungpasitporn W, Thongprayoon C, Ghahramani N
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Critical Care. 61:96-102, 2021 02.
[Journal Article. Meta-Analysis]
UI: 33157311
PURPOSES: Previous systematic review suggested that hypoalbuminemia is associated with increased risk of acute kidney injury (AKI). However, pooled sample size was small, and there was no universal definition for AKI.
MATERIALS AND METHODS: vid MEDLINE, EMBASE, the Cochrane Library and Database of Abstracts of Reviews of Effects (DARE) were search up to December 2019. Inclusion criteria include: observational studies, age >= 18 years, non-end-stage kidney disease, AKI, or mortality are outcomes of interest. Only articles utilizing multivariate analysis were included.
RESULTS: A total of 39 studies were included in hypoalbuminemia and AKI cohort (n = 168,740), and 15 studies were included in mortality cohort (n = 5693). Each 1.0 g/dL decrement of serum albumin was associated with increased AKI (OR 1.685; 95% CI, 1.302-2.179). The risk remained significant across sensitivity analyses. Furthermore, subgroup analyses showed that age >= 70 years and baseline serum albumin level > 3.2 g/dL were significant risk factors for AKI. In mortality cohort, patients with AKI and hypoalbuminemia had significantly higher death (OR 1.183; 95% CI, 1.085-1.288). However, there was potential publication bias to this analysis.
CONCLUSIONS: Hypoalbuminemia is associated with AKI in hospitalized patients. However, the effect on mortality is subjected to publication bias.

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506.

Factors Associated with Recovery in Motor Strength, Walking Ability, and Bowel and Bladder Function after Traumatic Cauda Equina Injury.
Attabib N, Kurban D, Cheng CL, Rivers CS, Bailey CS, Christie S, Ethans K, Flett H, Furlan JC, Tsai EC, O'Connell C
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Journal of Neurotrauma. 38(3):322-329, 2021 02.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 32907483
Traumatic cauda equina injury (TCEI) is usually caused by spine injury at or below L1 and can result in motor and/or sensory impairments and/or neurogenic bowel and bladder. We examined factors associated with recovery in motor strength, walking ability, and bowel and bladder function to aid in prognosis and establishing rehabilitation goals. The analysis cohort was comprised of persons with acute TCEI enrolled in the Rick Hansen Spinal Cord Injury Registry. Multi-variable regression analysis was used to determine predictors for lower-extremity motor score (LEMS) at discharge, walking ability at discharge as assessed by the walking subscores of either the Functional Independence Measure (FIM) or Spinal Cord Independence Measure (SCIM), and improvement in bowel and bladder function as assessed by FIM-relevant subscores. Age, sex, neurological level and severity of injury, time from injury to surgery, rehabilitation onset, and length of stay were examined as potential confounders. The cohort included 214 participants. Median improvement in LEMS was 4 points. Fifty-two percent of participants were able to walk, and >20% recovered bowel and bladder function by rehabilitation discharge. Multi-variable analyses revealed that shorter time from injury to rehabilitation admission (onset) was a significant predictor for both improvement in walking ability and bowel function. Longer rehabilitation stay and being an older female were associated with improved bladder function. Our results suggest that persons with TCEI have a reasonable chance of recovery in walking ability and bowel and bladder function. This study provides important information for rehabilitation goals setting and communication with patients and their families regarding prognosis.
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1
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2021

507.

Severe acute kidney injury following Sri Lankan Hypnale spp. envenoming is associated with thrombotic microangiopathy.
Wijewickrama ES, Gooneratne LV, Gnanathasan A, Gawarammana I, Gunatilake M, Isbister GK
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Clinical Toxicology: The Official Journal of the American Academy of Clinical Toxicology & European Association of Poisons Centres & Clinical Toxicologists. 59(4):296-302, 2021 Apr. [Journal Article. Observational Study]
UI: 32870056
CONTEXT: Acute kidney injury (AKI) is the most serious clinical manifestation of the Sri Lankan hump-nosed pit viper (Hypnale spp.) bites. Thrombotic microangiopathy (TMA) is increasingly recognized in association with AKI in cases of Hypnale spp envenomation. We investigated AKI in a cohort of cases of Hypnale envenomation, its association with TMA and the early diagnostic value of common biomarkers for AKI occurring.
MATERIALS AND METHODS: We conducted a prospective observational study of suspected viper bites and included 103 confirmed cases of Hypnale envenomation, based on venom specific enzyme immunoassay of blood. AKI was defined using the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Thrombotic microangiopathy was diagnosed based on thrombocytopenia (platelet count < 150,000 x 103/muL) and microangiopathic haemolytic anaemia (MAHA). We investigated the diagnostic performance of creatinine, platelet count and INR for AKI within 4 h and 8 h post-bite by area under the receiver operator characteristic curve (AUC-ROC).
RESULTS: Ten patients developed AKI: seven AKI stage 1 and three AKI stage 3. Ten patients (10%) developed thrombocytopaenia while 11 (11%) had MAHA. All three AKI stage 3 had thrombocytopaenia and MAHA fulfilling the criteria for TMA. Two of them presented with oliguria/anuria and all three required haemodialysis. Serum creatinine within 4 h post-bite was the best predictor of AKI with AUC-ROC of 0.83 (95% CI: 0.67-0.99) and was no better within 8 h of the bite.

CONCLUSIONS: We found that AKI is uncommon in Hypnale spp. envenomation, but an important serious complication. Severe AKI was associated with TMA. A creatinine within 4 h post-bite was the best predictor of AKI.
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1
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508.

A prediction model of sepsis-associated acute kidney injury based on antithrombin III.
Xie Y, Zhang Y, Tian R, Jin W, Du J, Zhou Z, Wang R
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Clinical & Experimental Medicine. 21(1):89-100, 2021 Feb.
[Journal Article. Observational Study]
UI: 32865720
The incidence of sepsis-associated acute kidney injury (AKI) is on the rise. Recent studies have found a correlation between antithrombin III and AKI. We established a predictive model for sepsis-associated AKI based on plasma ATIII levels. A prospective study (March 2018-January 2020) was conducted in sepsis patients admitted to the Critical Care Medicine Department at Shanghai General Hospital. ATIII levels were obtained within 48 h after admission to the ICU and before the diagnosis of sepsis-associated AKI was recorded. Renal function was assessed by measuring serum creatinine levels and urine volume. Male sex, other cardiovascular disease, and low ATIII levels were identified as independent risk factors for AKI. Age, immune disease, and low ATIII levels were identified as independent risk factors for death. Plasma ATIII levels in the non-AKI group were higher than those in the AKI group, plasma ATIII levels were higher in the survival group than in the non-survival group, plasma ATIII levels in the non-CRRT group were

higher than those in the CRRT group, and plasma ATIII levels in the non-CKD group were higher than those in the CKD group. ATIII was significantly higher in the group with pulmonary infection than in the group without pulmonary infection. ATIII was significantly lower in the celiac infection group than in the nonceliac infection group. There was no statistically significant difference between the ATIII in the gram-positive group and the gram-negative group. ATIII was significantly higher in medical patients than in surgical patients. The predictive model of sepsis-associated AKI established based on ATIII was ln[P/(1 - p)] = -1.211 x sex - 0.017 x ATIII + 0.022 x Cr + 0.004 x BUN - 2.8192. The model goodness-of-fit test (p = 0.000) and the area under the ROC curve of the model (0.9862) suggested that the model has a high degree of discrimination and calibration. ATIII reduction was closely related to the prognosis of patients with sepsis. ATIII reduction was an independent risk factor for sepsis-associated AKI and an independent risk factor for mortality in patients with sepsis. ATIII reduction could predict sepsis-associated AKI. Low ATIII predicted a poor prognosis.
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1
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509.

Acute kidney injury following the use of different proton pump inhibitor regimens: A real-world analysis of post-marketing surveillance data.
Chen G, Ning LJ, Qin Y, Zhao B, Mei D, Li XM
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Journal of Gastroenterology & Hepatology. 36(1):156-162, 2021 Jan.

[Journal Article]
UI: 32542684
BACKGROUND AND AIM: Recent evidence has concerned acute kidney injury (AKI) after the proton pump inhibitor (PPI) application. There are few real-world studies to compare the occurrences, clinical features, and prognosis of AKI related to various PPI regimens. We aimed to evaluate and compare the links between different PPIs and AKI in a large population by investigating the Food and Drug Administration Adverse Event Reporting System (FAERS) until recently.
METHODS: Disproportionality analysis and Bayesian analysis were used in data mining to screen the suspected AKI after different PPIs based on the FAERS from January 2004 to December 2019. The times to onset, fatality, and hospitalization rates of PPI-associated AKI were also investigated.
RESULTS: We identified 19 522 PPI-associated AKIs, which appeared to influence more middle-aged patients than elderly ones (53.04% vs 33.94%). Women were more affected than men (55.42% vs 44.58%). Lansoprazole appeared a stronger AKI association than other PPIs, based on the highest reporting odds ratio (reporting odds ratio = 20.8, 95% confidence interval = 20.16, 21.46), proportional reporting ratio (proportional reporting ratio = 15.55, chi2 = 73 899.68), and empirical Bayes geometric mean (empirical Bayes geometric mean = 15.15, 95% confidence interval = 14.76). The median time to AKI onset was 446 (interquartile range [IQR] 16-2176) days after PPI administration. PPIs showed a significant difference in average time to AKI onset ($P < 0.001$), with the shortest of 9 (IQR 3-25) days for rabeprazole and the longest of 1221 (IQR 96.5-2620) days for esomeprazole. PPI-associated AKI generally led to a 5.69% fatality rate and an 8.94% hospitalization rate. The highest death rate occurred in rabeprazole (15.35%).
CONCLUSIONS: Based on the FAERS database, we profiled AKI related to various PPIs with more details in occurrences, clinical characteristics, and prognosis. Concern should be paid for PPIs when applied to patients with a tendency for AKI.

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Year of Publication
2021

510.

Parvalbumin immunohistochemical expression in the spectrum of perivascular epithelioid cell (PEC) lesions of the kidney.
Calio A, Ammendola S, Brunelli M, Pedron S, Gobbo S, Martignoni G
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Virchows Archiv. 478(4):785-791, 2021 Apr.
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UI: 32524185
Parvalbumin is a cytosolic calcium-binding protein expressed in the distal convoluted tubule of the renal nephron. Among epithelial renal tumors, the reactivity for parvalbumin is observed in chromophobe renal cell carcinomas and frequently in oncocytomas. On the other hand, there are no data available on parvalbumin expression in the mesenchymal tumors of the kidney. Therefore, the purpose of this study was to evaluate the expression of parvalbumin in the spectrum of PEC (perivascular epithelioid cells) lesions of the kidney. Sixty-six PEC lesions (37 classic angiomyolipomas, 10 microscopic angiomyolipomas, 7 epithelioid angiomyolipomas/pure epithelioid PEComas, 5 leiomyoma-like angiomyolipomas, 3 lipoma-like angiomyolipomas, 2 intraglomerular lesions, 1 angiomyolipoma with epithelial cysts (AMLEC), and 1 sclerosing angiomyolipoma) were immunohistochemically stained with parvalbumin. Overall, parvalbumin immunostain was found in fifty-six PEC lesions (85%) and absent in the remaining ten cases (15%). Classic angiomyolipomas were positive in almost all cases (97%). Intraglomerular lesions and AMLEC showed parvalbumin immunolabeling as well. None of the 7 epithelioid angiomyolipomas/pure epithelioid PEComas or the only sclerosing angiomyolipoma expressed parvalbumin. In conclusion, we demonstrated the immunolabeling of parvalbumin in almost all PEC lesions of the kidney, but not in the epithelioid angiomyolipoma/pure epithelioid PEComa. This finding could shed light on some biological characteristics observed in the PEC lesions such as the plasticity of their cellular component. Moreover, parvalbumin may be another useful tool in the differential diagnosis among epithelioid angiomyolipoma/pure epithelioid PEComa with other renal eosinophilic tumors, such as oncocytoma and chromophobe renal cell carcinoma.
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1
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511.

Acute kidney injury following colistin treatment in critically-ill patients: may glucocorticoids protect?.
Heybeli C, Canaslan K, Oktan MA, Yildiz S, Arda HU, Cavdar C, Celik A, Gokmen N, Comert B
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Journal of Chemotherapy. 33(2):85-94, 2021 Apr.
[Journal Article]
UI: 32500843
Nephrotoxicity following colistin administration is common and factors alleviating nephrotoxicity are yet to be determined. We retrospectively evaluated outcomes of subjects who were treated with colistin (n = 133) and with antibiotics other than colistin (control, n = 133) in intensive care units. Acute kidney injury (AKI) occurred in 69.2% and 29.3% of patients in colistin and control groups, respectively (p < 0.001). In the colistin group, glucocorticoid exposure was more common in subjects who did not develop AKI (p < 0.001). This was not the case in the control group. In the colistin cohort, older age (per 10 years, odds ratio [OR] 1.41, 95% CI 1.05-1.91; p = 0.025), PPI use (OR 3.30, 95% CI 1.18-9.23; p = 0.023) and furosemide treatment (OR 2.66, 95% CI 1.01-6.98; p = 0.047) were independently associated with the development of AKI while glucocorticoid treatment (OR 0.23, 95% CI 0.10-0.53; p = 0.001) was independently associated with reduced risk of AKI. Mortality was observed in 74 patients in the colistin cohort (55.6%). A higher APACHE-II score (OR 1.17, 95% CI 1.08-1.26; p < 0.001) was independently associated with mortality while a higher serum albumin level (per 1 g/dL increase, OR 0.20, 95% CI 0.070-0.60; p = 0.004) was associated with a lower risk of mortality. In conclusion, glucocorticoid exposure is associated with a lower risk of AKI caused by colistin therapy in critically-ill patients. Prospective studies are needed to confirm these findings and determine the optimal type, dose and duration of glucocorticoid therapy.
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1
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Year of Publication
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512.

Pediatric nurse and pharmacist knowledge of acute kidney injury.
Goswami E.A.S., Sexton E., Fadrowski J.J.
Embase
Hospital Pediatrics. 11(8) (pp 871-877), 2021. Date of Publication: 01 Aug 2021.
[Review]
AN: 2013910860
OBJECTIVES: In this study, we assessed the knowledge and experience of pediatric pharmacists and nurses at a US tertiary-care pediatric center regarding the risk factors for, recognition of, and best practices for managing an acute kidney injury (AKI) in children.
METHOD(S): The authors developed a survey to assess the attitudes and knowledge of nurses and pharmacists regarding AKI in hospitalized children, which was reviewed by a small multidisciplinary group for content and length. The final 16-item survey consisted of demographic, self-assessment and attitude, and knowledge questions. All pediatric pharmacists and nurses at the study site received a voluntary online survey via e-mail. Data were analyzed by using descriptive statistics.
RESULT(S): A survey was sent to 620 nurses and 50 pharmacists; 148 (25%) and 22 (44%), respectively, completed it. Most respondents were <35 years old and had #10 years of experience in both their professions and pediatrics. A total of 72% of pediatric nurses felt identification of AKI was within their scope of practice, and ~60% felt confident in their ability to do so. More than 80% of pediatric pharmacists felt confident in their abilities to adjust medication doses in pediatric patients with AKI, but <60% felt confident in their ability to estimate the glomerular filtration rate in these patients. Nurses and pharmacists were able to correctly identify specific AKI criteria 60% to 70% and 70% to 90% of the time, respectively.
CONCLUSION(S): Although pediatric nurses and pharmacists have knowledge of AKI prevention and mitigation, gaps exist, and there is a desire for education in recognition of their key roles in the clinical team.

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American Academy of Pediatrics
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513.

Acute kidney injury among children admitted with viral rhabdomyolysis.
Gardner H.M., Askenazi D.J., Hoefert J.A., Helton A., Wu C.L.
Embase
Hospital Pediatrics. 11(8) (pp 878-884), 2021. Date of Publication: 01 Aug 2021.
[Review]
AN: 2013910861
BACKGROUND: Infectious etiologies cause a large portion of pediatric rhabdomyolysis. Among pediatric patients with rhabdomyolysis, it is unknown who will develop acute kidney injury (AKI). We sought to test the hypothesis that a viral etiology would be associated with less AKI in children admitted with rhabdomyolysis than a nonviral etiology.
METHOD(S): In this single-center retrospective cohort study, patients <21 years of age admitted with acute rhabdomyolysis from May 1, 2010, through December 31, 2018, were studied. The primary outcome was development of AKI, defined by using the Kidney Disease: Improving Global Outcomes guidelines. The primary predictor was identification of viral infection by laboratory testing or clinical diagnosis. Covariates included age, sex, race, insurance provider, presence of proteinuria and myoglobinuria, and initial creatinine kinase and serum urea nitrogen. Routine statistics and multivariable logistic modeling were performed via SAS 9.4 (SAS Institute, Inc, Cary, NC).
RESULT(S): In total, 319 pediatric patients with rhabdomyolysis were studied. The median age was 13 years. Patients were predominately male (69.9%), non-Hispanic Black (55.2%), and publicly insured (45.1%). We found no difference in the rates of AKI in those with a viral diagnosis versus those without a viral diagnosis (30 of 77 [39.0%] vs 111 of 234 [47.4%]; P =.19). Multivariable analysis revealed that viral diagnosis was not associated with the development of AKI. Patients $13 years of age, male patients, and those with proteinuria and elevated serum urea nitrogen on admission had increased odds of developing AKI.
CONCLUSION(S): In our study, viral rhabdomyolysis did not have lower rates of AKI compared with nonviral etiologies of AKI; therefore, providers should consider continued caution in these patients.

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514.

Midodrine and albumin versus albumin alone for the secondary prophylaxis of acute kidney injury in a patient with cirrhosis and ascites.
Sharma P., Puri P., Bansal N., Singla V., Kumar A., Shrihari A.A., Arora A.
Embase
European Journal of Gastroenterology and Hepatology. 33(1 S) (pp E499-E504), 2021. Date of Publication: 01 Dec 2021.
[Article]
AN: 2022889985
Background Acute kidney injury (AKI) in a patient with cirrhosis has high short-term mortality. Midodrine has shown promising results in the treatment of AKI-hepatorenal syndrome (HRS-AKI). Aims To compare midodrine and albumin versus albumin alone for the secondary prophylaxis of HRS-AKI. Patients and method Open labeled, nonrandomized, pilot study. Patients with a diagnosis of HRS-AKI were recruited after complete recovery. Patients were given midodrine daily (15 mg) and injection albumin infusion 20 g weekly in group-A (Gp-A) and injection albumin 20 g weekly with no midodrine in group-B (Gp-B). The primary endpoint was the recurrence of AKI-HRS, and the secondary endpoint was ascites tap in 2-month period. Results A total of 42 patients were enrolled in Gp-A, n = 22, and Gp-B, n = 20. There was no significant difference between the groups (Gp-A vs. Gp-B) in terms of age, model stage liver disease, Child-Turcotte-Pugh score and serum creatinine at inclusion (1.27 +/- 0.1 vs. 1.22 +/- 0.2 mg/dL). During follow up ten patients (50%) in Gp-B and four patients (18%) in Gp-A develop HRS-AKI (P = 0.04). The mean number of ascites tap was significantly higher in Gp-B compared to Gp-A (2.6 +/- 0.5 vs. 1.9 +/- 0.5) in 2 months. There was a significant increase in mean arterial pressure in Gp-A compared to Gp-B on days 7, 15, 30, 45 and 60. There was a significant difference in mean arterial pressure at day 7 in patients who developed HRS-AKI versus those who did not develop HRS-AKI [(n = 14, 65.5 +/- 5.5) vs. (n = 28,74.6 +/- 9.2 mm Hg), P = 0.02]. Conclusions Midodrine along with albumin infusion, is helpful in the secondary prophylaxis of HRS-AKI and reduces the number of ascites tap. However, a large randomized study is required for further validation.

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515.

Kidney damage associated with vesico ureteric reflux.
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Embase
Current Opinion in Pediatrics. 33(2) (pp 247-251), 2021. Date of Publication: 01 Apr 2021.
[Review]
AN: 2022748541
Purpose of reviewThe aim of this review is to highlight the most recent developments in the understanding of kidney damage associated with vesico ureteral reflux. The severe damage, with major adverse long-term sequelae, was thought to be, for the most part, the result of pyelonephritis, predisposed to by vesico ureteral reflux.Recent findingsIt is now recognized that there are two distinct forms of kidney damage (congenital and acquired), in association with reflux. We examined the most recent research regarding these two conditions.SummaryThe most recent articles focus on an understanding and the possible interventions for the congenital and acquired abnormalities of the kidney, associated with reflux. Of particular interest in congenital disorders, is the importance of urothelium and gene mutations in normal and aberrant development of the urinary tract. As regards the predisposition to urinary tract infections and kidney scarring, the importance of uromodulin in the defence mechanism preventing infection, and the role of interventions aimed at reducing scarring, such as vitamin A and steroids during the acute phase of the infection, are discussed. A recent article of particular value demonstrated the absence of long-term adverse outcomes during pregnancy, in women investigated for urinary tract infections in childhood.

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516.

Acute Kidney Injury After Neonatal Aortic Arch Surgery: Deep Hypothermic Circulatory Arrest Versus Moderate Hypothermia With Distal Aortic Perfusion.
Bottcher W., Weixler V., Redlin M., Murin P., Dehmel F., Schmitt K., Cho M.-Y., Miera O., Sinzobahamvya N., Photiadis J.
Embase
World Journal for Pediatric and Congenital Heart Surgery. 12(5) (pp 573-580), 2021. Date of Publication: October 2021.
[Article]
AN: 2013841157
Background: Acute kidney injury (AKI) is a common complication observed after neonatal aortic arch repair. We studied its incidence after procedures carried out using deep hypothermic circulatory arrest (DHCA) versus moderate hypothermia with distal aortic perfusion (MHDP), usually through the common femoral artery. In both groups, continuous regional cerebral perfusion (RCP) was used during the time required for aortic arch repair.

Method(s): A total of 125 neonates underwent aortic arch repair. Between 2007 and 2012, DHCA with RCP was used in 51 neonates. From 2013 to 2019, MHDP with RCP was performed on 74 newborns. Operative complexity was similar in both periods. Acute kidney injury was defined as a significant elevation of serum creatinine and was classified according to the neonatal modified n-KDIGO (neonatal Kidney Disease: Improving Global Outcomes) stages 1 to 3 (Kidney Disease Improving: Global Outcomes).
Result(s): Acute kidney injury was observed in a total of 68 patients (68/125: 54.4%). In the majority (44/68: 64.7%), n-KDIGO stage 1 occurred. Stage 2 (n = 14) and stage 3 (n = 10) were observed more frequently after DHCA versus MHDP: 29.4% (15/51) versus 12.2% (9/74), P =.02. At cardiopulmonary bypass end, lactate levels were significantly higher (P =.001) after DHCA: 3.4 (2.9-4.3) mmol/L compared to 2.7 (2.3-3.7) mmol/L after MHDP. Early mortality was 12% (15/125) in the entire cohort. It was 17.6% (9/51) after DHCA versus 8.1% (6/74) after MHDP, however not statistically significant (P =.16).
Conclusion(s): Mild (stage 1) AKI occurred frequently after neonatal aortic arch repair. The use of MHDP was associated with a significantly lower incidence of moderate (stage 2) and severe (stage 3) AKI forms.

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SAGE Publications Inc.
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517.

The Long-Term Renal Functions After An Episode of Acute Kidney Injury in Children. Cocuklarda Akut Bobrek Hasari Sonrasi Uzun Donem Bobrek Fonksiyonlari <Cocuklarda Akut Bobrek Hasari Sonrasi Uzun Donem Bobrek Fonksiyonlari.>
Oztek Celebi F.Z., Yazilitas F., Aydog O., Bulbul M.
Embase
Turkish Journal of Pediatric Disease. 15(6) (pp 507-512), 2021. Date of Publication: 2021.
[Article]
AN: 2022506671
Objective: It is widely accepted that an acute kidney injury (AKI) episode has long-term consequences such as chronic kidney disease. But the risk factors for poor renal outcome after an AKI episode are not well defined in paediatric age group. The aim of this study is to evaluate the first and fifth-year renal functions of the patients who undergo AKI during their hospital admission and to determine the risk factors affecting renal functions.

Material(s) and Method(s): 219 patients who underwent AKI from 2008 to 2012 were included in this study. 62 patients survived less than 1 year. The first and the fifth-year serum creatinine concentrations of the remaining 157 patients were reviewed retrospectively.
Result(s): Patients who were <=2 years of age and patients who were in Failure+Loss group at the time of AKI had significantly lower estimated Glomerular Filtration Rate (eGFR) values in the first and fifth year after AKI compared to patients who were>2 years of age and patients who were in Risk+Injury group. 25.7% and 40.3% of the patients had abnormal eGFR in the first and fifth year after AKI respectively. In a logistic regression model, factors associated with having abnormal eGFR in the first and fifth year after AKI included younger age but not an advanced degree of AKI.
Conclusion(s): The previous episode of AKI could cause harmful effects on renal functions of children in the long term. Younger age and advanced stage of AKI are associated with worse renal functions after an episode of AKI.

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Publisher
Ankara Pediatric Hematology Oncology Training and Research Hospital
Year of Publication
2021

518.

Assessment of urinary podocalyxin as a marker of glomerular injury in obesity-related kidney disease in children and adolescents with obesity compared to urinary albumin creatinine ratio.
Musa N., Ramzy T., Hamdy A., Arafa N., Hassan M.
Embase
Clinical Obesity. 11(4) (no pagination), 2021. Article Number: e12452. Date of Publication: August 2021.
[Article]
AN: 2011044104
Obesity increases the risk of chronic kidney disease in children. Our aim was to assess urinary podocalyxin (PCX) in children and adolescents with obesity as a potential marker of obesity-related kidney disease (ORKD). The current case-control study included 128 children with obesity compared to 60 non-obese age and sex matched controls. Study population were subjected to full history taking as well as thorough physical examination. Urine samples for albumin creatinine ratio (uACR) and PCX were collected from the study population as well as blood samples for assessment of serum creatinine and fasting lipid profile. A statistically significant difference was found between cases and controls regarding urinary PCX (P <.001) and uACR (P =.021). A

statistically significant positive correlation was found between uACR and weight SD score (SDS), body mass index SDS, waist circumference, estimated glomerular filtration rate, triglycerides (TG) as well as urinary PCX, whilst urinary PCX correlated significantly with obesity duration and uACR. Cases with microalbuminuria had a statistically significant higher waist circumference, waist-hip ratio, fat percentage, TG and urinary PCX compared to those with normal uACR (P =.042,.034,.05,.018 and.036 respectively). Urinary PCX showed 83.3% sensitivity and 74% specificity in detection of albuminuria. Urinary PCX was increased significantly in children with obesity making it a potential sensitive marker of ORKD in children.

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Publisher
John Wiley and Sons Inc
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2021

519.

Re-evaluating Renal Angina Index: An Authentic, Evidence-Based Instrument for Acute Kidney Injury Assessment: Critical Appraisal.
Raina R., Sethi S.K., Mawby I., Datla N., Kumar N., Agarwal N., Tibrewal A., Chakraborty R.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 682672. Date of Publication: 29 Jul 2021.
[Article]
AN: 635705027
Background/Introduction: Renal angina index (RAI) used to calculate and accurately predict risk for the development of acute kidney injury (AKI) has been heavily explored. AKI is traditionally diagnosed by an increase in serum creatinine (SCr) concentration or oliguria, both of which are neither specific nor sensitive, especially among children. An RAI score may be calculated by combining objective signs of kidney dysfunction (such as SCr) and patient context, such as AKI risk factors, thus potentially serving as a more accurate indicator for AKI.
Objective(s): Due to the propitious and novel nature of RAI, this editorial commentary aims to analyze the current literature on RAI and determine how well RAI serves as a predictor of AKI outcomes.
Method(s): A comprehensive literature search was conducted in PubMed/Medline and Google Scholar between January 2012 and July 2020. Literature included the prognostic aspect of early prediction of AKI in the pediatric and adult population via RAI.
Result(s): The initial literature search included 149 studies, and a total of 10 studies reporting the outcomes of interest were included. The overall sample size across these studies was 11,026. The predictive ability of RAI had a pooled (95% CI) sensitivity of 79.21%, specificity of 73.22%, and negative predictive value of 94.83%.

Conclusion(s): RAI shows benefit in the prediction of AKI among adult and pediatric populations. However, there is a lack of sufficient data, and further prospective studies are needed in pediatric populations to use RAI as a principal AKI indicator among clinicians.

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Publisher
Frontiers Media S.A.
Year of Publication
2021

520.

Doppler finding in acute kidney injury in neonates with perinatal asphyxia.
Hussein A.H., Dawoud O.A., Fawal F.M.A., Eldien A.M.A.
Embase
Turkish Journal of Physiotherapy and Rehabilitation. 32(3) (pp 10090-10098), 2021. Date of Publication: 2021.
[Article]
AN: 2013984540
Background: Asphyxia is an important cause of acute kidney injury (AKI) and transient kidney impairment. Both (color) Doppler sonography (CDS) and amplitude-coded color Doppler sonography (aCDS) investigations add functional imaging to the anatomic-morphologic description of US and are mandatory in neonatal oligo anuria and renal failure. Aim of the study: The aim of this study was to determine the usefulness of renal Doppler as a diagnostic tool in acute renal failure in perinatal asphyxia.
Patients and Methods: 72 neonates (divided into 36 healthy and 36 asphyxiated) were examined at NICUs and case control study was done. Doppler examination was done using 9-11 MHz linear probe with both kidneys scanned in both long and short axes. Results were based on the mean value for each kidney was calculated. The left and right kidneys had similar patterns and data in each patient.
Result(s): In asphyxiated neonates renal Doppler showed there was significant decrease in both peak systolic flow volume and end diastolic flow volume and significant increase in resistive index in comparison to the healthy neonates. The sensitivity of Doppler examination was 75%, specificity was 80.6%, positive predictive was 79.4%, Negative predictive value was 76.3% and accuracy was 77.8%.
Conclusion(s): This study demonstrated that renal Doppler examination can be useful tool in early detection of acute renal failure in perinatal asphyxia.

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Publisher
Turkish Physiotherapy Association
Year of Publication
2021

521.

Acute Kidney Injury Post-cardiac Surgery in Infants and Children: A Single-Center Experience in a Developing Country.
Aoun B., Daher G.A., Daou K.N., Sanjad S., Tamim H., El Rassi I., Arabi M., Sharara R., Bitar F., Assy J., Bulbul Z., Degheili J.A., Majdalani M.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 637463. Date of Publication: 26 Jul 2021.
[Article]
AN: 635658605
Introduction: The incidence of acute kidney injury (AKI) in pediatric patients following cardiac surgery varies between 15 and 64%, with a mortality rate of 10-89% among those requiring dialysis. This variation in the incidence and mortality of AKI across studies is probably due to the inconsistent definitions used for AKI. The purpose of this study is to present our experience with AKI post-cardiac surgery with emphasis on predisposing or aggravating factors.
Patients and Methods: We evaluated the incidence of AKI using the KDIGO criteria in 150 infants and children undergoing cardiac surgeries between 2015 and 2017. Post-operatively, all patients were admitted to the pediatric intensive care unit (PICU) at a tertiary care center in a developing country. This is a retrospective chart review in which data collected included age, gender, type of heart disease, prior cardiac surgeries, RACHS-1 category, and pre- and post-operative creatinine levels. Neonates were not included in this study.
Result(s): Six percent of the studied patients were below 1 year of age, 84% 1-10 years, and 10% 10-18 years. Fourteen patients (9.3%) developed AKI. Patients with cyanotic heart disease were more prone to develop AKI (78%) compared to those with non-cyanotic heart disease (44%). Children with AKI had a higher length of stay in PICU, 2.56 +/- 1.44 vs. 4 +/- 2.66 (p- 0.02). Serum lactic acid was higher in patients who developed AKI with a mean value of 6.8 +/- 6.9 vs. 2.85 +/- 1.55 mmol/l in the non-AKI group (p- 0.03). Lower hemoglobin levels and hyperlactic acidemia were significantly more prevalent in the AKI group. There were five deaths in this series (3.3%), and four of those (80%) were in the AKI group.
Conclusion(s): Using the KDIGO criteria, the incidence of AKI in infants and children following cardiac surgery was 9.3%. This is slightly lower than in previously published studies where the range was between 15 and 64%. Children with cyanotic cardiac disease, hyperlactic acidemia, and anemia were more prone to developing AKI. Identifying patients at risk might help decrease the risk of post-operative AKI.

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Publisher
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522.

The Albumin-to-Fibrinogen Ratio Independently Predicts Acute Kidney Injury in Infants With Ventricular Septal Defect Undergoing Cardiac Surgery With Cardiopulmonary Bypass.
Cao F., Chen X., Huang G., Liu W., Zhou N., Yuan H., Zou M.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 682839. Date of Publication: 19 Jul 2021.
[Article]
AN: 635643303
Background: Acute kidney injury (AKI) is a common and serious complication faced by children following ventricular septal defect (VSD) surgery with cardiopulmonary bypass (CPB). The objective of this study was to explore potential predictors inherent to AKI.
Method(s): VSD infants who were scheduled for elective cardiac surgery with CPB from 2017 to 2020 were enrolled in this study. Based on the Pediatric Risk, Injury, Failure, Loss, End-Stage Renal Disease (pRIFLE) criteria, patients were divided into AKI and non-AKI groups. Univariate and multivariate logistic regression analyses were carried out in order to evaluate potential risk factors for AKI. Receiver operating characteristic (ROC) curves were generated to evaluate the predictive probabilities of risk factors for AKI.
Result(s): Of all the 338 enrolled VSD infants, 49 manifested AKI with an incidence of 14.5% (49/338). The ROC curve indicated that albumin-to-fibrinogen ratio (AFR) during CPB was a significant predictor of AKI [area under the curve (AUC), 0.711; $p < 0.001$]. Based on the univariate and multivariate logistic analyses, AFR during CPB [odds ratio (OR), 1.89; 95% confidence interval (CI), 1.22-2.76, $p = 0.011$] was the only independent risk factor for AKI.
Conclusion(s): This study demonstrated that a low AFR (<9.35) during CPB was an independent risk factor for AKI in VSD infants following cardiac surgery with CPB.

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Year of Publication
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523.

Risk Factors for Acute Kidney Injury in Critically Ill Neonates: A Systematic Review and Meta-Analysis.
Hu Q., Li S.-J., Chen Q.-L., Chen H., Li Q., Wang M.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 666507. Date of Publication: 14 Jul 2021.
[Review]
AN: 635572981
Background and Objective: Acute kidney injury (AKI) is recognized as an independent risk factor for mortality and long-term poor prognosis in neonates. The objective of the study was to identify the risk factors for AKI in critically ill neonates to provide an important basis for follow-up research studies and early prevention.
Method(s): The PubMed, Embase, Web of Science, Cochrane Library, China National Knowledge Infrastructure, WanFang Med, SinoMed, and VIP Data were searched for studies of risk factors in critically ill neonates. Studies published from the initiation of the database to November 19, 2020, were included. The quality of studies was assessed by the Newcastle-Ottawa Scale and the Agency for Healthcare Research and Quality (AHRQ) checklist. The meta-analysis was conducted with Stata 15 and drafted according to the guidelines of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement.
Result(s): Seventeen studies (five cohort studies, ten case-control studies, and two cross-sectional studies) were included in meta-analysis, with 1,627 cases in the case group and 5,220 cases in the control group. The incidence of AKI fluctuated from 8.4 to 63.3%. Fifteen risk factors were included, nine of which were significantly associated with an increased risk of AKI in critically ill neonates: gestational age [standardized mean difference (SMD) = -0.31, 95%CI = (-0.51, -0.12), P = 0.002], birthweight [SMD = -0.37, 95%CI = (-0.67, -0.07), P = 0.015], 1-min Apgar score [SMD = -0.61, 95%CI = (-0.78, -0.43), P = 0.000], 5-min Apgar score [SMD = -0.71, 95%CI = (-1.00, -0.41), P = 0.000], congenital heart disease (CHD) [odds ratio (OR) = 2.94, 95%CI = (2.08, 4.15), P = 0.000], hyperbilirubinemia [OR = 2.26, 95%CI = (1.40, 3.65), P = 0.001], necrotizing enterocolitis (NEC) [OR = 6.32, 95%CI = (2.98, 13.42), P = 0.000], sepsis [OR = 2.21, 95%CI = (1.25, 3.89), P = 0.006], and mechanical ventilation [OR = 2.37, 95%CI = (1.50, 3.75), P = 0.000]. Six of them were not significantly associated with AKI in critically ill neonates: age [SMD = -0.25, 95%CI = (-0.54, 0.04), P = 0.095], male sex [OR = 1.10, 95%CI =(0.97, 1.24), P = 0.147], prematurity [OR = 0.90, 95%CI(0.52, 1.56), P = 0.716], cesarean section [OR = 1.52, 95%CI(0.77, 3.01), P = 0.234], prenatal hemorrhage [OR = 1.41, 95%CI = (0.86, 2.33), P = 0.171], and vancomycin [OR = 1.16, 95%CI = (0.71, 1.89), P = 0.555].
Conclusion(s): This meta-analysis provides a preliminary exploration of risk factors in critically ill neonatal AKI, which may be useful for the prediction of AKI. Systematic Review Registration: PROSPERO (CRD42020188032).

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Publisher
Frontiers Media S.A.

Year of Publication
2021

524.

Intraoperative and Postoperative Hemodynamic Predictors of Acute Kidney Injury in Pediatric Heart Transplant Recipients.
Hollander S.A., Chung S., Reddy S., Zook N., Yang J., Vella T., Navaratnam M., Price E., Sutherland S.M., Algaze C.A.
Embase
Journal of Pediatric Intensive Care. (no pagination), 2021. Date of Publication: 2021.
[Article]
AN: 636226157
Acute kidney injury (AKI) is common after pediatric heart transplantation (HT) and is associated with inferior patient outcomes. Hemodynamic risk factors for pediatric heart transplant recipients who experience AKI are not well described. We performed a retrospective review of 99 pediatric heart transplant patients at Lucile Packard Children's Hospital Stanford from January 1, 2015, to December 31, 2019, in which clinical and demographic characteristics, intraoperative perfusion data, and hemodynamic measurements in the first 48 postoperative hours were analyzed as risk factors for severe AKI (Kidney Disease: Improving Global Outcomes [KDIGO] stage >= 2). Univariate analysis was conducted using Fisher's exact test, Chi-square test, and the Wilcoxon rank-sum test, as appropriate. Multivariable analysis was conducted using logistic regression. Thirty-five patients (35%) experienced severe AKI which was associated with lower intraoperative cardiac index (p = 0.001), higher hematocrit (p < 0.001), lower body temperature (p < 0.001), lower renal near-infrared spectroscopy (p = 0.001), lower postoperative mean arterial blood pressure (MAP: p = 0.001), and higher central venous pressure (CVP; p < 0.001). In multivariable analysis, postoperative CVP >12 mm Hg (odds ratio [OR] = 4.27; 95% confidence interval [CI]: 1.48-12.3, p = 0.007) and MAP <65 mm Hg (OR = 4.9; 95% CI: 1.07-22.5, p = 0.04) were associated with early severe AKI. Children with severe AKI experienced longer ventilator, intensive care, and posttransplant hospital days and inferior survival (p = 0.01). Lower MAP and higher CVP are associated with severe AKI in pediatric HT recipients. Patients, who experienced AKI, experienced increased intensive care unit (ICU) morbidity and inferior survival. These data may guide the development of perioperative renal protective management strategies to reduce AKI incidence and improve patient outcomes.

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525.

Pediatric Acute Kidney Injury Survivors Need Risk Stratification and Individualized Follow-Up.
Zhao Y., Pu Y., Zhang L., Fu P.
Embase
Journal of the American Society of Nephrology : JASN. (no pagination), 2021. Date of Publication: 16 Sep 2021.
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Publisher
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Year of Publication
2021

526.

Urine Quantification following Furosemide for Severe Acute Kidney Injury Prediction in Critically Ill Children.
Gist K.M., Penk J., Wald E.L., Kitzmiller L., Webb T.N., Krallman K., Brinton J., Soranno D.E., Goldstein S.L., Basu R.K.
Embase
Journal of Pediatric Intensive Care. (no pagination), 2021. Date of Publication: 2021.
[Article]
AN: 635685913
A standardized, quantified assessment of furosemide responsiveness predicts acute kidney injury (AKI) in children after cardiac surgery and AKI progression in critically ill adults. The purpose of this study was to determine if response to furosemide is predictive of severe AKI in critically ill children outside of cardiac surgery. We performed a multicenter retrospective study of critically ill children. Quantification of furosemide response was based on urine flow rate (normalized for weight) measurement 0 to 6 hours after the dose. The primary outcome was presence of creatinine defined severe AKI (Kidney Disease Improving Global Outcomes stage 2 or greater) within 7 days of furosemide administration. Secondary outcomes included mortality, duration of mechanical ventilation and length of stay. A total of 110 patients were analyzed. Severe AKI

occurred in 20% (n = 22). Both 2-and 6-hour urine flow rate were significantly lower in those with severe AKI compared with no AKI (p = 0.002 and p < 0.001). Cutoffs for 2-and 6-hour urine flow rate for prediction of severe AKI were <4 and <3 mL/kg/hour, respectively. The adjusted odds of developing severe AKI for 2-hour urine flow rate of <4 mL/kg/hour was 4.3 (95% confidence interval [CI]: 1.33-14.15; p = 0.02). The adjusted odds of developing severe AKI for 6-hour urine flow rate of <3 mL/kg/hour was 6.19 (95% CI: 1.85-20.70; p = 0.003). Urine flow rate in response to furosemide is predictive of severe AKI in critically ill children. A prospective assessment of urine flow rate in response to furosemide for predicting subsequent severe AKI is warranted.

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Publisher
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527.

Incidence, risk factors, and adverse outcomes of acute kidney injury in very premature neonates: a single center experience.
Ustun N.
Embase
Turkish journal of medical sciences. (no pagination), 2021. Date of Publication: 21 Jul 2021.
[Article]
AN: 635664073
BACKGROUND/AIM: Acute kidney injury (AKI) is a serious morbidity in premature neonates. The aim of this study was to determine the incidence of AKI and to evaluate its impact on morbidity and mortality in very premature infants. MATERIALS AND METHODS: This retrospective cohort study was conducted in the neonatal intensive care unit (NICU). A total of 410 preterm infants who were born before 32 gestational weeks were screened and 318 were included in this analysis. AKI was defined according to the modified neonatal Kidney Disease: Improving Global Outcomes criteria.

RESULT(S): The incidence of AKI was 32.1% (102/318). Regression analyses revealed that lower gestational age, vasopressor use, and hemodynamically significant patent ductus arteriosus were significantly associated with an increased risk for AKI. After adjustment for potential confounders, those with AKI had a higher risk of death before 36 weeks of corrected gestational age (adjusted hazard ratio: 3.02, 95% confidence interval 1.47- 6.22). Additionally, the AKI group had a higher rate of bronchopulmonary dysplasia (BPD) (46% vs. 24%, p < 0.001) and longer hospital stay with a mean difference of 38 days.
CONCLUSION(S): AKI is common in very premature neonates and associated with higher mortality, longer hospital stay, and BPD. Identification of risk factors and preventive strategies for AKI may improve the outcomes in this vulnerable population.
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34284537 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34284537]
Status
Article-in-Press
Publisher
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Year of Publication
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528.

C-reactive protein and haemoglobin level in acute kidney injury among preterm newborns.
Kadi F.A., Yuniati T., Sribudian Y., Rachmadi D.
Embase
Medicinski glasnik : official publication of the Medical Association of Zenica-Doboj Canton, Bosnia and Herzegovina. 18(2) (no pagination), 2021. Date of Publication: 01 Aug 2021.
[Article]
AN: 635495975
Aim To explore the possibility of C-reactive protein (CRP) and haemoglobin (Hb) in prediction and risk assessment of acute kidney injury (AKI) among preterm newborns. This is believed to be closely related to the incidences of AKI, and could be the most affordable in early detection of AKI. Methods A case control study was carried out at Dr Hasan Sadikin Hospital in Bandung with a total of 112 preterms divided into two groups: with and without AKI based on the neonatal KDIGO (Kidney Disease: Improving Global Outcomes). CRP and creatinine serum were measured within 6 hours and at 72-96 hours after birth. The routine blood count included haemoglobin, haematocrit, leucocyte, and thrombocyte in the first 24 hours of life. Results CRP increase was the most influential factor for AKI with sensitivity of 80.6% and specificity of 60.2%. An increase in CRP >0.04 had an aOR (95% CI) of 5.64 (1.89-16.84). Haemoglobin <14.5 g/dL had slightly increased aOR (95% CI) of 1.65 (1.05- 8.63) Conclusion CRP increases >0.04 and level Hb <14.5 g/dL showed acceptable as an early warning for AKI in preterm newborns.
PMID
34190503 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34190503]
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Publisher
NLM (Medline)
Year of Publication
2021

529.

Long-term Kidney Outcomes Following Childhood Acute Kidney Injury Receiving Dialysis: A Population-based Cohort Study.
Robinson C., Jeyakumar N., Luo B., Wald R., Garg A., Nash D., McArthur E., Greenberg J., Askenazi D., Mammen C., Thabane L., Goldstein S., Parekh R., Zappitelli M., Chanchlani R.
Embase
Journal of the American Society of Nephrology : JASN. (no pagination), 2021. Date of Publication: 26 May 2021.
[Article]
AN: 635166897
Background Acute kidney injury (AKI) is common during pediatric hospitalizations and associated with adverse short-term outcomes. However, long-term outcomes among survivors of pediatric AKI who received dialysis remain uncertain. Methods To determine the long-term risk of kidney failure (defined as receipt of chronic dialysis or kidney transplant) or death over a 22-year period for pediatric survivors of dialysistreated AKI, we used province-wide health administrative databases to perform a retrospective cohort study of all neonates and children (aged 0-18 years) hospitalized in Ontario, Canada, from April 1, 1996, to March 31, 2017, who survived a dialysis-treated AKI episode. Each AKI survivor was matched to four hospitalized pediatric comparators without dialysis-treated AKI, based on age, sex, and admission year. We reported the incidence of each outcome and performed Cox proportional hazards regression analyses, adjusting for relevant covariates. Results We identified 1688 pediatric dialysis-treated AKI survivors (median age 5 years) and 6752 matched comparators. Among AKI survivors, 53.7% underwent mechanical ventilation and 33.6% had cardiac surgery. During a median 9.6-year follow-up, AKI survivors were at significantly increased risk of a \ composite outcome of kidney failure or death versus comparators. Death occurred in 113 (6.7%) AKI survivors, 44 (2.6%) developed kidney failure, 174 (12.1%) developed hypertension, 213 (13.1%) developed chronic kidney disease (CKD), and 237 (14.0%) had subsequent AKI. AKI survivors had significantly higher risks of developing CKD and hypertension versus comparators. Risks were greatest in the first year after discharge and gradually decreased over time. Conclusions Survivors of pediatric dialysis-treated AKI are at higher long-term risks of kidney failure, death, CKD, and hypertension, compared with a matched hospitalized cohort.
PMID
34039667 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34039667]
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Publisher
NLM (Medline)
Year of Publication
2021

530.

Association Between Acute Kidney Injury Duration and Outcomes in Critically Ill Children.
Alobaidi R., Anton N., Burkholder S., Garros D., Garcia Guerra G., Ulrich E.H., Bagshaw S.M.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. (no pagination), 2021. Date of Publication: 26 Feb 2021.
[Article]
AN: 634600463
OBJECTIVES: Acute kidney injury occurs frequently in children during critical illness and is associated with increased morbidity, mortality, and health resource utilization. We aimed to examine the association between acute kidney injury duration and these outcomes. DESIGN: Retrospective cohort study. SETTINGS: PICUs in Alberta, Canada. PATIENTS: All children admitted to PICUs in Alberta, Canada between January 1, 2015, and December 31, 2015.None. MEASUREMENTS AND MAIN RESULTS: In total, 1,017 children were included, and 308 (30.3%) developed acute kidney injury during PICU stay. Acute kidney injury was categorized based on duration to transient (48 hr or less) or persistent (more than 48 hr). Transient acute kidney injury occurred in 240 children (77.9%), whereas 68 children (22.1%) had persistent acute kidney injury. Persistent acute kidney injury had a higher proportion of stage 2 and stage 3 acute kidney injury compared with transient acute kidney injury and was more likely to start within 24 hours from PICU admission. Persistent acute kidney injury occurred more frequently in those with higher illness severity and in those admitted with shock, sepsis, or with a history of transplant. Mortality varied significantly according to acute kidney injury status: 1.8% of children with no acute kidney injury, 5.4% with transient acute kidney injury, and 17.6% with persistent acute kidney injury died during hospital stay ($p < 0.001$). On multivariable analysis adjusting for illness and acute kidney injury severity, transient and persistent acute kidney injury were both associated with fewer ventilation-free days at 28 days (-1.28 d; 95% CI, -2.29 to -0.26 and -4.85 d; 95% CI, -6.82 to -2.88), vasoactive support-free days (-1.07 d; 95% CI, -2.00 to -0.15 and -4.24 d; 95% CI, -6.03 to -2.45), and hospital-free days (-1.93 d; 95% CI, -3.36 to -0.49 and -5.25 d; 95% CI, -8.03 to -2.47), respectively.
CONCLUSION(S): In critically ill children, persistent and transient acute kidney injury have different clinical characteristics and association with outcomes. Acute kidney injury, even when its duration is short, carries significant association with worse outcomes. This risk increases further if acute kidney injury persists longer independent of the degree of its severity.
PMID
33729733 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33729733]
Status
Article-in-Press

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Publisher
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Year of Publication
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531.

Sickle cell nephropathy. Clinical manifestations and new mechanisms involved in kidney injury. Nefropatia falciforme. Manifestaciones clinicas y nuevos mecanismos implicados en el dano renal <Nefropatia falciforme. Manifestaciones clinicas y nuevos mecanismos implicados en el dano renal.>
Payan-Pernia S., Ruiz Llobet A., Remacha Sevilla AF., Egido J., Ballarin Castan J.A., Moreno J.A.
Embase
Nefrologia : publicacion oficial de la Sociedad Espanola Nefrologia. (no pagination), 2021. Date of Publication: 10 Mar 2021.
[Review]
AN: 634573899
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33714630 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33714630]
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Publisher
NLM (Medline)
Year of Publication
2021

532.

Serum Creatinine Monitoring After Acute Kidney Injury in the PICU.
Robinson C., Benisty K., Cockovski V., Joffe A.R., Garros D., Riglea T., Pizzi M., Palijan A., Chanchlani R., Morgan C., Zappitelli M.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. (no pagination), 2021. Date of Publication: 20 Jan 2021.
[Article]
AN: 634545687
OBJECTIVES: It is unknown whether children with acute kidney injury during PICU admission have kidney function monitored after discharge.
OBJECTIVE(S): 1) describe postdischarge serum creatinine monitoring after PICU acute kidney injury and 2) determine factors associated with postdischarge serum creatinine monitoring.
DESIGN: Secondary analysis of longitudinal cohort study data. SETTING: Two PICUs in Montreal and Edmonton, Canada. PATIENTS: Children (0-18 yr old) surviving PICU admission greater than or equal to 2 days from 2005 to 2011. EXCLUSIONS: postcardiac surgery and prior kidney disease. EXPOSURE: acute kidney injury by Kidney Disease: Improving Global Outcomes serum creatinine definition.None. MEASUREMENTS: Primary outcome: postdischarge serum creatinine measured by 90 days, 1 year, and 5-7 years. SECONDARY OUTCOMES: Healthcare events and nephrology follow-up. ANALYSIS: Proportions with outcomes; logistic regression to evaluate factors associated with the primary outcome. Kaplan-Meier analysis of time to serum creatinine measurement and healthcare events. MAIN RESULTS: Of n = 277, 69 (25%) had acute kidney injury; 29/69 (42%), 34/69 (49%), and 51/69 (74%) had serum creatinine measured by 90 days, 1 year, and 5-7 year postdischarge, respectively. Acute kidney injury survivors were more likely to have serum creatinine measured versus nonacute kidney injury survivors at all time points (p <= 0.01). Factors associated with 90-day serum creatinine measurement were inpatient nephrology consultation (unadjusted odds ratio [95% CI], 14.9 [1.7-127.0]), stage 2-3 acute kidney injury (adjusted odds ratio, 3.4 [1.1-10.2]), and oncologic admission diagnosis (adjusted odds ratio, 10.0 [1.1-93.5]). A higher proportion of acute kidney injury versus nonacute kidney injury survivors were readmitted by 90 days (25 [36%] vs 44 [21%]; p = 0.01) and 1 year (33 [38%] vs 70 [34%]; p = 0.04). Of 24 acute kidney injury survivors diagnosed with chronic kidney disease or hypertension at 5-7 year follow-up, 16 (67%) had serum creatinine measurement and three (13%) had nephrology follow-up postdischarge.
CONCLUSION(S): Half of PICU acute kidney injury survivors have serum creatinine measured within 1-year postdischarge and follow-up is suboptimal for children developing long-term kidney sequelae. Knowledge translation strategies should emphasize the importance of serum creatinine monitoring after childhood acute kidney injury.
PMID
33689252 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33689252]
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Publisher
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Year of Publication
2021

533.

Low hemoglobin levels are independently associated with neonatal acute kidney injury: a report from the AWAKEN Study Group.
Li L., Nada A., Askenazi D., Boohaker L.J., Mahan J.D., Charlton J., Griffin R.L., Selewski D.T., Ambalavanan N., Sarkar S., Kent A., Fletcher J., Abitbol C.L., DeFreitas M., Duara S., Swanson J.R., D'Angio C., Mian A., Rademacher E., Mhanna M.J., Raina R., Kumar D., Jetton J.G., Brophy P.D., Colaizy T.T., Klein J.M., Akcan-Arikan A., Joseph C., Rhee C.J., Kupferman J.C., Bhutada A., Rastogi S., Cole F.S., Davis T.K., Milner L., Smith A., Fuloria M., Kaskel F.J., Reidy K., Gist K.M., Soranno D.E., Gien J., Hanna M., Chishti A.S., Hingorani S., Starr M., Wong C.S., DuPont T., Ohls R., Khokhar S., Perazzo S., Ray P.E., Revenis M., Sethi S.K., Rohatgi S., Mammen C., Synnes A., Wazir S., Zappitelli M., Woroniecki R., Sridhar S., Goldstein S.L., Nathan A.T., Staples A., Wintermark P., Guillet R.
Embase
Pediatric Research. 89(4) (pp 922-931), 2021. Date of Publication: March 2021.
[Article]
AN: 2005198609
Background: Studies in adults showed a relationship between low hemoglobin (Hb) and acute kidney injury (AKI). We performed this study to evaluate this association in newborns.
Method(s): We evaluated 1891 newborns from the Assessment of Worldwide AKI Epidemiology in Neonates (AWAKEN) database. We evaluated the associations for the entire cohort and 3 gestational age (GA) groups: <29, 29-<36, and >=36 weeks' GA.
Result(s): Minimum Hb in the first postnatal week was significantly lower in neonates with AKI after the first postnatal week (late AKI). After controlling for multiple potential confounders, compared to neonates with a minimum Hb >=17.0 g/dL, both those with minimum Hb <=12.6 and 12.7-14.8 g/dL had an adjusted increased odds of late AKI (aOR 3.16, 95% CI 1.44-6.96, p = 0.04) and (aOR 2.03, 95% CI 1.05-3.93; p = 0.04), respectively. This association was no longer evident after controlling for fluid balance. The ability of minimum Hb to predict late AKI was moderate (c-statistic 0.68, 95% CI 0.64-0.72) with a sensitivity of 65.9%, a specificity of 69.7%, and a PPV of 20.8%.
Conclusion(s): Lower Hb in the first postnatal week was associated with late AKI, though the association no longer remained after fluid balance was included. Impact: The current study suggests a possible novel association between low serum hemoglobin (Hb) and neonatal acute kidney injury (AKI).The study shows that low serum Hb levels in the first postnatal week are associated with increased risk of AKI after the first postnatal week.This study is the first to show this relationship in neonates.Because this study is retrospective, our observations cannot be considered proof of a causative role but do raise important questions and deserve further investigation. Whether the correction of low Hb levels might confer short- and/or long-term renal benefits in neonates was beyond the scope of this study.

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Status

Embase
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Publisher
Springer Nature
Clinical Trial Number
https://clinicaltrials.gov/show/NCT02443389

Year of Publication
2021

534.

T-Cell Expression and Release of Kidney Injury Molecule-1 in Response to Glucose Variations Initiates Kidney Injury in Early Diabetes.
Forbes J.M., McCarthy D.A., Kassianos A.J., Baskerville T., Fotheringham A.K., Giuliani K.T.K., Grivei A., Murphy A.J., Flynn M.C., Sullivan M.A., Chandrashekar P., Whiddett R., Radford K.J., Flemming N., Beard S.S., D'silva N., Nisbet J., Morton A., Teasdale S., Russell A., Isbel N., Jones T., Couper J., Healy H., Harris M., Donaghue K., Johnson D.W., Cotterill A., Barrett H.L., O'moore-Sullivan T.
Embase
Diabetes. 70(8) (pp 1754-1766), 2021. Date of Publication: August 2021.
[Article]
AN: 2018423010
Half of the mortality in diabetes is seen in individuals <50 years of age and commonly predicted by the early onset of diabetic kidney disease (DKD). In type 1 diabetes, increased urinary albumin-to-creatinine ratio (uACR) during adolescence defines this risk, but the pathological factors responsible remain unknown. We postulated that early in diabetes, glucose variations contribute to kidney injury molecule-1 (KIM-1) release from circulating T cells, elevating uACR and DKD risk. DKD risk was assigned in youth with type 1 diabetes (n 5 100; 20.0 +/- 2.8 years; males/females, 54:46; HbA1c 66.1 [12.3] mmol/mol; diabetes duration 10.7 +/- 5.2 years; and BMI 24.5 [5.3] kg/m2) and 10-year historical uACR, HbA1c, and random blood glucose concentrations collected retrospectively. Glucose fluctuations in the absence of diabetes were also compared with streptozotocin diabetes in apolipoprotein E/ mice. Kidney biopsies were used to examine infiltration of KIM-1-expressing T cells in DKD and compared with other chronic kidney disease. Individuals at high risk for DKD had persistent elevations in uACR defined by area under the curve (AUC; uACR AUC0-10yrs, 29.7 +/- 8.8 vs. 4.5 +/- 0.5; P < 0.01 vs. low risk) and early kidney dysfunction, including ~8.3 mL/min/1.73 m2 higher estimated glomerular filtration rates (modified Schwartz equation; Padj < 0.031 vs. low risk) and plasma KIM-1 concentrations (~15% higher vs. low risk; P < 0.034). High-risk individuals had greater glycemic variability and increased peripheral blood T-cell KIM-1 expression, particularly on CD8+ T cells. These findings were confirmed in a murine model of glycemic variability both in the presence and absence of diabetes. KIM-1+ T cells were also infiltrating kidney biopsies from individuals with DKD. Healthy primary human proximal tubule epithelial cells exposed to plasma from high-risk youth with diabetesshowedelevatedcollagenIVandsodium-glucose cotransporter 2 expression, alleviated with KIM-1 blockade. Taken together, these studies suggest that glycemic variations confer risk for DKD in diabetes via increased CD8+ T-cell production of KIM-1.

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34285121 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34285121]
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Embase
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Publisher
American Diabetes Association Inc.
Year of Publication
2021

535.

Management of severe hypernatremic dehydration and acute kidney injury in children in a critical care nephrology and dialysis unit.
Shireen A., Tahmina F., Farhana Y., Umme T., Sukriti B., Hossain M.K.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 32(5) (pp 1431-1440), 2021. Date of Publication: 01 Sep 2021.
[Article]
AN: 637957464
Our study aimed to manage the children presented with severe hypernatremic dehydration and acute kidney injury (AKI) an updated fluid management protocol was used to find out the rate of decline of serum sodium per day and their outcome. This is a prospective interventional study was conducted from November 2015 up to October 2016 in the Critical Care Nephrology and Dialysis Unit of Dhaka Shishu (Children) Hospital, Bangladesh. A total of 45 children with hypernatremia and AKI were evaluated. Patients were treated by the calculated amount of dextrose in normal saline mixed with various dilutions of 3% NaCl with a difference of serum to infusate sodium concentration around 10 mEq/L as per the American Academy of Pediatrics - 2005. Intermittent peritoneal dialysis was done when in the failure stage of AKI or when serum sodium (Na+) >180 mEq/L. Depending on the outcome samples were divided into survival and death groups. Data were processed by software STATA 13 and analysis was done by one-way ANOVA, Tukey test, Chi-square test, F-test, and Student's t-test. Age ranged from one month to 61/2 years and 91% were infants. Total 64% of patients were in the failure stage of AKI and majority were in the death group, 31% in injury and 4.4% patient in the risk stage. Out of 45 cases, 30 (67%) had severe hypernatremia. Significant reduction of serum Na+ was found and

the rate of decline between days was optimum (8.4 mmol/L/day). Overall 60% survived with normal renal functions and 40% died. The calculated amount of dextrose in normal saline mixed with various dilutions of 3% NaCl is safe in severe hypernatremic dehydration with AKI.
PMID
35532714 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35532714]
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Publisher
NLM (Medline)
Year of Publication
2021

536.

Utility of Urine N-acetyl-beta-D-glucosaminidase for Prediction of Renal Damage in Obese Children.
Safaeian B., Nickavar A., Zaeri H., Lahootian L., Behnampour N.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 32(3) (pp 699-702), 2021. Date of Publication: 01 May 2021.
[Article]
AN: 637152688
The incidence of obesity has increased globally in children and adults. In addition, renal dysfunction is an important complication of childhood obesity. This study was performed to identify the diagnostic value of N-acetyl-beta-D-glucosaminidase (NAG), a renal injury marker, for the early determination of renal damage in childhood obesity. Totally, 115 obese children and 115 healthy normal weight controls were enrolled in a cross-sectional case-control study. Urine NAG was measured in sample urine and normalized by urine creatinine (CR). In addition, correlation of urine NAG with other variables such as blood pressure (BP), blood glucose, and urine albumin was evaluated. Mean systolic BP (P <0.001), serum glucose (P = 0.047), urine albumin/Cr (P = 0.049), and urine NAG/Cr (P = 0.037) were significantly higher in obese children, compared with normal healthy controls. There was no correlation between urine NAG and urine albumin excretion. Urinary NAG/Cr was a simple and safe screening test for early determination of renal damage in children with obesity.
PMID
35102911 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35102911]
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Publisher
NLM (Medline)
Year of Publication
2021

537.

Epidemiology of community-acquired acute kidney injury in children as seen in an emergency room of Tertiary Hospital in South-South Nigeria.
Ezeonwu B.U., Abonyi L.E., Odetunde O.I., Nnodim I.J., Nwafor I.O., Ajaegbu O.C., Emeagui O.D., Okoli N.E., Okolo A.A.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 32(2) (pp 428-436), 2021. Date of Publication: 01 Mar 2021.
[Article]
AN: 637053124
Acute kidney injury (AKI) is an abrupt or rapid decline in renal function as evidenced by a rapid rise in serum creatinine (SCr) or decrease in urine output. AKI occurs in children. The aim of the study is to document the epidemiology of AKI in our setting. This was a prospective cross-sectional observational study of all the admissions at the children emergency room of Federal Medical Center in Asaba, Delta State. A diagnosis of community-acquired AKI was made using the pRIFLE criteria if there was a 25% decrease in estimated creatinine clearance from the premorbid baseline (if known) or assumed baseline of 100 mL/min/1.73 m2 and/or urine output <0.5 mL/kg/h for >8 h within the 48 h of admission. There were 404 admissions during the period and those with AKI were 58, giving an incidence rate of 14.4 cases per 100 children aged between >1 month and 16 years. The mean age of the subjects with AKI was 35.7 months. Subjects with AKI stages R (risk), I (injury), and F (failure) were, respectively, 44.8%, 39.7%, and 8.6%. The most common causes were acute gastroenteritis (36.2%), complicated malaria (10.3%), and primary renal disease (10.3%). Age group and sickle cell anemia predicted AKI in these subjects. For the outcome of the AKI, two (3.4%) died, while 55 (96.6%) subjects were discharged alive. The level of SCr within 48 h of admission predicted the outcome of AKI. The prevalence of AKI is high, gastroenteritis being the most common etiology.
PMID
35017337 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35017337]
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Publisher
NLM (Medline)
Year of Publication
2021

538.

Acute kidney injury in children hospitalized with a relapse of nephrotic syndrome: A short-term outcome study.
Kumar R., Agrwal S., Mantan M., Yadav S.
Embase

Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 32(2) (pp 437-444), 2021. Date of Publication: 01 Mar 2021.
[Article]
AN: 637052111
Children with nephrotic syndrome (NS) have a number of potential risk factors for the development of acute kidney injury (AKI) including intravascular volume depletion, infection, exposure to nephrotoxic medication, and renal interstitial edema. This study was aimed to determine the incidence of AKI in children hospitalized with a relapse of NS and its short-term outcome. This prospective observational study was conducted from February 2017 to January 2018 at a tertiary care teaching hospital. A total of 54 children and adolescents (1-18 years) hospitalized with a diagnosis of NS and relapse with/or without other complications were enrolled. Clinical data and examination were recorded. AKI was defined using the Kidney Disease Improving Global Outcomes (KDIGO) serum creatinine criteria and Pediatric Risk, Injury, Failure, Loss, End-Stage Renal Disease (p-RIFLE) classification. Children who developed AKI during the first two weeks of hospitalization were followed up till recovery or six weeks whichever was earlier to determine the outcome and factors predisposing to AKI. The mean age of the study population was 59.5 months and 35 (64.8%) patients were male. Of the 54 patients hospitalized, 42 (77.8%) were admitted with infection-associated relapses while 22.2% of children had relapse alone. Diarrhea and spontaneous bacterial peritonitis were the most common infections (26.1% each) followed by urinary tract infections in 19% and pneumonia in 14.3%. Twenty-three (42.6%) children developed AKI according to the KDIGO definition and 27 (50%) using the pRIFLE classification. Fourteen (60.9%) had stage 2 AKI while 21.7% had stage 3 AKI. Infections [odds ratio (OR) 1.24] and use of angiotensin-converting enzyme inhibitors (ACEI) (OR 2.3) were the most common predisposing factors for AKI. The mean recovery time for AKI was 7.34 days. Development of AKI was associated with prolonged hospital stay (12.57 vs.8.55 days P <0.01) and delayed recovery. At the end of follow-up all children recovered from AKI. The incidence of AKI in children hospitalized with complications of NS is high. While the occurrence of these AKI episodes may appear transient, a recurrence of such episodes may be detrimental to the long-term outcome of children with NS. Infections and the use of ACEI during relapses are risk factor for the occurrence of AKI.
PMID
35017338 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35017338]
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Publisher
NLM (Medline)
Year of Publication
2021

539.

Changing trends in dialysis modalities utilization and mortality in children, adolescents and young adults with acute kidney injury, 2010-2017.
Tain Y.-L., Kuo H.-C., Hsu C.-N.
Embase
Scientific reports. 11(1) (pp 11887), 2021. Date of Publication: 04 Jun 2021.
[Article]
AN: 635263721
The aim of the study was to assess trends in the relative use of dialysis modalities in the hospital-based pediatric cohort and to determine risk factors associated with in-hospital morality among

pediatric patients receiving dialysis for acute kidney injury (AKI). Patients aged<20 years who received dialysis between 2010 and 2017 were identified from electronic health records databases of a Taiwan's healthcare delivery system. The annual uses of intermittent hemodialysis (HD), continuous and automated peritoneal dialysis (PD) and continuous kidney replacement therapy (CKRT) were assessed using Cochran-Armitage Tests for trend. Among patients who received their first dialysis as inpatients for AKI, a multivariate logistic regression model was employed to assess mortality risks associated with dialysis modalities, patient demographics, complexity of baseline chronic disease, and healthcare service use during their hospital stays. Kidney dialysis was performed 37.9 per patient per year over the study period. Intermittent hemodialysis (HD) (73.3%) was the most frequently used dialysis modality. In the inpatient setting, the relative annual use of CKRT increased over the study period, while HD use concomitantly declined (P<0.0001). The overall in-hospital mortality rate after dialysis for AKI was 33.6%, which remained steady over time (P=0.2411). Patients aged<2 years [adjusted odds ratio: (aOR) 3.36; 95% confidence interval (CI) 1.34-8.93] and greater vasoactive regimen use (aOR: 17.1; 95% CI: 5.3-55.21) were significantly associated with dialysis-related mortality. Overall treatment modality used for dialysis in pediatric patients increased slowly in the study period, and HD and CRKT modality uses largely evolved in the inpatient setting. Younger ages and use of more vasoactive medication regimens were independently associated with increased early mortality in patients on AKI-dialysis.
PMID
34088938 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34088938]
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(Hsu) School of Pharmacy, Kaohsiung Medical University, Kaohsiung 807, Taiwan (Republic of China)
Publisher
NLM (Medline)
Year of Publication
2021

540.

Changes in urinary kidney injury molecule-1 levels after blood transfusions in preterm infants.
Turner S.S., Davidson J.M., Elabiad M.T.
Embase
Scientific reports. 11(1) (pp 11690), 2021. Date of Publication: 03 Jun 2021.
[Article]
AN: 635254520
Literature supports an association between transfusions and gut injury in preterm infants. We hypothesized that packed red blood (PRBC) transfusions are associated with kidney inflammation marked by a rise in urinary levels of Kidney Injury Molecule 1 (KIM-1). Prospectively, KIM-1 levels were measured before and then at 6, 12 and 24 h after a PRBC transfusion. Results are presented as mean (+/-SD) and median (IQR). Thirty-four infants, birth weight 865 (+/-375) g, had higher pretransfusion KIM-1 levels of 2270 (830, 3250) pg/mg than what is normal for age. These were not associated with hematocrit levels. KIM-1 levels peaked between 6 and 12 h after the transfusion. Levels peaked to 3300 (1990, 6830) pg/mg; levels returned to pretransfusion levels of 2240 (1240, 3870) pg/mg by 24 h, p<0.01. The 24-h post-transfusion KIM-1 levels were similar to pretransfusion levels, p=0.63. PRBC transfusions in preterm infants are associated with an elevation in urinary KIM-1 levels. The mechanism of this association may be important in studying

transfusion associated organ injury. KIM-1, as an inflammatory marker, may be helpful in assessing the effect of different transfusion volumes or in evaluating operational thresholds of anemia in premature infants.
PMID
34083688 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34083688]
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Publisher
NLM (Medline)
Year of Publication
2021

541.

Proton pump inhibitors associated acute kidney injury and chronic kidney disease: data mining of US FDA adverse event reporting system.
Wu B., Li D., Xu T., Luo M., He Z., Li Y.
Embase
Scientific reports. 11(1) (pp 3690), 2021. Date of Publication: 11 Feb 2021.
[Article]
AN: 634281938
Proton pump inhibitors (PPIs) were widely used. Observational studies suggested increasing risk of kidney injury in patients with PPIs treatment. We gathered six PPI regimens and adverse reports of acute kidney injury (AKI) and chronic kidney disease (CKD) based on US FDA Adverse Event Reporting System (FAERS) database from 2004 to 2019. We employed reporting odds ratio (ROR) to detect signals. Finally, we identified 3187 PPIs-associated AKI cases and 3457 PPIs-associated CKD cases. We detected significant signals between PPIs and AKI as well as CKD. The signal strength was stronger for CKD (ROR=8.80, 95% CI 8.49-9.13) than AKI (ROR=3.95, 95% CI 3.81-4.10), while dexlansoprazole performed stronger association for CKD (ROR=34.94, 95% CI 30.89-39.53) and AKI (ROR=8.18, 95% CI 7.04-9.51) than the other five PPIs. The median time from PPIs use to event occurrence was 23 days for AKI and 177 days for CKD. PPIs-associated AKI resulted larger proportion of death, life-threatening, hospitalization and disability events than PPIs-associated CKD. By mining the FAERS big data, we provided more information between PPIs use and the AKI and CKD events. PPIs rational use should be repeatedly stressed.
PMID
33574396 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33574396]
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Publisher
NLM (Medline)
Year of Publication
2021

542.

The novel STING antagonist H151 ameliorates cisplatin-induced acute kidney injury and mitochondrial dysfunction.
Gong W., Lu L., Zhou Y., Liu J., Ma H., Fu L., Huang S., Zhang Y., Zhang A., Jia Z.
Embase
American Journal of Physiology - Renal Physiology. 320(4) (pp F608-F616), 2021. Date of Publication: April 2021.
[Article]
AN: 2011903992
Stimulator of interferon genes (STING) is an important adaptor in cytosolic DNA-sensing pathways. A recent study found that the deletion of STING ameliorated cisplatin-induced acute kidney injury (AKI), suggesting that STING could serve as a potential target for AKI therapy. Up to now, a series of small-molecule STING inhibitors/antagonists have been identified. However, none of the research was performed to explore the role of human STING inhibitors in AKI. Here, we investigated the effect of a newly generated covalent antagonist, H151, which targets both human and murine STING, in cisplatin-induced AKI. We found that H151 treatment significantly ameliorated cisplatin-induced kidney injury as shown by the improvement of renal function, kidney morphology, and renal inflammation. In addition, tubular cell apoptosis and increased renal tubular injury marker neutrophil gelatinase-Associated lipocalin induced by cisplatin were also effectively attenuated in H151-Treated mice. Moreover, the mitochondrial injury caused by cisplatin was also reversed as evidenced by improved mitochondrial morphology, restored mitochondrial DNA content, and reversed mitochondrial gene expression. Finally, we observed enhanced mitochondrial DNA levels in the plasma of patients receiving platinum-based chemotherapy compared with healthy controls, which could potentially activate STING signaling. Taken together, these findings suggested that H151 could be a potential therapeutic agent for treating AKI possibly through inhibiting STING-mediated inflammation and mitochondrial injury. NEW and NOTEWORTHY Although various stimulator of interferon genes (STING) inhibitors have been identified, no research was performed to investigate the role of human STING inhibitors in AKI. Here, we evaluated the effect of H151 targeting both human and murine STING on cisplatin-induced AKI and observed a protection against renal injury possibly through ameliorating inflammation and mitochondrial dysfunction.

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33615891 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33615891]
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Publisher
American Physiological Society
Year of Publication
2021

543.

Association between two common environmental toxicants (phthalates and melamine) and urinary markers of renal injury in the third trimester of pregnant women: The Taiwan Maternal and Infant Cohort Study (TMICS).
Tsai H.-J., Kuo F.-C., Wu C.-F., Sun C.-W., Hsieh C.-J., Wang S.-L., Chen M.-L., Hsieh H.-M., Chuang Y.-S., Wu M.-T.
Embase
Chemosphere. 272 (no pagination), 2021. Article Number: 129925. Date of Publication: June 2021.
[Article]
AN: 2011060295
Background: Exposure to either melamine or phthalate, two common toxicants, during pregnancy may cause adverse health effects, including kidney damage.
Objective(s): We investigated the independent and interactive effect of exposure to melamine and phthalates, particularly di-(2-ethylhexyl) phthalate (DEHP), on markers of early renal injury in women their third trimester of pregnancy in one nationwide birth cohort, the Taiwan Maternal and Infant Cohort Study (TMICS).
Method(s): Between October, 2012 and May, 2015, participants were administered questionnaires, physical examinations, and blood and urine tests during their third trimester. One-spot overnight urine specimens were used to simultaneously measure melamine, 11 phthalate metabolites, and two markers of renal injury, microalbumin and N-acetyl-beta-D-glucosaminidas (NAG). Estimated daily DEHP intake was calculated based on measurement of three urinary DEHP metabolites. Microalbuminuria was defined as having a urinary albumin/creatinine ratio (ACR) higher than 3.5 mg/mmol.
Result(s): Total 1433 pregnant women were analyzed. The median value for urinary melamine was 0.63 mug/mmol Cr and estimated DEHP intake was 1.84 mug/kg/day. We found subjects in the highest quartile of estimated DEHP intake to have significantly higher urinary ACR (beta = 0.095, p = 0.043) and the prevalence of microalbuminuria (adjusted OR = 1.752, 95% confidence interval = 1.118-2.746), compared to those in the lowest quartile. In addition, there was a significant interactive effect between urinary melamine and estimated DEHP intake on urinary ACR and NAG.
Conclusion(s): Our results suggest these two ubiquitous chemicals together may be associated with markers of early kidney injury in pregnant women.

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35534976 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35534976]
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Embase
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Publisher
Elsevier Ltd
Year of Publication
2021

544.

Implementation of a clinical guideline for nonoperative management of isolated blunt renal injury in children.
Steinberger A.E., Wilson N.A., Fairfax C., Treon S.J., Herndon M., Levene T.L., Keller M.S.
Embase
Surgery Open Science. 5 (pp 19-24), 2021. Date of Publication: July 2021.
[Article]
AN: 2012120953
Background: The aim was to evaluate the impact of a standardized nonoperative management protocol by comparing patients with isolated blunt renal injury before and after implementation.
Method(s): We retrospectively reviewed the trauma registry at our Level 1 pediatric trauma center. We compared consecutive patients (<= 18 years) managed nonoperatively for blunt renal injury Pre (1/2010-9/2014) and Post (10/2014-3/2020) implementation of a clinical guideline. Outcomes included length of stay, intensive care unit admission, urinary catheter use, and imaging studies.
Result(s): We included 48 patients with isolated blunt renal injuries (29 Pre, 19 Post). There were no differences in age, sex, injury grade, or mechanism (P > .05). Postprotocol had decreased length of stay (P = .040), intensive care unit admissions (P = .015), urinary catheter use (P = .031), and ionizing radiation imaging (P < .001).
Conclusion(s): These data suggest improved outcomes and resource utilization following implementation of a nonoperative management protocol of pediatric isolated blunt renal injuries.

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Publisher
Elsevier Inc.
Year of Publication
2021

545.

Evaluation of renal injury in children with a solitary functioning kidney.
Balki H.G., Turhan P., Candan C.
Embase
Turkish Archives of Pediatrics. 56(3) (pp 219-223), 2021. Date of Publication: 2021.
[Article]
AN: 2007644523
Objective: Children with a solitary functioning kidney have an increased risk of developing renal injury that is hypothesized to be caused by glomerular hyperfiltration. In this study, we aimed to assess the early signs of renal injury and ambulatory blood pressure profiles in children with a solitary functioning kidney.
Material(s) and Method(s): Data of children with normal office blood pressure measurement and a solitary functioning kidney were reviewed (serum creatinine and urine albumin and beta2 microglobulin excretions), and 23 age-, weight-, and height-matched healthy children were considered as a control group. The size of the kidney was measured by renal ultrasound, and the presence of compensatory hypertrophy was calculated for all the subjects. Also, the subjects were additionally assessed for blood pressure (BP) pattern and the presence of hypertension by 24-hambulatory blood pressure monitoring.
Result(s): The solitary functioning kidney demonstrated compensatory hypertrophy in 36 out of the patients (86%) at a mean age of 14.0 (SD 3.0) years. Increased urine albumin and beta2 microglobulinuria, which are signs of kidney damage, were found in 7 (17%) and 5(12%) patients. Compared with the controls, patients had significantly higher mean blood pressure standard deviation scores (p>0,001), and ambulatory blood pressure monitoring identified masked hypertension in 7 (17%) children and prehypertension in 6 (14%) patients. Therefore, renal injury, defined as the presence of hypertension and/or albuminuria and/or beta2 microglobulinuria and/or hypertension, was present in 36% of all children with a solitary functioning kidney.
Conclusion(s): Children with a solitary functioning kidney need prolonged follow-up to detect early signs of renal injury and prevent end-organ damage later in life. Ambulatory blood pressure monitoring is an essential tool in the diagnosis and clinical management of solitary functioning kidney patients.

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Embase
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Year of Publication
2021

546.

Serum and urinary biomarkers for early detection of acute kidney injury following Hypnale spp. envenoming.
Wijewickrama E.S., Mohamed F., Gawarammana I.B., Endre Z.H., Buckley N.A., Isbister G.K.
Embase
PLoS Neglected Tropical Diseases. 15(12) (no pagination), 2021. Article Number: e0010011.
Date of Publication: December 2021.

[Article]
AN: 2015213142
Background Hump-nosed pit viper (HNV; Hypnale spp.) bites account for most venomous snakebites in Sri Lanka. Acute kidney injury (AKI) is the most serious systemic manifestation (1-10%) following HNV envenoming. We aimed to identify the value of functional and injury biomarkers in predicting the development of AKI early following HNV bites. Methods We conducted a prospective cohort study of patients with confirmed HNV envenoming presenting to two large tertiary care hospitals in Sri Lanka. Demographics, bite details, clinical effects, complications and treatment data were collected prospectively. Blood and urine samples were collected from patients for coagulation and renal biomarker assays on admission, at 0-4h, 4-8h, 8-16h and 16-24h post-bite and daily until discharge. Follow-up samples were obtained 1 and 3 months post-discharge. Creatinine (sCr) and Cystatin C (sCysC) were measured in serum and kidney injury molecule-1 (uKIM-1), clusterin (uClu), albumin (uAlb), beta2-microglobulin (ubeta2M), cystatin C (uCysC), neutrophil gelatinase associated lipocalin (uNGAL), osteopontin (uOPN) and trefoil factor-3 (uTFF-3) were measured in urine. Definite HNV bites were based on serum venom specific enzyme immunoassay. Kidney Disease: Improving Global Outcomes (KDIGO) criteria were used to stage AKI. Two patients had chronic kidney disease at 3 month follow-up, both with pre-existing abnormal sCr, and one developed AKI following HNV envenoming. Results There were 52 patients with confirmed HNV envenoming; median age 48y (Interquartile range [IQR]:40-59y) and 29 (56%) were male. Median time to admission was 1.87h (IQR:1- 2.75h). Twelve patients (23%) developed AKI (AKI stage 1 = 7, AKI stage 2 = 1, AKI stage 3 = 4). Levels of five novel biomarkers, the functional marker serum Cystatin C and the damage markers urinary NGAL, cystatin C, beta2-microglobulin and clusterin, were elevated in patients who developed moderate/severe acute kidney injury. sCysC performed the best at 0-4 h post-bite in predicting moderate to severe AKI (AUC-ROC 0.95;95%CI:0.85-1.0) and no biomarker performed better than sCr at later time points. Conclusions sCysC appears to be a better marker than sCr for early prediction of moderate to severe AKI following HNV envenoming.

PMID
34871314 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34871314]
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Publisher
Public Library of Science
Year of Publication
2021

547.

Risk factors for in-hospital mortality and acute kidney injury in neonatal-pediatric patients receiving extracorporeal membrane oxygenation.
Liao M.-T., Tsai I.-J., Lin F.-H., Tseng L.-J., Huang S.-C., Chen Y.-S., Wu E.-T., Tsau Y.-K.
Embase
Journal of the Formosan Medical Association. 120(9) (pp 1758-1767), 2021. Date of Publication: September 2021.
[Article]
AN: 2011555122
Background: Acute kidney injury (AKI) is the most frequent complication in critically ill neonatal and pediatric patients receiving extracorporeal membrane oxygenation (ECMO) support. This study analyzed risk factors for in-hospital mortality and the incidence of AKI in neonatal and pediatric patients received ECMO support.
Method(s): We reviewed the medical records of 105 neonatal and 171 pediatric patients who received ECMO support at the intensive care unit (ICU) of a tertiary care university hospital between January 2008 and December 2015. Demographic, clinical, and laboratory data were retrospectively collected as survival and AKI predictors, utilizing the Kidney Disease Improving Global Outcome (KDIGO) consensus definition for AKI.
Result(s): In the 105 neonatal and 171 pediatric patients, the overall in-hospital mortality rate were 58% and 55% respectively. The incidence of AKI at post-ECMO 24 h were 64.8% and 61.4%. A greater KDIGO24-h severity was associated with a higher in-hospital mortality rate (chi-square test; $p < 0.01$) and decreased survival rate (log-rank tests, $p < 0.01$). In univariate logistic regression analysis of in-hospital mortality, the CVP level at post ECOMO 24-h increased odds ratio (OR) (OR = 1.27 [1.10-1.46], p = 0.001) of in-hospital mortality in neonatal group; as for pediatric group, elevated lactate (OR = 1.12 [1.03-1.20], p = 0.005) and PT (OR = 1.86 [1.17-2.96], p = 0.009) increased OR of in-hospital mortality. And the KDIGO24h stage 3 had the strongest association with in-hospital mortality in both neonatal (p = 0.005) and pediatric (p = 0.001) groups. In multivariate OR of neonatal and pediatric groups were 4.38 [1.46-13.16] (p = 0.009) and 3.76 [1.70-8.33] (p = 0.001), respectively.
Conclusion(s): AKI was a significant risk factor for in-hospital mortality in the neonatal and pediatric patients who received ECMO support. A greater KDIGO24-h severity was associated with higher mortality rates and decreased survival rate in both neonatal and pediatric groups. Of note, KDIGO24h can be an easy and early tool for the prognosis of AKI in the neonatal and pediatric patients.

PMID
33810928 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33810928]
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Publisher
Elsevier B.V.

Year of Publication
2021

548.

Kidney-Targeted Redox Scavenger Therapy Prevents Cisplatin-Induced Acute Kidney Injury.
Williams R.M., Shah J., Mercer E., Tian H.S., Thompson V., Cheung J.M., Dorso M., Kubala J.M., Gudas L.J., de Stanchina E., Jaimes E.A., Heller D.A.
Embase
Frontiers in Pharmacology. 12 (no pagination), 2021. Article Number: 790913. Date of Publication: 03 Jan 2022.
[Article]
AN: 636962521
Cisplatin-induced acute kidney injury (CI-AKI) is a significant co-morbidity of chemotherapeutic regimens. While this condition is associated with substantially lower survival and increased economic burden, there is no pharmacological agent to effectively treat CI-AKI. The disease is hallmarked by acute tubular necrosis of the proximal tubular epithelial cells primarily due to increased oxidative stress. We investigated a drug delivery strategy to improve the pharmacokinetics of an approved therapy that does not normally demonstrate appreciable efficacy in CI-AKI, as a preventive intervention. In prior work, we developed a kidney-selective mesoscale nanoparticle (MNP) that targets the renal proximal tubular epithelium. Here, we found that the nanoparticles target the kidneys in a mouse model of CI-AKI with significant damage. We evaluated MNPs loaded with the reactive oxygen species scavenger edaravone, currently used to treat stroke and ALS. We found a marked and significant therapeutic benefit with edaravone-loaded MNPs, including improved renal function, which we demonstrated was likely due to a decrease in tubular epithelial cell damage and death imparted by the specific delivery of edaravone. The results suggest that renal-selective edaravone delivery holds potential for the prevention of acute kidney injury among patients undergoing cisplatin-based chemotherapy.

Status
Embase
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Publisher
Frontiers Media S.A.
Year of Publication
2021

549.

Risk Factors for Acute Kidney Injury in Adult Patients With COVID-19: A Systematic Review and Meta-Analysis.

Cai X., Wu G., Zhang J., Yang L.
Embase
Frontiers in Medicine. 8 (no pagination), 2021. Article Number: 719472. Date of Publication: 06 Dec 2021.
[Review]
AN: 636723568
Background and Objective: Since December 2019, coronavirus disease 2019 (COVID-19) has spread rapidly around the world. Studies found that the incidence of acute kidney injury (AKI) in COVID-19 patients was more than double the incidence of AKI in non-COVID-19 patients. Some findings confirmed that AKI is a strong independent risk factor for mortality in patients with COVID-19 and is associated with a three-fold increase in the odds of in-hospital mortality. However, little information is available about AKI in COVID-19 patients. This study aimed to analyse the risk factors for AKI in adult patients with COVID-19.
Method(s): A systematic literature search was conducted in PubMed, EMBASE, Web of Science, the Cochrane Library, CNKI, VIP and WanFang Data from 1 December 2019 to 30 January 2021. We extracted data from eligible studies to compare the effects of age, sex, chronic diseases and potential risk factors for AKI on the prognosis of adult patients with COVID-19.
Result(s): In total, 38 studies with 42,779 patients were included in this analysis. The meta-analysis showed that male sex (OR = 1.37), older age (MD = 5.63), smoking (OR = 1.23), obesity (OR = 1.12), hypertension (OR=1.85), diabetes (OR=1.71), pneumopathy (OR = 1.36), cardiovascular disease (OR = 1.98), cancer (OR = 1.26), chronic kidney disease (CKD) (OR = 4.56), mechanical ventilation (OR = 8.61) and the use of vasopressors (OR = 8.33) were significant risk factors for AKI (P < 0.05).
Conclusion(s): AKI is a common and serious complication of COVID-19. Overall, male sex, age, smoking, obesity, hypertension, diabetes, pneumopathy, cardiovascular disease, cancer, CKD, mechanical ventilation and the use of vasopressors were independent risk factors for AKI in adult patients with COVID-19. Clinicians need to be aware of these risk factors to reduce the incidence of AKI. System Review Registration: PROSPERO, identifier [CRD42021282233].

Status
Embase
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550.

Controversies in paediatric acute kidney injury and continuous renal replacement therapy: can paediatric care lead the way to precision acute kidney injury medicine?.
Stanski N.L., Fuhrman D., Basu R.K.
Embase
Current Opinion in Critical Care. 27(6) (pp 604-610), 2021. Date of Publication: 01 Dec 2021.
[Review]
AN: 2019293284
Purpose of reviewPaediatric patients represent a unique challenge for providers managing acute kidney injury (AKI). Critical care for these children requires a precise approach to assessment, diagnostics and management.Recent findingsPrimarily based on observational data, large

epidemiologic datasets have demonstrated a strong association between AKI prevalence (one in four critically ill children) and poor patient outcome. Drivers of AKI itself are multifactorial and the causal links between AKI and host injury remain incompletely defined, creating a management paradigm primarily supportive in nature. The previous decades of research have focused primarily on elucidating the population-level epidemiologic signal of AKI and use of renal replacement therapy (RRT), but in order to reverse the course of the AKI 'epidemic', future decades will require more attention to the individual patient. A patient-level approach to AKI in children will require sophisticated approaches to risk stratification, diagnostics and targeted utilization of therapies (both supportive and targeted towards drivers of injury).SummaryIn this review, we will summarize the past, present and future of AKI care in children, discussing the ongoing work and future goals of a personalized approach to AKI medicine.

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551.

Association of preoperative diuretic use with early acute kidney injury in infants with biventricular hearts following cardiac surgery.
Rathgeber S.L., Chakrabarti A., Kapravelou E., Hemphill N., Voss C., Mammen C., Skippen P., Harris K.C.
Embase
Journal of the American Heart Association. 10(20) (no pagination), 2021. Article Number: e020519. Date of Publication: 19 Oct 2021.
[Article]
AN: 2014561282
BACKGROUND: Diuretics are used to manage congestive heart failure in infants with congenital heart disease. Adult data in-dicate that preoperative diuretic use increases the risk of cardiac surgery associated acute kidney injury (CS-AKI). We have sought to understand if preoperative diuretics in infants increases the risk of CS-AKI. METHODS AND RESULTS: This is a single-center retrospective study of infants (1-12 months) who had CS requiring cardiopulmonary bypass between 2013 and 2018. The diagnosis and severity of CS-AKI was defined according to the Kidney Disease Improving Global Outcomes guidelines. Three hundred patients were included (mean 6 months, SD 2.4, range 1.2- 12.9 months). A total of 149 (49.7%) patients were diagnosed with CS-AKI (stage 1: 80 [54%], stage 2: 57 [38%], stage 3: 12 [8%]). Logistic regression analysis showed preoperative diuretics were not associated with CS-AKI (odds ratio [OR], 0.79; 95% CI, 0.43-1.44; P=0.45). A diagnosis of tetralogy of Fallot was an independent risk factor for CS-AKI (OR, 3.49; 95% CI, 1.33- 9.1, P=0.01). A diagnosis of tetralogy of Fallot (OR, 3.6; 95% CI, 1.28-10.22; P=0.02) and longer cardiopulmonary bypass (OR, 1.01; 95% CI, 1.0-1.02; P=0.04) time are risk factors for moderate to severe CS-AKI.

CONCLUSION(S): Preoperative diuretic use does not contribute to the risk of CS-AKI in infants early after surgery. A diagnosis of tetralogy of Fallot was the only risk factor for CS-AKI identified using multivariate analysis in our cohort. Furthermore, a diagnosis of tetralogy of Fallot and longer cardiopulmonary bypass time are risk factors for moderate to severe CS-AKI.

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Publisher
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552.

Risk of in-hospital mortality in severe acute kidney injury after traumatic injuries: A national trauma quality program study.
Ahmed N., Mathew R.O., Kuo Y., Asif A.
Embase
Trauma Surgery and Acute Care Open. 6(1) (no pagination), 2021. Article Number: e000635. Date of Publication: 16 Feb 2021.
[Article]
AN: 634219844
Background The development of acute kidney injury (AKI) in trauma patients has been associated with an almost threefold increase in overall mortality. Many risk factors of mortality in severe AKI have been reported, but majority of the studies have been performed using a single-center data or have a small sample size. The purpose of this study was to identify the risk factors of mortality in severe AKI trauma patients. Methods The study was performed using 2012-2016 American College of Surgeon Trauma Quality Improvement Program data, a national database of trauma patients in the USA. All adult trauma patients aged 16 to 89 years old, admitted to the hospital and who developed a severe AKI were included in the study. A p value of <0.05 was considered statistically significant. Results Out of 9309 trauma patients who developed severe AKI, 2641 (28.08%) died. There were significant differences found in bivariate analysis between the groups who died and who survived after developing a severe AKI. Multivariable analysis showed male sex, older age, higher Injury Severity Score, lower Glasgow Coma Scale, presence of hypotension (systolic blood pressure<90 mm Hg) and coagulopathy were all significantly associated with in-hospital mortality. The area under the curve value was 0.706 and the 95% CI was 0.68 to 0.727. Discussion Current analysis showed certain patients' characteristics are associated with higher mortality in patients with severe AKI. Prompt identification and aggressive monitoring and management in high-risk patients may result in reduced mortality. Level of evidence IV. Study type Observational cohort study.

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553.

Cumulative Application of Creatinine and Urine Output Staging Optimizes the Kidney Disease: Improving Global Outcomes Definition and Identifies Increased Mortality Risk in Hospitalized Patients With Acute Kidney Injury.
Sutherland S.M., Kaddourah A., Gillespie S.E., Soranno D.E., Woroniecki R.P., Basu R.K., Zappitelli M.
Embase
Critical Care Medicine. 49(11) (pp 1912-1922), 2021. Date of Publication: 01 Nov 2021.
[Article]
AN: 2017900190
OBJECTIVES: Acute kidney injury is diagnosed according to creatinine and urine output criteria. Traditionally, both are applied, and a severity stage (1-3) is conferred based upon the more severe of the two; information from the other criteria is discarded. Physiologically, however, rising creatinine and oliguria represent two distinct types of renal dysfunction. We hypothesized that using the information from both criteria would more accurately characterize acute kidney injury severity and outcomes. DESIGN: Prospective cohort study. SETTING: Multicenter, international collaborative of ICUs. PATIENTS: Three thousand four hundred twenty-nine children and young adults admitted consecutively to ICUs as part of the Assessment of the Worldwide Acute Kidney Injury, Renal Angina and Epidemiology Study. MEASUREMENTS AND MAIN RESULTS: The Kidney Disease: Improving Global Outcomes creatinine and urine output acute kidney injury criteria were applied sequentially, and the two stages were summed, generating an Acute Kidney Injury (AKI) Score ranging from 1 to 6. The primary outcome was 28-day mortality; secondary outcomes were time until ICU discharge and nonrecovery from acute kidney injury. Models considered associations with AKI Score, assessing the relationship unadjusted and adjusted for covariates. Twenty-eight-day mortality and nonrecovery from acute kidney injury were modeled using logistic regression. For 28-day ICU discharge, competing risks analysis was performed. Although AKI Scores 1-3 had similar mortality to no Acute Kidney Injury, AKI Scores 4-6 were associated with increased mortality. Relative to No Acute Kidney Injury, AKI Scores 1-6 were less likely to be discharged from the ICU within 28 days. Relative to AKI Score 1, AKI Scores 2-6 were associated with higher risk of nonrecovery. Within the traditional Kidney Disease: Improving Global Outcomes Stage 3 acute kidney injury cohort, when compared with AKI Score 3, AKI Scores 4-6 had increased mortality, AKI Scores 5-6 had prolonged time to ICU discharge, and AKI Score 6 experienced higher nonrecovery rates.
CONCLUSION(S): Cumulative application of the creatinine and urine output criteria characterizes renal excretory and fluid homeostatic dysfunction simultaneously. This Acute Kidney Injury score more comprehensively describes the outcome implications of severe acute kidney injury than traditional staging methods.

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Publisher
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554.

Risk Factors and Prognosis of Acute Kidney Injury in Pre-Eclampsia.
Muzammil M., Qureshi A.I., Imran H.
Embase
Medical Forum Monthly. 32(11) (pp 90-94), 2021. Date of Publication: November 2021.
[Article]
AN: 2016967207
Objective: To explore the risk factors and clinical outcomes in women with preeclampsia who developed AKI.
Study Design: A prospective observation study Place and Duration of Study: This study was conducted at the gynecology department of Bakhtawar Amin Trust Teaching Hospital Multan from June 2020 to June 2021.
Material(s) and Method(s): The study was conducted on pregnant women admitted to the hospital with pre-eclampsia. Women with maximum creatinine >=90 mumol/L during admission were assessed for pre-pregnancy serial creatinine level. Kidney Disease Improving Global Outcomes criteria were adopted to evaluate the renal injury and its recovery. Predetermined risk factors, maternal and neonatal outcomes were contrasted between AKI stages.
Result(s): Among the total of 50 women with pre-eclampsia, 13 (26%) women qualified for the AKI KDIGO criteria. Of these, 7 (14%) had AKI stage 1, 4 (8%) had stage 2, and 2 (4%) had stage 3. Women with AKI (Stages 1-3) had a significantly higher incidence of stroke (risk ratio (RR), 15.5; 95% CI, 1.5- 157.7; p=0.012), eclampsia (RR, 1.6; 95% CI, 1.1-2.5; P=0.003) and were likely to die more (RR, 3.9; 95% CI, 1.2-12.3; P=0.002) than the woman who didn't develop AKI. Similarly, women with AKI were more prone to experience a stillbirth (RR, 1.9; 95% CI, 1.6-2.6; P<0.01) and neonatal death (RR, 2.3; 95% CI, 2.2-2.5; p=0.001). Hypertensive disorder in a previous pregnancy was the strongest predictor of the development and severity of AKI. It was found that the recovery rate reduced with an increase in the severity of the disease.
Conclusion(s): Conclusively, AKI was found to be a common complication in women with pre-eclampsia and resulted in considerable maternal and neonatal mortality. The failure to acquire absolute recovery of the affected population requires serious consideration of risk factors.

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Publisher
Medical Forum Monthly
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555.

Acute Kidney Injury and Renal Replacement Therapy After Fontan Operation.
Niaz T., Stephens E.H., Gleich S.J., Dearani J.A., Johnson J.N., Sas D.J., Bly S., Driscoll D.J., Cetta F.
Embase
American Journal of Cardiology. 161 (pp 84-94), 2021. Date of Publication: 15 Dec 2021.
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AN: 2015494341
Fontan circulation leads to chronic elevation of central venous pressure. We sought to identify the incidence, risk factors, and survival among patients who developed acute kidney injury (AKI) after the Fontan operation. We retrospectively reviewed 1,166 patients who had Fontan operation/revision at Mayo Clinic Rochester from 1973 to 2017 and identified patients who had AKI (defined by AKI Network criteria) within 7 days of surgery. A total of 132 patients (11%) developed AKI after the Fontan operation with no significant era effect. Of those who developed AKI, severe (grade 3) kidney injury was present in 101 patients (76.5%). Multivariable risk factors for AKI were asplenia (odds ratio [OR] 4.2, p <0.0001), elevated preoperative pulmonary artery pressure (per 1 mm Hg increase, OR 1.04, p = 0.0002), intraoperative arrhythmias (OR 1.9, p = 0.02), and elevated post-bypass Fontan pressure (per 1 mm Hg increase, OR 1.12, p = 0.0007). Renal replacement therapy (RRT) was used in 72 patients (54%), predominantly through peritoneal dialysis (n = 56, 78%). Multivariable risk factors for RRT were age <=3 years (OR 9.7, p = 0.0004), female gender (OR 2.6, p = 0.02), and aortic cross-clamp time >60 minutes (OR 3.1, p = 0.01). Patients with AKI had more postoperative complications, including bleeding, stroke, pericardial tamponade, low cardiac output state and cardiac arrest, than those without AKI. This resulted in longer intensive care unit stay (39 vs 17 days, p = 0.0001). In-hospital mortality was exceedingly higher among patients with AKI versus no AKI (58%, 76 of 132 vs 10%, 99 of 1,034, p <0.0001); however, there was no significant difference based on the need for RRT. Recovery from AKI was observed in 56 patients (42%). Over 20-year follow-up, patients with AKI had a distinctly higher all-cause-mortality (82%) than those without AKI (35%). It is prudent to identity patients at a higher risk of developing postoperative AKI after Fontan operation to ensure renal protective strategies in the perioperative period. Postoperative AKI leads to substantial short and long-term morbidity and mortality, but the need for RRT does not affect the outcomes.

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Publisher
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556.

Advances in neonatal acute kidney injury.
Starr M.C., Charlton J.R., Guillet R., Reidy K., Tipple T.E., Jetton J.G., Kent A.L., Abitbol C.L., Ambalavanan N., Mhanna M.J., Askenazi D.J., Selewski D.T., Harer M.W.
Embase
Pediatrics. 148(5) (no pagination), 2021. Article Number: e2021051220. Date of Publication: 01 Nov 2021.
[Review]
AN: 2015470811
In this state-of-the-art review, we highlight the major advances over the last 5 years in neonatal acute kidney injury (AKI). Large multicenter studies reveal that neonatal AKI is common and independently associated with increased morbidity and mortality. The natural course of neonatal AKI, along with the risk factors, mitigation strategies, and the role of AKI on short- and long-term outcomes, is becoming clearer. Specific progress has been made in identifying potential preventive strategies for AKI, such as the use of caffeine in premature neonates, theophylline in neonates with hypoxic-ischemic encephalopathy, and nephrotoxic medication monitoring programs. New evidence highlights the importance of the kidney in "crosstalk" between other organs and how AKI likely plays a critical role in other organ development and injury, such as intraventricular hemorrhage and lung disease. New technology has resulted in advancement in prevention and improvements in the current management in neonates with severe AKI. With specific continuous renal replacement therapy machines designed for neonates, this therapy is now available and is being used with increasing frequency in NICUs. Moving forward, biomarkers, such as urinary neutrophil gelatinase-associated lipocalin, and other new technologies, such as monitoring of renal tissue oxygenation and nephron counting, will likely play an increased role in identification of AKI and those most vulnerable for chronic kidney disease. Future research needs to be focused on determining the optimal follow-up strategy for neonates with a history of AKI to detect chronic kidney disease.

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Publisher
American Academy of Pediatrics
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557.

An analysis of the risk factors that predispose heatstroke patients to develop acute kidney injury.
Xing L., Liu S.-Y., Cao Q.-M., Li X., Mao H.-D., Zhao J.-B., Duan L.-J., Song Q.
Embase
Journal of Biological Regulators and Homeostatic Agents. 35(6) (pp 1869-1878), 2021. Date of Publication: November-December 2021.
[Article]
AN: 2015454769
This study aimed to analyze the factors related to acute kidney injury (AKI) in patients with heatstroke (HS). Patients with HS who visited the hospital from January 2013 to December 2019 were retrospectively analyzed. These patients were divided into an AKI and a non-AKI group based on the presence of AKI. Patients in the AKI group were further divided into the transient and persistent AKI groups. The differences in clinical characteristics between the AKI and the non-AKI group and the persistent AKI group and transient AKI group were analyzed to study the related factors of the occurrence of AKI. Male patients were more prone to AKI (P = 0.01). Compared with the non-AKI group, HS patients with AKI had a higher core body temperature (CBT) (P < 0.001) and lower mean arterial pressure (MAP) (P = 0.004). In addition, the incidence of mechanical ventilation, renal replacement therapy (RRT), and blood transfusion were higher in the AKI group (P < 0.001). However, the proportion of patients among whom cooling the CBT to 38.9degreeC within 30 min had taken place was lower (P = 0.007), and the risk of Disseminated Intravascular Coagulation (DIC) and death was higher (P < 0.001). There was no statistical

difference in age, basic disease, heat index, and other indexes (P > 0.05). Compared with the transient AKI group, patients with persistent AKI had higher serum creatinine (Scr) levels, WBC counts, a higher rate of transfusion, DIC and death (P < 0.05), and a lower rate of cooling the CBT to 38.9degreeC within 30 min from the discovery of unconsciousness (P = 0.006). There were no significant differences between the two groups in terms of gender, age, highest CBT and MAP at admission, RRT, mechanical ventilation, or other factors (P > 0.05). Multivariate logistic regression analysis showed that the highest CBT (OR2.54; 1.007-6.42) and the Scr level on admission (OR 1.13; 1.07-1.18) were risk factors for AKI in HS patients (P < 0.05). The highest CBT and Scr levels on admission are independent risk factors for AKI, while the duration and progression of AKI may be associated with delayed CBT cooling.

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558.

Maternal-perinatal variables in patients with severe preeclampsia who develop acute kidney injury.
Rodriguez-benitez P., Moreno I.A., Barrecheguren C.O., Lopez Y.C., Yllana F., Recarte P.P., Arribas C.B., Alvarez-mon M., Ortega M.A., De Leon-Luis J.A.
Embase
Journal of Clinical Medicine. 10(23) (no pagination), 2021. Article Number: 5629. Date of Publication: December-1 2021.
[Article]
AN: 2014693501
Introduction: At present, we are witnessing an increase in preeclampsia, especially the most severe forms, which are associated with an increased risk of maternal-perinatal morbidity and mortality. As a severity criterion, acute kidney injury (AKI) has been associated with a worse prognosis, and for this reason, the maternal and perinatal variables associated with AKI in patients with severe preeclampsia (SP) were analysed in this study.
Method(s): An observational, retrospective, single-centre study of patients with SP treated at a tertiary hospital between January 2007 and December 2018 was conducted. The case criteria based on the criteria established by the ACOG Practice Guidelines for Gestational Hypertension and Preeclampsia. AKI is considered when serum creatinine exceeds 1.1 mg/dL in a pregnant woman with previously normal renal function. In patients with existing chronic kidney disease (CKD), it is referred to as AKI if the baseline serum creatinine increases by 1.5 fold. Pregestational, gestational and postpartum variables were analysed up to 12 weeks postpartum using univariate and multivariate logistic regression analysis.

Result(s): During the study period, 76,828 births were attended, and 303 pregnant women were diagnosed with SP. The annual incidence of SP increased gradually throughout the study period, reaching 1.79/100 births/year in 2018. Acute kidney injury (AKI) occurred in 24.8% of the patients. The multivariate analysis revealed an increased association with a history of previous CKD, the use of assisted reproductive techniques and caesarean section. Uric acid and thrombotic microangiopathy (TMA) had a high correlation with AKI. Indications for caesarean section are associated with AKI in SP. Regarding perinatal outcomes in cases of AKI, there was a higher percentage of neonates who required foetal lung maturation with steroids and an increased need for NICU admission. No case of maternal death was recorded; however, an increase in neonatal mortality was found among patients who did not develop AKI. After 12 weeks postpartum, 72 patients were referred to the nephrology consultation for persistent hypertension, proteinuria or renal failure.
Conclusion(s): In preeclampsia, AKI is a common complication, especially among patients with a history of CKD, those who became pregnant using assisted reproduction techniques and those who delivered via caesarean section. The perinatal impact of AKI is mainly centred on a higher rate of NICU admission and a lower mortality rate. Among biochemical and haematological markers, the uric acid level prior to renal failure has a direct and significant correlation with the risk of AKI, as does the development of TMA in patients with preeclampsia. Therefore, the monitoring of renal function in cases of preeclampsia should be strict, and referral for a nephrology consultation may be necessary in some cases.

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559.

Demographic, clinical, and laboratory factors associated with renal parenchymal injury in Iranian children with acute pyelonephritis.
Fahimi D., Khedmat L., Afshin A., Jafari M., Bakouei Z., Beigi E.H., Kajiyazdi M., Izadi A., Mojtahedi S.Y.
Embase

BMC Infectious Diseases. 21(1) (no pagination), 2021. Article Number: 1096. Date of Publication: December 2021.
[Article]
AN: 2014025540
Background: The association between renal parenchyma changes on dimercaptosuccinic acid (DMSA) scans and demographic, clinical, and laboratory markers was assessed in pediatric patients with acute pyelonephritis.
Method(s): A retrospective study of 67 Iranian babies and children aged 1-month to 12-year with APN was conducted between 2012 and 2018. The presence of renal parenchymal involvement (RPI) during APN was determined using technetium-99m DMSA during the first 2 weeks of hospitalization. The association of DMSA results with demographic data, clinical features (hospitalization stay, fever temperature and duration), and laboratory parameters such as pathogen type, and hematological factors (ESR, CRP, BUN, Cr, Hb, and WBC) was evaluated.
Result(s): 92.5% of children with an average age of 43.76 +/- 5.2 months were girls. Twenty-four children (35.8%) did not have renal parenchymal injury (RPI), while 26 (38.8%) and 17 (25.4%) patients showed RPI in one and both kidneys, respectively. There was no significant association between RPI and mean ESR, CRP, BUN, and WBC. However, there were significant associations between RPI and higher mean levels of Cr, Hb, and BMI.
Conclusion(s): Low BMI and Hb levels and increased Cr levels might be indicative of the presence of RPI in children with APN.

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560.

Risk factors of renal trauma in children with severe Henoch-Schonlein purpura and effect of mycophenolate mofetil on pediatric renal function.
Li M., Guo B., Wang X., Zhang Y.
Embase

Translational Pediatrics. 10(12) (pp 3166-3174), 2021. Date of Publication: December 2021.
[Article]
AN: 2016417128
Background: Renal trauma (RT) is a common feature in children with severe Henoch-Schonlein purpura (HSP), which can elevate the chance of recurrence and trigger end-stage renal disease. The risk factors of RT in children with HSP were explored and research was conducted on relevant treatment methods.
Method(s): A total of 120 child patients with severe HSP admitted to our hospital from January 2019 to January 2020 were selected as the research cohort, and divided into a RT group (n=45) and RT-free group (n=75) according to their condition to analyze the risk factors inducing RT in pediatric patients, and mycophenolate mofetil therapy was given to both participant groups to compare their renal function indicators, immune function indicators, and adverse reaction rates (ARR) after treatment.
Result(s): Recurrent rash, adenovirus infection, respiratory virus infection, D-dimer level, leukocyte level, urinary albumin (UA) level, and platelet level were the risk factors of RT affecting severe HSP child patients. After treatment, the renal function indicators and immune indicators of participants in both groups were significantly better than those before treatment (P<0.05), and these indicators of the RT-free group were significantly better than the RT group after treatment (P<0.05). All participants did not experience serious adverse reactions, and no significant difference was presented when comparing the ARR between the 2 groups (P>0.05).
Conclusion(s): Recurrent rash, adenovirus infection, respiratory virus infection, D-dimer level, leukocyte level, UA level, and platelet level are the risk factors of RT affecting children with severe HSP, and mycophenolate mofetil can improve the renal function in pediatric patients and enhance their immunity, and is thus worthy of promotion in practice.

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Publisher
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561.

Accuracy of Urine Calprotectin in the Diagnosis of Acute Kidney Injury in Neonates: A Cross-Sectional Study.
Khalesi N., Mohammadian S., Hooman N., Khodadost M., Allahqoli L.
Embase
Iranian Journal of Neonatology. 12(4) (pp 7-13), 2021. Date of Publication: September 2021.
[Article]
AN: 2016193200
Background: Urine calprotectin significantly elevates in acute kidney injury (AKI) in adult and pediatric patients. The present study aimed to assess the accuracy of urine calprotectin as a diagnostic marker for (AKI) in neonates.
Method(s): This cross-sectional study assessed urine calprotectin in 100 neonates (80 newborns with confirmed AKI and 20 healthy ones). Random urine calprotectin was measured by Enzyme-

linked Immunosorbent Assay (ELISA) and then compared between the two groups. We included the neonates who had received at least 48 h of intravenous fluid and met the inclusion and exclusion criteria. Receiver-operating characteristic (ROC) curve was used to set a cut-off point for urine calprotectin for the prediction of AKI. The overall accuracy and Kappa coefficient were used to assess the agreement between the two methods. A p-value less than 0.05 was considered statistically significant.
Result(s): Urine calprotectin levels were not significantly higher in neonates with AKI, as compared to those in the healthy ones (146.2 versus 142.4; P=0.1). The results pointed to an optimal cut-off value of 123.5 mg/dl for urine calprotectin with the area under the curve of 0.515 (the sensitivity, specificity, positive predictive value, and negative predictive value were obtained at 77.5%, 40%, 83.7%, and 30.7%, respectively). The overall accuracy and Kappa agreement coefficient were reported as 70% and 0.15, r (P=0.11).
Conclusion(s): As evidenced by the results of the resent study, although urine calprotectin level elevates in AKI in neonates, it is not more sensitive than gold standards to predict AKI.

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Year of Publication
2021

562.

Predisposition of blood group non-secretors to urinary tract infection with Escherichia coli antimicrobial resistance and acute kidney injury.
Thiagarajan S., Stephen S., Kanagamuthu S., Ambroise S., Viswanathan P., Chinnakali P., Ganesh R.N.
Embase
Journal of Pure and Applied Microbiology. 15(4) (pp 2085-2097), 2021. Date of Publication: December 2021.
[Article]
AN: 2015958707
Urinary tract infection (UTI) causes significant renal damage and disease severity is compounded by antimicrobial resistance (AMR) and other comorbidities in the patient. Blood group antigens secreted in body fluids (secretor status) are known to play a role in bacterial adhesion and we studied its influence on AMR in UTI. A total of 2758 patients with UTI were studied with urine culture, qualitative and semiquantitative urine microscopy, serum creatinine and secretor status in saliva samples by adsorption-inhibition method. Of these, AMR from 300 patients with E. coli infection were assessed as per CLSI 2019 guidelines and extended-spectrum beta-lactamase (ESBL) genes (bla TEM, bla CTX-M, bla SHV) and NDM1 genes were studied using TaqMan

probes in Real-time polymerase chain reaction. Patients with UTI were followed up for two weeks. Female patients had higher predilection (57%) for E. coli infection while patients with diabetes or non-secretors had none. In our study, ESBL producers were seen in 62% of the E. coli isolates and fosfomycin had 100% susceptibility. Non-secretors were significantly associated with acute kidney injury (AKI), AMR and ESBL genes. Multidrug-resistant (MDR) was noted in 127/160 (79.4%) ESBL and 17/18 (94%) NDM1 gene encoding strains. Quantitative urine microscopy scoring predicted AKI both at presentation and at end of follow up. ESBL producers were common in our study population and non-secretors had a significant association with AMR genes. Urine microscopy scoring system may be a useful tool to predict AKI in patients with UTI.

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Publisher
Journal of Pure and Applied Microbiology
Year of Publication
2021

563.

Incidence and Outcome of Community-Acquired Acute Kidney Injury in Pediatric Patients Seen at an Emergency Department.
Safdar O., Alaydarous S.A., Arafsha Y., Arafsha L., Almaimani N., Bahomeed R., Beiruty M.A., Norah A., Kari J.A., Shalaby M.
Embase
Pediatric Emergency Care. 37(12) (pp E1429-E1433), 2021. Date of Publication: 01 Dec 2021. [Review]
AN: 2015926468
Objectives: Acute kidney injury (AKI) has significant morbidity and mortality rates among young patients. This study aimed to determine the incidence and outcome of community-acquired AKI among pediatric patients seen in the emergency department of King Abdulaziz University Hospital for more than 3 years.
Method(s): This retrospective study reviewed electronic medical records for all pediatric patients aged 1 month to 18 years who visited the emergency department of King Abdulaziz University Hospital from January 1, 2015, until December 31, 2017. Acute kidney injury was diagnosed and classified according to the Kidney Disease: Improving Global Outcomes criteria.
Result(s): Of 6038 patients, 1581 were included. Acute kidney injury occurred in 135 patients (8.5%), of which 77 (57%) were in stage 1, 42 (31.1%) were in stage 2, and 16 (11.9%) were in stage 3. Mortality was higher in the AKI group (4.4%) than in the non-AKI group (0.2%; $P < 0.01$). On long-term observation, 14.8% did not return for follow-up, 58.5% of survivors recovered

completely, and 22.2% progressed to chronic kidney disease. The most affected age group was 1 month to 2 years (26%). Common admission causes were chemotherapy-induced AKI (31.9%) and pneumonia (10.4%). There was a significant inverse relationship between AKI and age group (P < 0.001) and a positive association between AKI and death (P < 0.001). However, no association was found between AKI stages and outcomes.
Conclusion(s): Community-acquired AKI remains a common condition affecting the pediatric population. It is associated with a higher mortality rate. Infants were more susceptible to AKI, and a significant number of patients with AKI progressed to chronic kidney disease.
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PMID
32118838 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32118838]
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Publisher
Lippincott Williams and Wilkins
Year of Publication
2021

564.

Incidence, risk and risk factors for acute kidney injury associated with the use of intravenous indomethacin in neonatal patent ductus arteriosus: A 16-year retrospective cohort study.
Raknoo T., Janjindamai W., Sitaruno S., Dissaneevate S., Ratanajamit C.
Embase
Pharmacy Practice. 19(4) (no pagination), 2021. Article Number: 2409. Date of Publication: October-December 2021.
[Article]
AN: 2015778866
Background: Intravenous indomethacin has been used in infants for many years as the pharmacological closure of ductus arteriosus, but the incidence, risk, and risk factors of acute kidney injury (AKI) among infants treated with indomethacin, were still scarce.
Objective(s): To determine the incidence, risk, and risk factors of AKI among infants treated with indomethacin (exposed group) for patent ductus arteriosus (PDA) closure compared with the matched non-exposed infants.
Method(s): A matched retrospective cohort study of infants admitted to the neonatal intensive care unit of Songklanagarind Hospital from January 2003 to December 2018 was performed. All data were collected from computerized medical records. A non-exposed infant was matched (1:1) by gestational age and birth weight to each exposed infant. AKI, the outcome of interest, was diagnosed according to neonatal AKI definitions. The incidence (95% CI) of AKI was estimated for each group. Conditional logistic regression was used to estimate the odds ratio (OR) of developing AKI among those who received indomethacin compared with those who did not, adjusted for potential confounders (concomitantly used nephrotoxic potential medications including aminoglycosides, amphotericin B, vancomycin, furosemide, systemic corticosteroids, and systemic vasopressors and inotropes). Kaplan-Meier estimate was performed to examine probability of recovery from AKI after AKI events.
Result(s): The matching resulted in 193 pairs of exposed and non-exposed infants. The incidences [95% CI] of AKI in the exposed and the non-exposed group, were 33.7%

[27.0%:40.4%] and 15.5% [10.4%:20.7%], respectively. Indomethacin statistically increased the risk for developing AKI, crude OR 2.94[95%CI 1.77:4.90], McNemar's chi square p<0.001, and adjusted OR 2.73 [95%CI 1.55:4.80], p=0.001. The risk of AKI associated with potentially nephrotoxic medications were inconclusive. Time to recovery from AKI was relatively rapid, median recovery time was 3 days in both groups and all infants who developed AKI recovered within 6 days.
Conclusion(s): The incidence of AKI among infants treated with indomethacin for PDA closure were doubled that in the indomethacin-nonexposed infants. Indomethacin significantly increased the risk of AKI, while the risk associated with other concomitant nephrotoxic medications were inconclusive. Transient nephrotoxicity associated with indomethacin should be balanced with the risk associated with delayed PDA closure. All infants receiving indomethacin should be routinely monitored for serum creatinine and/or urine output, throughout the treatment and one to two weeks after treatment cessation. Alternatives with better renal safety profiles should be considered in the population with higher risk of AKI.

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Year of Publication
2021

565.

Risk factors for cerebral edema and acute kidney injury in children with diabetic ketoacidosis.
Raghunathan V., Jevalikar G., Dhaliwal M., Singh D., Sethi S.K., Kaur P., Singhi S.C.
Embase
Indian Journal of Critical Care Medicine. 25(12) (pp 1446-1451), 2021. Date of Publication: December 2021.
[Article]
AN: 2014804677
Objectives: To study the clinical profile and risk factors of cerebral edema and acute kidney injury in children with diabetic ketoacidosis.
Design(s): Retrospective review of medical records.
Patient(s): Fifty consecutive patients (age <18 years) admitted to our pediatric intensive care unit with a diagnosis of diabetic ketoacidosis over 5 years.
Material(s) and Method(s): Retrospective analysis of medical records was done, and data including patients' age, sex, presenting features, biochemical profile including blood glucose, osmolality, urea, creatinine, and venous blood gas, electrolytes were recorded at admission, at 12 and 24 hours. Treatment details including fluid administration, rate of fall of glucose, time to resolution of diabetic ketoacidosis were noted. Complications such as cerebral edema and acute kidney injury were recorded. Patients with and without cerebral edema and acute kidney injury were compared. Variables that were significant on univariate analysis were entered in a multiple logistic regression analysis to determine the independent predictors for cerebral edema and acute kidney injury. Odds ratio and 95% confidence interval were calculated using SPSS version 22.

Measurements and Main Results: Between November 2015 and 2020, 48 patients were admitted for a total of 50 episodes of diabetic ketoacidosis. Two patients had recurrent diabetic ketoacidosis. Median age was 9.5 years (range 1-17). Thirty-one patients (62%) had new-onset type I diabetes mellitus. Twenty-two patients (44%) presented with severe diabetic ketoacidosis. Cerebral edema and acute kidney injury were seen in 11 (22%) and 15 (30%) patients, respectively. On multiple logistic regression analysis, higher blood urea level, lower serum bicarbonate level, and higher corrected sodium levels at admission were identified to be variables independently associated with risk of cerebral edema.
Conclusion(s): Higher corrected sodium, higher urea level, and lower serum bicarbonate levels at admission are predictive of cerebral edema in patients presenting with diabetic ketoacidosis. The severity of dehydration and acidosis in DKA appear to be common factors responsible for the development of dysfunction of both brain and kidney.

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Jaypee Brothers Medical Publishers (P) Ltd
Year of Publication
2021

566.

Nt-probnp as a potential marker of cardiovascular damage in children with chronic kidney disease.
Skrzypczyk P., Okarska-Napierala M., Pietrzak R., Pawlik K., Wascinska K., Werner B., Panczyk-Tomaszewska M.
Embase
Journal of Clinical Medicine. 10(19) (no pagination), 2021. Article Number: 4344. Date of Publication: October-1 2021.
[Article]
AN: 2013871246
Assessing cardiovascular disease (CVD) in children with chronic kidney disease (CKD) is difficult. Great expectations have been associated with biomarkers, including the N-terminal pro-brain natriuretic peptide (NT-proBNP). This study aimed to determine the correlation between NT-proBNP and cardiovascular complications in children with CKD. Serum NT-proBNP, arterial stiffness, common carotid artery intima-media thickness (cIMT), echocardiographic (ECHO) pa-

rameters (including tissue Doppler imaging), and biochemical and clinical data were analyzed in 38 pediatric patients with CKD (21 boys, 12.2 +/- 4.2 years). Mean NT-proBNP in CKD patients was 1068.1 +/- 4630 pg/mL. NT-proBNP above the norm (125 pg/mL) was found in 16 (42.1%) subjects. NT-proBNP correlated with glomerular filtration rate (GFR) (r = -0.423, p = 0.008), and was significantly higher in CKD G5 (glomerular filtration rate grade) patients compared to CKD G2, G3, and G4 children (p = 0.010, p = 0.004, and p = 0.018, respectively). Moreover, NT-proBNP correlated positively with augmentation index (AP/PP: r = 0.451, p = 0.018, P2/P: r = 0.460, p = 0.016), cIMT (r = 0.504, p = 0.020), and E/E' in ECHO (r = 0.400, p = 0.032). In multivariate analysis, logNT-proBNP was the only significant predictor of cIMT Z-score (beta = 0.402, 95CI (0.082-0.721), p = 0.014) and P2/P1 (beta = 0.130, 95CI (0.082-0.721), p = 0.014). Conclusion(s): NT-proBNP may serve as a possible marker of thickening of the carotid artery wall in pediatric patients with CKD. The final role of NT-proBNP as a biomarker of arterial damage, left ventricular hypertrophy, or cardiac diastolic dysfunction in CKD children needs confirmation in prospective studies.

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Publisher
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567.

The role of urinary N-acetyl-beta-D-glucosaminidase in cirrhotic patients with acute kidney injury: Multicenter, prospective cohort study.
Yoo J.-J., Kwon J.H., Kim Y.S., Nam S.W., Park J.W., Kim H.Y., Kim C.W., Shin S.K., Chon Y.E., Jang E.S., Jeong S.-H., Lee J.W., Song D.S., Yang J.M., Lee S.W., Lee H.L., Jung Y.K., Yim H.J., Lee B., Kim S.G., Kim J.H.
Embase
Journal of Clinical Medicine. 10(19) (no pagination), 2021. Article Number: 4328. Date of Publication: October-1 2021.
[Article]
AN: 2013844307
Background and Aims: Currently, it is difficult to predict the reversibility of renal function and to discriminate renal parenchymal injury in cirrhotic patients with acute kidney injury (AKI). The aim of this study is to evaluate whether urine N-acetyl-beta-D-Glucosaminidase (NAG) can predict the survival and response to terlipressin in cirrhotic patients with AKI.
Method(s): Two hundred sixty-two cirrhotic consecutive patients who developed AKI were prospectively enrolled from 11 tertiary medical centers in Korea between 2016 to 2019. AKI was defined as an increase in serum Cr (SCr) of 0.3 mg/dL or a 50% increase in baseline SCr. Patients diagnosed with hepatorenal syndrome (HRS-AKI) were treated with terlipressin plus albumin.

Result(s): The patients were 58.8 +/- 12.9 years old on average and were predominantly male (72.5%). The mean MELD score was 25.3 +/- 9.1. When classified according to the AKI phenotype, there were 119 pre-renal, 52 acute tubular necrosis, 18 miscellaneous, and 73 HRS-AKI patients. However, the urine NAG was not effective at discriminat-ing AKI phenotypes, except for HRS-AKI. The baseline urine NAG increased as the baseline AKI stage increased ($p < 0.001$). In addition, within the same AKI stage, the urine NAG values were significantly lower in the AKI-resolved group than in the unresolved group. The urine NAG level was significantly lower in living patients compared with those who died or who underwent a liver transplant within 3 months ($p = 0.005$). In the multivariate analysis, the increased urine NAG was a significant risk factor for the 3-month transplant-free survival (TFS) rate, especially in patients with Child-Pugh class <=B or MELD <24. The urine NAG did not predict the response to terlipressin treatment in patients with HRS.
Conclusion(s): Urine NAG is strongly associated with the severity of AKI in patients with liver cirrhosis and is useful for predicting the 3-month TFS.

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Clinical Trial Number
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Year of Publication
2021

568.

Renal doppler sonography for assessment of renal injury in the asphyxiated newborn infant.
Hussein A.H., Dawoud O.A., Al Fawal F.M., AlaaEldien A.M.
Embase

European Journal of Molecular and Clinical Medicine. 8(3) (pp 4112-4125), 2021. Date of Publication: December 2021.
[Article]
AN: 2013764499
Background:Asphyxia is an important cause of acute kidney injury (AKI) and transient kidney impairment, there is a high incidence of AKI among the asphyxiated infants (50 - 72%). The normal renal ultrasound appearance in a neonate typically shows higher cortical echogenicity than in older child. Normally the parenchymal echogenicity is equal to or greater than that of liver and spleen. Doppler examination of the renal artery includes complete evaluation of the kidneys. Left and right decubitus patient positions are preferred for the kidney examination (left decubitus for the right kidney and vice versa). Both kidneys are examined carefully with respect to size, echogenicity and smoothness of outline, together with assessment of the corticomedullary differentiation.There are two approaches are used in Doppler examination, anterior abdominal approach and flank approach.

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Embase
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Publisher
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Year of Publication
2021

569.

Tubular injury in diabetic ketoacidosis: Results from the diabetic kidney alarm study.
Piani F., Melena I., Severn C., Chung L.T., Vinovskis C., Cherney D., Pyle L., Roncal-Jimenez C.A., Lanaspa M.A., Rewers A., van Raalte D.H., Obeid W., Parikh C., Nelson R.G., Pavkov M.E., Nadeau K.J., Johnson R.J., Bjornstad P.
Embase
Pediatric Diabetes. 22(7) (pp 1031-1039), 2021. Date of Publication: November 2021.
[Article]
AN: 2013617359
Objective: Glomerular injury is a recognized complication of diabetic ketoacidosis (DKA), yet the tubular lesions are poorly understood. The aim of this prospective study was to evaluate the presence and reversibility of tubular injury during DKA in children with type 1 diabetes (T1D).
Research Design and Methods: Blood and urine samples were collected from 40 children with DKA (52% boys, mean age 11 +/- 4 years, venous pH 7.2 +/- 0.1, glucose 451 +/- 163 mg/dL) at three timepoints: 0-8 and 12-24 h after starting insulin, and 3 months after discharge. Mixed-effects models evaluated the changes in tubular injury markers over time (neutrophil gelatinase-associated lipocalin [NGAL], kidney injury molecule 1 [KIM-1], and interleukin 18 [IL-18]). We also evaluated the relationships among the tubular injury biomarkers, copeptin, a vasopressin surrogate, and serum uric acid (SUA).
Result(s): Serum NGAL, KIM-1, and IL-18 were highest at 0-8 h (306.5 +/- 45.9 ng/mL, 128.9 +/- 10.1 pg/mL, and 564.3 +/- 39.2 pg/mL, respectively) and significantly decreased over 3 months ($p = 0.03$, $p = 0.01$, and $p < 0.001$, respectively). There were strong relationships among increases in copeptin and SUA and rises in tubular injury biomarkers. At 0-8 h, participants with acute kidney injury (AKI) [17%] showed significantly higher concentrations of tubular injury markers, copeptin, and SUA.

Conclusion(s): DKA was characterized by tubular injury, and the degree of injury associated with elevated copeptin and SUA. Tubular injury biomarkers, copeptin and SUA may be able to predict AKI in DKA.

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Publisher
John Wiley and Sons Inc
Year of Publication
2021

570.

Early kidney injury in immunoglobulin A vasculitis: Role of renal biomarkers.
Ture E., Yazar A., Akin F., Topcu C., Aydin A., Balasar M., Atas B.
Embase
Pediatrics International. 63(10) (pp 1218-1222), 2021. Date of Publication: October 2021.
[Article]
AN: 2013496098
Background: We aimed to determine whether urine kidney injury molecule 1 (KIM-1) and neutrophil gelatinase-associated lipocalin (NGAL) can be used as early noninvasive biomarkers of kidney injury in immunoglobulin A vasculitis.
Method(s): Patients who were diagnosed with immunoglobulin A vasculitis were included in the study. Urine samples were collected for determination of urine KIM-1 and NGAL levels. The control group consisted of age-matched healthy children.
Result(s): Sixty-one patients who were diagnosed with immunoglobulin A vasculitis were included in the study; 37.7% of these patients were determined to have renal involvement. Median KIM-1

was found to be significantly higher in the patient group (69.59 pg/mL) than the control group (40.84 pg/mL) (P = 0.001). Median NGAL was determined to be statistically significantly higher in the patient group (59.87 ng/mL) compared with the control group (44.87 ng/mL) (P = 0.013). In 23.6% of the patients without renal involvement at admission renal involvement developed within the following 6 months. When median KIM-1 and NGAL at admission of these patients were compared with the control group, they were determined to be statistically significantly higher (P = 0.001, P = 0.003).
Conclusion(s): The fact that our patients with late-term nephropathy had no hematuria and / or proteinuria and that KIM-1 and NGAL levels were determined to be high indicates that these biomarkers might be potentially reliable, noninvasive and early determinants of kidney injury.

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33423326 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33423326]
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571.

Machine learning model for early prediction of acute kidney injury (AKI) in pediatric critical care.
Dong J., Feng T., Thapa-Chhetry B., Cho B.G., Shum T., Inwald D.P., Newth C.J.L., Vaidya V.U.
Embase
Critical Care. 25(1) (no pagination), 2021. Article Number: 288. Date of Publication: December 2021.
[Article]
AN: 2013407988
Background: Acute kidney injury (AKI) in pediatric critical care patients is diagnosed using elevated serum creatinine, which occurs only after kidney impairment. There are no treatments other than supportive care for AKI once it has developed, so it is important to identify patients at risk to prevent injury. This study develops a machine learning model to learn pre-disease patterns of physiological measurements and predict pediatric AKI up to 48 h earlier than the currently established diagnostic guidelines.

Method(s): EHR data from 16,863 pediatric critical care patients between 1 month to 21 years of age from three independent institutions were used to develop a single machine learning model for early prediction of creatinine-based AKI using intelligently engineered predictors, such as creatinine rate of change, to automatically assess real-time AKI risk. The primary outcome is prediction of moderate to severe AKI (Stage 2/3), and secondary outcomes are prediction of any AKI (Stage 1/2/3) and requirement of renal replacement therapy (RRT). Predictions generate alerts allowing fast assessment and reduction of AKI risk, such as: "patient has 90% risk of developing AKI in the next 48 h" along with contextual information and suggested response such as "patient on aminoglycosides, suggest check level and review dose and indication".
Result(s): The model was successful in predicting Stage 2/3 AKI prior to detection by conventional criteria with a median lead-time of 30 h at AUROC of 0.89. The model predicted 70% of subsequent RRT episodes, 58% of Stage 2/3 episodes, and 41% of any AKI episodes. The ratio of false to true alerts of any AKI episodes was approximately one-to-one (PPV 47%). Among patients predicted, 79% received potentially nephrotoxic medication after being identified by the model but before development of AKI.
Conclusion(s): As the first multi-center validated AKI prediction model for all pediatric critical care patients, the machine learning model described in this study accurately predicts moderate to severe AKI up to 48 h in advance of AKI onset. The model may improve outcome of pediatric AKI by providing early alerting and actionable feedback, potentially preventing or reducing AKI by implementing early measures such as medication adjustment.

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572.

Prevalence and impact of acute kidney injury in hospitalized pediatric patients with acute pancreatitis.
Thavamani A., Umapathi K.K., Sankararaman S.
Embase
Pediatric Nephrology. 36(11) (pp 3785-3788), 2021. Date of Publication: November 2021.
[Article]
AN: 2011600419

Background: The incidence of acute pancreatitis (AP) in pediatric patients is rising with accompanying increased hospitalizations. Acute kidney injury (AKI) is associated with worse clinical outcomes in adults, and similar data in the pediatric age group is limited.
Method(s): We analyzed non-overlapping years of National Inpatient Sample (NIS) and Kids Inpatient Database (KID) to include all patients less than 21 years old with primary diagnosis of AP between 2003 and 2016. Patients with concomitant diagnosis of AKI were compared with patients without AKI for demographics, comorbid/etiologic conditions, procedures, complications, and mortality. Length of stay and inflation-adjusted hospitalization charges were used to compare health care resource utilization.
Result(s): In total, 123,185 AP-related hospitalizations were analyzed. Overall prevalence of AKI among AP patients was 1.5% during the study period. The prevalence rate of AKI increased almost five-fold from 0.6% (2003) to a peak rate of 2.9% (2016), P < 0.001. Patients with AKI were older, more often male and had either more systemic diseases or chronic comorbid conditions such as malignancies, systemic lupus erythematosus, solid organ transplantation, hypertriglyceridemia, and hypercalcemia. Multivariate analysis demonstrated AP-related hospitalizations with AKI were 1.97 (CI 1.27-3.08, P < 0.001) times more likely to be associated with in-hospital mortality and contributed to 4.3 additional days of hospitalization (CI 4.02-4.6, P < 0.001), also incurring an additional $51,830 (CI 48571-55088, P < 0.001) in hospital charges.
Conclusion(s): The prevalence of AKI is increasing steadily among pediatric patients with AP and is associated with increased risk of mortality and higher health care resource expenditure.

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Publisher
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573.

Favipiravir use in children with COVID-19 and acute kidney injury: is it safe?.
Ozsurekci Y., Oygar P.D., Gurlevik S.L., Kesici S., Ozen S., Kurt Sukur E.D., Gulhan B., Topaloglu R., Bayrakci B., Cengiz A.B.
Embase
Pediatric Nephrology. 36(11) (pp 3771-3776), 2021. Date of Publication: November 2021.
[Article]
AN: 2011596031
Background: The rising number of infections due to Severe Acute Respiratory Syndrome Coronavirus-2 (popularly known as COVID-19) has brought to the fore new antiviral drugs as possible treatments, including favipiravir. However, there is currently no data regarding the safety of this drug in patients with kidney impairment. The aim of this paper, therefore, is to share our experience of the use of favipiravir in pediatric patients affected by COVID-19 with any degree of kidney impairment.

Method(s): The study enrolled pediatric patients aged under 18 years and confirmed as suffering from COVID-19 and multisystem inflammatory syndrome in children (MIS-C) with any degree of kidney injury, who were treated with favipiravir at the time of admission.
Result(s): Out of a total of 11 patients, 7 were diagnosed with MIS-C and 4 with severe COVID-19. The median age of the cases was 15.45 (9-17.8) years and the male/female ratio was 7/4. At the time of admission, the median serum creatinine level was 1.1 mg/dl. Nine patients were treated with favipiravir for 5 days, and 2 patients for 5 days followed by remdesivir for 5-10 days despite kidney injury at the time of admission. Seven patients underwent plasma exchange for MIS-C while 2 severely affected cases underwent continuous kidney replacement therapy (CKRT) as well. One severe COVID-19 patient received plasma exchange as well as CKRT. Serum creatinine values returned to normal in mean 3.07 days.
Conclusion(s): Favipiravir seems a suitable therapeutic option in patients affected by COVID-19 with kidney injury without a need for dose adjustment.

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Publisher
Springer Science and Business Media Deutschland GmbH
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574.

Serum metabolic profile of postoperative acute kidney injury following infant cardiac surgery with cardiopulmonary bypass.
Davidson J.A., Frank B.S., Urban T.T., Twite M., Jaggers J., Khailova L., Klawitter J.
Embase
Pediatric Nephrology. 36(10) (pp 3259-3269), 2021. Date of Publication: October 2021.
[Article]
AN: 2011415021
Background: We sought to determine differences in the circulating metabolic profile of infants with or without acute kidney injury (AKI) following cardiothoracic surgery with cardiopulmonary bypass (CPB).
Method(s): We performed a secondary analysis of preoperative and 24-h postoperative serum samples from infants <= 120 days old undergoing CPB. Metabolic profiling of the serum samples was performed by targeted analysis of 165 serum metabolites via tandem mass spectrometry. We then compared infants who did or did not develop AKI in the first 72 h postoperatively to determine global differences in the preoperative and 24-h metabolic profiles in addition to specific differences in individual metabolites.
Result(s): A total of 57 infants were included in the study. Six infants (11%) developed KDIGO stage 2/3 AKI and 13 (23%) developed stage 1 AKI. The preoperative metabolic profile did not differentiate between infants with or without AKI. Infants with severe AKI could be moderately

distinguished from infants without AKI by their 24-h metabolic profile, while infants with stage 1 AKI segregated into two groups, overlapping with either the no AKI or severe AKI groups. Differences in these 24-h metabolic profiles were driven by 21 metabolites significant at an adjusted false discovery rate of < 0.05. Prominently altered pathways include purine, methionine, and kynurenine/nicotinamide metabolism.
Conclusion(s): Moderate-to-severe AKI after infant cardiac surgery is associated with changes in the serum metabolome, including prominent changes to purine, methionine, and kynurenine/nicotinamide metabolism. A portion of infants with mild AKI demonstrated similar metabolic changes, suggesting a potential role for metabolic analysis in the evaluation of lower stage injury. Graphical abstract: [Figure not available: see fulltext.]

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575.

Acute kidney injury in pediatric non-traumatic rhabdomyolysis.
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Embase
Pediatric Nephrology. 36(10) (pp 3251-3257), 2021. Date of Publication: October 2021.
[Article]
AN: 2011156653
Background: Our study aimed to determine the prevalence of acute kidney injury (AKI) in pediatric non-traumatic rhabdomyolysis, and to identify factors associated with its development.
Method(s): Clinical information and laboratory tests of children with rhabdomyolysis who were admitted between 2009 and 2018 were reviewed retrospectively. Rhabdomyolysis was defined by a peak serum creatine kinase (CK) level > 1000 IU/L within the first 72 h of admission. The primary outcome was the occurrence of AKI within the first 7 days of admission, which was determined by the KDIGO criteria.
Result(s): A total of 54 patients with a median age of 7.8 years old were included. Ten (18.5%) patients developed AKI. AKI was relatively rare in children with viral myositis (2.6%), whereas all patients with rhabdomyolysis related to seizure or irritability/dystonia developed AKI. Patients with AKI had higher white cell count (10.6 vs. 4.5 x 109/L) and lower serum bicarbonate (19.4 vs. 25.5 mmol/L) on admission, with higher peak serum CK (23,086.0 vs. 3959.5 IU/L). The AKI group was more likely to present with positive urine results (myoglobinuria, dipstick heme or protein >=

2+). Peak serum CK had a good discriminatory power for stage 2-3 AKI (AUC 0.930, p = 0.005), with an optimal cut-off of 15,000 IU/L identified from the ROC analysis.
Conclusion(s): The overall prevalence of AKI in pediatric non-traumatic rhabdomyolysis was 18.5%. Positive urine tests (myoglobinuria, dipstick heme or protein >= 2+), high white cell count, lower serum bicarbonate on admission, and high peak serum CK were associated with development of AKI. Graphical abstract: [Figure not available: see fulltext.]

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576.

Clinical characteristics and long-term outcomes of endovascular treatment of renal artery fibromuscular dysplasia with branch lesions.
Li K., Cui M., Zhang K., Liang K., Zhai S.
Embase
Pediatric Nephrology. 36(10) (pp 3169-3180), 2021. Date of Publication: October 2021.
[Article]
AN: 2011130998
Background: Renal artery fibromuscular dysplasia (FMD) can cause arterial stenosis, dissection, and aneurysm of renal arteries. This study aimed to analyze the clinical characteristics and evaluate the long-term outcomes of renal branch artery FMD in children and adults.
Method(s): Sixty-one patients with renal artery FMD underwent endovascular treatment, including 23 children and 38 adults. They were divided into two groups, the main artery FMD group (n = 40, with severe stenosis located in the main renal artery) and the branch artery FMD group (n = 21, with only the branch lesions in unilateral or bilateral branch artery). The clinical characteristics and long-term outcomes of these pediatric and adult patients were evaluated.
Result(s): The incidence of branch FMD was higher in children than in adults (P = 0.005). Thirteen children showed one or more branch artery involvements. Hypertension and headache were the most common symptoms. The branch aneurysm with coexisting stenosis was more common in patients with branch artery FMD. During the follow-up, blood pressure was normal in 8 patients and lowered in 11 patients in the branch FMD group. The patient's glomerular filtration was increased in 61 patients (P < 0.001). Four-year freedom from reintervention in 21 branch artery FMD patients was lower than that in 40 main artery FMD patients (P < 0.05).
Conclusion(s): A higher incidence of renal branch artery FMD was observed in children than in adults. Endovascular treatment with balloon angioplasty can be used for treating renal branch artery FMD.

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Publisher
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577.

Clinical phenotypes of acute kidney injury are associated with unique outcomes in critically ill septic children.
Basu R.K., Hackbarth R., Gillespie S., Akcan-Arikan A., Brophy P., Bagshaw S., Alobaidi R., Goldstein S.L.
Embase
Pediatric Research. 90(5) (pp 1031-1038), 2021. Date of Publication: November 2021.
[Article]
AN: 2010324720
Background: Assessment of acute kidney injury (AKI) in septic patients remains imprecise. In adults, the classification of septic patients by clinical AKI phenotypes (severity and timing) demonstrates unique associations with patient outcome vs. broadly defined AKI.
Method(s): In a multinational prospective observational study, AKI diagnosis in critically ill septic children was stratified by duration (transient vs. persistent) and severity (mild vs. severe by creatinine change and urine output). The outcomes of interest were mortality and intensive care unit resource complexity at 28 days.
Result(s): Seven hundred and fifty-seven septic children were studied (male 52.7%, age 4.6 years (1.5-11.9)). Mortality (overall 12.1%) was different between severe AKI and mild AKI (18.3 vs. 4.4%, $p < 0.001$) as well as intensive care unit (ICU) complexity (overall 34.5%, 45 vs. 21.7%, $p < 0.001$). Patients with Persistent AKI had fewer ICU-free days (17 (7, 21) vs. 24 (17, 26), $p < 0.001$) and higher ICU complexity (52.8 vs. 22.9%, $p = 0.002$) than transient AKI, even after exclusion of patients with early mortality. AKI phenotypes incorporating temporal and severity data correlate with unique survival (range 4.4-21.6%) and ICU-free days (range of 15-25 days)
Conclusion(s): The outcome of septic children with AKI changes by clinical phenotype. Our findings underscore the importance of prognostic enrichment in sepsis and AKI for the purpose of trial design and patient management. Impact: Although AKI occurs commonly in patients with sepsis (S-AKI), outcomes for children with S-AKI varies based on the severity and timing of the AKI.Existing S-AKI pediatric data utilize a broad singular definition of kidney injury. Increasing the precision of AKI classification results in a new understanding of how S-AKI associates with patient outcome.A refined classification of S-AKI identifies subgroups of children, making possible a targeted and a personalized medicine approach to S-AKI study and management.

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Publisher
Springer Nature
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578.

A Review on the Application and Limitations of Administrative Health Care Data for the Study of Acute Kidney Injury Epidemiology and Outcomes in Children.
Ulrich E.H., So G., Zappitelli M., Chanchlani R.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 742888. Date of Publication: 27 Oct 2021.
[Review]
AN: 636411119
Administrative health care databases contain valuable patient information generated by health care encounters. These "big data" repositories have been increasingly used in epidemiological health research internationally in recent years as they are easily accessible and cost-efficient and cover large populations for long periods. Despite these beneficial characteristics, it is also important to consider the limitations that administrative health research presents, such as issues related to data incompleteness and the limited sensitivity of the variables. These barriers potentially lead to unwanted biases and pose threats to the validity of the research being conducted. In this review, we discuss the effectiveness of health administrative data in understanding the epidemiology of and outcomes after acute kidney injury (AKI) among adults and children. In addition, we describe various validation studies of AKI diagnostic or procedural codes among adults and children. These studies reveal challenges of AKI research using administrative data and the lack of this type of research in children and other subpopulations. Additional pediatric-specific validation studies of administrative health data are needed to promote higher volume and increased validity of this type of research in pediatric AKI, to elucidate the large-scale epidemiology and patient and health systems impacts of AKI in children, and to devise and monitor programs to improve clinical outcomes and process of care.

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Publisher
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579.

Acute Kidney Injury in Neonates with Perinatal Asphyxia Receiving Therapeutic Hypothermia.
Bozkurt O., Yucesoy E.
Embase
American Journal of Perinatology. 38(9) (pp 922-929), 2021. Date of Publication: 01 Jul 2021.
[Article]
AN: 635484536
Objective To assess the incidence and severity of acute kidney injury (AKI) and evaluate risk factors that predict AKI in asphyxiated infants receiving therapeutic hypothermia. Study Design Infants >=36 weeks' gestation diagnosed with moderate-to-severe perinatal asphyxia and received therapeutic hypothermia were reviewed retrospectively (n = 166). Modified Acute Kidney Injury Network criteria were used to diagnose AKI. The results of infants with AKI were compared with the infants who did not develop AKI. Results AKI developed in 49 (29.5%) infants, of whom 22 had stage I, 13 had stage II, and 14 had stage III AKI. The overall mortality rate was 15.7% and was significantly higher in infants with AKI when compared with infants without AKI (41 vs. 5%; p < 0.001). Asystole at birth (p = 0.044), placental abruption (p = 0.041), outborn status (p = 0.041), need for vasopressor support (p = 0.031), increased bleeding tendency (p = 0.031), initial lactate level (p = 0.015), and 12-hour lactate level (p = 0.029) were independent risk factors for the development of AKI. Receiver operating characteristic curve analysis demonstrated a good predictive value for initial lactate level (>15 mmol/L), with 69% sensitivity (95% CI: 55-82) and 82% specificity (95% CI: 74-89), and for 12-hour lactate level (>6 mmol/L), with 83.7% sensitivity (95% CI: 70-93) and 73.5% specificity (95% CI: 64.5-81), to predict AKI. Conclusion AKI is still a common complication of perinatal asphyxia despite treatment with therapeutic hypothermia. Identification of risk factors associated with the development of AKI in asphyxiated infants would be potentially beneficial to reduce morbidity and mortality. Besides perinatal risk factors, initial and 12-hour lactate concentrations can be used for the early prediction of AKI.

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Publisher
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580.

Acute Kidney Injury Following Mannitol Administration in Traumatic Brain Injury: A Meta-analysis.
Purnomo A.F., Permana K.R., Daryanto B.
Embase
Acta Informatica Medica. 29(4) (pp 270-274), 2021. Date of Publication: 2021.
[Article]
AN: 2016612419
Background: Acute kidney injury (AKI) is one of the most frequent but anticipated potential complications. The objective of this meta-analysis was to evaluate the AKI incidence following mannitol administration in traumatic brain injury (TBI) patients worldwide.
Objective(s): So in this study, authors will discuss the incidence of AKI related to the provision of mannitol in TBI cases so it is expected to provide a better prevention of complications.
Method(s): We were using meta-analysis. Studies were searched throughout Pubmed, Cochrane, JNS in December 2017. Studies that were included ranged from 2009-2018. Keywords were "renal"or "kidney"and "traumatic brain injury". Inclusion criteria were full-text observational study or randomized control trial, subjects in study were newly diagnosed AKI after TBI, GCS < 13, with age range 15-100 years old, survived and followed at least for 30 days after discharge, and given mannitol at least 1g/kg BW/day for at least 3 days. From 648 studies, total 4 studies were eligible for this study. Statistical analysis was done by using Review Manager 5.
Result(s): From those 4 studies, it is shown than the pooled risk ratio AKI incidence following mannitol administration in traumatic brain injury (TBI) was 1.57. The pooled risk ratio had wide heterogeneity (I2 = 0.95 and 1, p< 0.05) so random effect model was used.
Conclusion(s): AKI appeared more frequent in patient with TBI with mannitol administration. It still needs more multicentre and long term period researches in the future to get better understanding AKI in TBI following mannitol administration.

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Avicena Publishing
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581.

Outcome and Incidence of Acute Kidney Injury among Hospitalized Children.
Masood S., Farrukh R., Rizvi Q., Shakoor I., Naseer A., Sultana S.
Embase
Pakistan Journal of Medical and Health Sciences. 15(11) (pp 3400-3402), 2021. Date of Publication: November 2021.
[Article]

AN: 2016196519
Background and purpose: Data on the epidemiology of acute kidney injury (ARI) in Asia come primarily from studies conducted in large tertiary hospitals with nephrology departments. Little is known about what happens in primary care settings without nephrology, especially in the paediatric population. The aim of this study is to describe the epidemiology, outcome and risk factors of ARF in children admitted in pediatric department. Place and Duration: In the Pediatric Medicine and Nephrology department of Abbasi Shaheed Hospital for one-year duration from August 2020 to August 2021.
Method(s): We prospectively examined children aged 2 to 14 whose guardians gave the consent for the study and were admitted in the Pediatric ward. We identified children with risk factors for AKI on admission and then tested them for AKI using the 2012 Creatinine-based Modified General Kidney Disease Improvement (KDIGO) criteria to improve overall outcomes. Participants with AKI were followed up to discharge. The subject of interest was the need and access to dialysis and renal recovery on discharge from the hospital.
Result(s): A total of 74.3% (n = 116) out of the 156 patients admitted during the study period were at risk of ARF. Of the 156 registered participants, 51.9% (n = 81) were males with a mean age of 5 years. Although comorbid conditions were rare, sickle cell anaemia and malnutrition were the most common. Most of the children were hypotensive (n = 89; 57.1%), with mean systolic and diastolic blood pressures of 81 mmHg and 42 mmHg, respectively. The mean urine output was 0.79 ml / kg / hr. Thirteen patients (8.33%) had urine dipstick anomalies. Anaemia was common (n = 72, 46.2%) and 32 (20.5%) had severe anaemia. Leucocytosis was detected in 26.3% of patients, and a platelet count below 100,000 / mm3 in 24 (15.4%) patients. In total, 21 of 156 participants had AKI for an incidence of 13.5%. The only patient with an indication for dialysis (uremic encephalopathy and anuria> 24 hours) died without dialysis due to a delay in transfer to a dialysis centre (due to lack of resources). Of the 20 survivors in the AKI group, 15 (71.4%) had complete improvement in kidney function The median hospitalization time was significantly longer in participants with stage 3 AKI.
Conclusion(s): ARF risk factors are very common in children admitted in the hospitals. At least one in 10 children presenting with AKI risk factors will have AKI. AKI is largely caused by community-acquired diseases that can be prevented, such as diarrheal diseases and malaria. Efforts should be made to educate about risk assessment, prevention, early diagnosis and treatment of AKI in children.

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Lahore Medical And Dental College
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582.

Safety and Efficacy of Trans-Perineal Urethroplasty for Management of Post-Traumatic Urethral Strictures in Pediatric Age-Group.
Chaudhari R., Sharma A., Shaikh I., Andankar M., Pathak H.
Embase

Urologia Internationalis. 105(11-12) (pp 1024-1028), 2021. Date of Publication: 01 Oct 2021.
[Article]
AN: 2015471021
Introduction: Trans-perineal urethroplasty is the preferred treatment for distraction urethral injuries in adults. However, management of such injuries in children is challenging because of functional implications in a growing child. In the present study, we aim to evaluate the safety and efficacy of perineal urethroplasty for distraction urethral injuries in children.
Method(s): The medical records of prepubertal pediatric patients (age <14 years) with traumatic urethral distraction injuries managed by perineal urethroplasty were retrospectively reviewed and analyzed with respect to demographics, stricture characteristics, management, complications, follow-up, and outcome.
Result(s): A total of 14 patients were included in the study. Ten had membranous, and 4 had bulbar urethral strictures. All membranous strictures were secondary to pelvic trauma; bulbar strictures were secondary to blunt perineal trauma; 7 patients had associated pelvic fractures. Anastomotic urethroplasty was used in 10 patients (71.4%) and buccal mucosal graft urethroplasty was done in 4 patients (38.6%). The mean follow-up duration was 56 months (range 24-76). Surgery was primarily successful in 85.7%. Failed repair in 2 patients was successfully managed with augmented anastomotic urethroplasty. Post-operatively, the mean maximal urinary flow rate was 26.4 mL/s. No significant complications occurred. All boys are continent. There was no chordee or urethral diverticula, during follow-up.
Conclusion(s): In pediatric patients, bulbar and membranous strictures can be treated successfully with urethroplasty using the perineal approach. Longer follow-up is needed to confirm that these good results are maintained as these patients cross into adulthood, especially as these repairs were done before puberty.

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Publisher
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583.

Urinary NGAL is a Potential Biomarker for Early Renal Injury in Insulin Resistant Obese Non-diabetic Children.
Sen S., Kizilay D.O., Taneli F., Ozen C., Ertan P., Ozunan I., Yildiz R., Ersoy B.
Embase
JCRPE Journal of Clinical Research in Pediatric Endocrinology. 13(4) (pp 400-407), 2021. Date of Publication: 2021.
[Article]
AN: 2015362579
Objective: Neutrophil gelatinase-associated lipocalin (NGAL) is one of the new biomarkers for detecting acute renal injury. There are studies showing the relationship between NGAL and renal injury in obese children. The aim of this study was to investigate whether urinary levels of NGAL, kidney injury molecule-1, and serum cystatin C are increased in insulin resistance (IR) patients before the development of diabetes.

Method(s): Cross-sectional, case-controlled study that included non-diabetic obese children and adolescent patients with IR and a non-diabetic obese control group with no IR, who attended a tertiary center pediatric endocrinology outpatient clinic between 2016-2018. Those with diabetes mellitus and/or known renal disease were excluded. NGAL and creatinine (Cr) levels were evaluated in the morning spot urine from all participants. Serum renal function was evaluated.
Result(s): Thirty-six control and 63 IR patients were included in the study, of whom 68 (68.7%) were girls. The mean age of all participants was 13.12+/-2.64 years and no statistically significant difference was found between the two groups in terms of age or gender distribution. Median (range) spot urinary NGAL (u-NGAL) values in the IR group were significantly higher at 26.35 (7.01-108.7) ng/mL than in the control group at 19.5 (3.45-88.14) ng/mL (p=0.018). NGAL/Cr ratio was also significantly higher in the IR group compared to the control group (p=0.018).
Conclusion(s): Obese pediatric patients with IR were shown to have elevated levels of u-NGAL, a marker of renal injury. u-NGAL examination may show early renal injury before development of diabetes.

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Publisher
Galenos Publishing House
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584.

Characteristics, maternal and neonatal outcomes of acute kidney injury in preeclampsia: A prospective, single-center study.
Sharma M., Mazumder M.A., Alam S., Deka N., Shehwar D., Mahanta P.J., Doley P.K.
Embase
Clinical Nephrology. 96(5) (pp 263-269), 2021. Date of Publication: November 2021.
[Article]
AN: 2015245885
Background: Preeclampsia is an important cause of pregnancy-related acute kidney injury (AKI). The objective of our study was to determine the incidence, characteristics, and maternal and neonatal outcomes of AKI in pregnant women with preeclampsia.
Material(s) and Method(s): A prospective, observational, single-center study from January 2019 to January 2020. Patients admitted with preeclampsia were included. Patients with obstetric complications were excluded. AKI was defined according to Kidney Disease Improving Global Outcomes (KDIGO) 2012 criteria.
Result(s): Total number of patients with preeclampsia was 104, out of which 25% developed AKI. Among those with AKI, nulliparity (61.5%) was the most common risk factor for preeclampsia

followed by prior history of preeclampsia (15.4%), pregestational hypertension (11.5%), pregestational diabetes mellitus (3.8%), and chronic kidney disease (3.8%). There was no significant difference in maternal mortality between those with AKI (15.4%) and without AKI (7.7%). Intermittent hemodialysis was needed in 15.4%. At the end of 90 days follow-up, complete recovery of renal function occurred in 53.8%, partial recovery in 23.1% and end-stage kidney disease (ESKD) in 7.7%. Perinatal death occurred in 26.9%, preterm birth in 23.1% and stillbirth in 7.7% of those with AKI and was not significantly different from those without AKI. The mean of birth weight in newborns delivered by patients with AKI (2.53 +/- 0.73 kg) was significantly lower compared to those without AKI (2.82 +/- 0.58 kg).
Conclusion(s): AKI was associated with a lower mean birth weight of newborns. Complete recovery of renal function was seen in 53.8% of patients with AKI and preeclampsia.

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Publisher
Dustri-Verlag Dr. Karl Feistle
Year of Publication
2021

585.

Characteristics of pediatric rhabdomyolysis and the associated risk factors for acute kidney injury: A retrospective multicenter study in korea.
Yoo S., Cho M.H., Baek H.S., Song J.Y., Lee H.S., Yang E.M., Yoo K.H., Kim S.J., Shin J.I., Lee K.H., Ha T.-S., Jang K.M., Lee J.W., Kim K.H., Cho H., Lee M.J., Suh J.-S., Han K.H., Hyun H.S., Ha I.-S., Cheong H.I., Kang H.G., Namgoong M.K., Cho H.-K., Oh J.-H., Lee S.T., Kim K.S., Lee J.H., Park Y.S., Kim S.H.
Embase
Kidney Research and Clinical Practice. 40(4) (pp 673-686), 2021. Date of Publication: December 2021.
[Article]
AN: 2014906215
Background: The clinical features of pediatric rhabdomyolysis differ from those of the adults with rhabdomyolysis; however, multi-center studies are lacking. This study aimed to investigate the characteristics of pediatric rhabdomyolysis and reveal the risk factors for acute kidney injury (AKI) in such cases.
Method(s): This retrospective study analyzed the medical records of children and adolescents diagnosed with rhabdomyolysis at 23 hospitals in South Korea between January 2007 and December 2016.
Result(s): Among 880 patients, those aged 3 to 5 years old composed the largest subgroup (19.4%), and all age subgroups were pre-dominantly male. The incidence of AKI was 11.3%. Neurological disorders (53.6%) and infection (39.0%) were the most common un-derlying disorder and cause of rhabdomyolysis, respectively. The median age at diagnosis in the AKI subgroup was older than that in the non-AKI subgroup (12.2 years vs. 8.0 years). There were no

significant differences in body mass index, myalgia, dark-colored urine, or the number of causal factors between the two AKI-status subgroups. The multivariate logistic regression model indicated that the following factors were independently associated with AKI: Multiorgan failure, presence of an underlying disorder, strong positive urine occult blood, increased aspartate aminotransferase and uric acid levels, and reduced calcium levels.
Conclusion(s): Our study revealed characteristic clinical and laboratory features of rhabdomyolysis in a Korean pediatric population and highlighted the risk factors for AKI in these cases. Our findings will contribute to a greater understanding of pediatric rhabdomyolysis and may enable early intervention against rhabdomyolysis-induced AKI.

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The Korean Society of Nephrology
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586.

Risk factors, predictions, and progression of acute kidney injury in hospitalized COVID-19 patients: An observational retrospective cohort study.
Naser M.N., Al-Ghatam R., Darwish A.H., Alqahtani M.M., Alahmadi H.A., Mohamed K.A., Hasan N.K., Perez N.S.
Embase
PLoS ONE. 16(9 September) (no pagination), 2021. Article Number: e0257253. Date of Publication: September 2021.
[Article]
AN: 2014849074
Objectives Studies have shown that acute kidney injury (AKI) occurrence post SARS-CoV-2 infection is complex and has a poor prognosis. Therefore, more studies are needed to understand the rate and the predications of AKI involvement among hospitalized COVID-19 patients and AKI's impact on prognosis while under different types of medications. Patients and methods This study is a retrospective observational cohort study conducted at Bahrain Defence Force (BDF) Royal Medical Services. Medical records of COVID-19 patients admitted to BDF hospital, treated, and followed up from April 2020 to October 2020 were retrieved. Data were analyzed using univariate and multivariate logistic regression with covariate adjustment, and the odds ratio (OR) and 95% confidence (95% CI) interval were reported. Results Among 353 patients admitted with COVID-19, 47.6% developed AKI. Overall, 51.8% of patients with AKI died compared to 2.2% of patients who did not develop AKI (p< 0.001 with OR 48.6 and 95% CI 17.2-136.9). Besides, deaths in patients classified with AKI staging were positively correlated and multivariate regression analysis revealed that moderate to severe hypoalbuminemia (<32 g/L) was

independently correlated to death in AKI patients with an OR of 10.99 (CI 95% 4.1-29.3, p<0.001). In addition, 78.2% of the dead patients were on mechanical ventilation. Besides age as a predictor of AKI development, diabetes and hypertension were the major risk factors of AKI development (OR 2.04, p<0.01, and 0.05 for diabetes and hypertension, respectively). Also, two or more comorbidities substantially increased the risk of AKI development in COVID-19 patients. Furthermore, high levels upon hospital admission of D-Dimer, Troponin I, and ProBNP and low serum albumin were associated with AKI development. Lastly, patients taking ACEI/ARBs had less chance to develop AKI stage II/III with OR of 0.19-0.27 (p<0.05-0.01). Conclusions The incidence of AKI in hospitalized COVID-19 patients and the mortality rate among AKI patients were high and correlated with AKI staging. Furthermore, laboratory testing for serum albumin, hypercoagulability and cardiac injury markers maybe indicative for AKI development. Therefore, clinicians should be mandated to perform such tests on admission and follow-up in hospitalized patients.

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Publisher
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587.

Frequency of acute kidney injury among septic children, admitted at a tertiary care hospital.
Afroze M., Haider M., Arshad U., Noor N., Naqvi S., Tebha S.S.
Embase
Medical Forum Monthly. 32(7) (pp 107-111), 2021. Date of Publication: July 2021.
[Article]
AN: 2014577880
Objective: The objective of our study was to determine the frequency of acute kidney injury (AKI) among septic patients admitted at a tertiary care hospital.
Study Design: Descriptive/observational study Place and Duration of Study: This study was conducted at a Tertiary Care Hospital of Karachi from 1st July 2015 to 31st December 2015.
Material(s) and Method(s): Total 237 patients who were diagnosed as having sepsis with age 1 to 144 months were included in the study. These patients were monitored till the development of acute kidney injury (AKI). The frequency and percentages were calculated for qualitative variables i.e. gender, and age group, while mean and standard deviation was calculated for quantitative variables i.e., age, baseline serum creatinine, maximum serum creatinine and hospital stay. P-value <=0.05 was considered as significant.
Result(s): Total 237 patients were included in study with age 1 to 144 months 61.93(+/-33.510). Out of 237 patients 62 i.e. (26.2%) developed Acute Kidney Injury (AKI). A significant association of acute kidney injury was observed with hospital stay (p<0.001) and male gender (p=0.045). No significant association of acute kidney injury was observed with age (p=0.737) and baseline serum creatinine (p=0.104).

Conclusion(s): Development of Acute kidney injury is common in septic children and is significantly associated with increased hospital stay. This study provides statistics of sepsis induced AKI in the local population. In addition, the results emphasize on early identification of AKI among septic children to prevent further morbidity and mortality.

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Publisher
Medical Forum Monthly
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588.

Renal tissue desaturation and acute kidney injury in infant cardiac surgery: a prospective propensity score-matched cohort study.
Zhang D., Ouyang C., Zhao X., Cui B., Dai F., Meng L., Ma J.
Embase
British Journal of Anaesthesia. 127(4) (pp 620-628), 2021. Date of Publication: October 2021.
[Article]
AN: 2014240605
Background: Previous studies on the association between renal tissue desaturation and acute kidney injury (AKI) in infant cardiac surgery are limited by small sample sizes and inconsistent results. This prospective study aimed to determine the association between renal desaturation and AKI in infants undergoing surgical repair of an isolated ventricular septal defect (VSD).
Method(s): Infants undergoing VSD repair involving cardiopulmonary bypass participated in this prospective cohort study. The exposure of interest was renal tissue desaturation, defined as at least 20% decrease in saturation from baseline for at least 60 consecutive seconds. Intraoperative care was not guided by renal oxygenation, as the anaesthesiologists were blinded to the monitor. The outcome was AKI arising within postoperative Days 1-3. The primary analysis was based on propensity score-matched infants with and without intraoperative renal desaturation.
Result(s): Intraoperative renal desaturation was detected in 38 of 242 infants using near-infrared spectroscopy. This group of infants was matched with 114 infants without intraoperative renal saturation after propensity score matching. Acute kidney injury occurred in 47% (18/38) and 27% (31/114) of infants with or without renal desaturation, respectively. Infants with renal desaturation had higher odds of developing AKI than infants without renal desaturation based on conditional logistic regression (odds ratio 2.79; 95% confidence interval: 1.21-6.44; P=0.016). The cumulative time of renal desaturation correlated moderately with the ratio of postoperative peak creatinine to preoperative baseline creatinine (r=0.51; P<0.001).
Conclusion(s): Intraoperative renal desaturation is associated with increased odds of developing AKI after surgical repair of an isolated VSD involving cardiopulmonary bypass in infants. Clinical trial registration: NCT03941015.

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589.

Acute kidney injury and renal tubular damage in children with type 1 diabetes mellitus onset.
Marzuillo P., Iafusco D., Zanfardino A., Guarino S., Piscopo A., Casaburo F., Capalbo D., Ventre M., Arienzo M.R., Cirillo G., de Luca Picione C., Esposito T., Montaldo P., Di Sessa A., del Giudice E.M.
Embase
Journal of Clinical Endocrinology and Metabolism. 106(7) (pp E2720-E2737), 2021. Date of Publication: 2021.
[Article]
AN: 2014224408
Context: Acute kidney injury (AKI) and renal tubular damage (RTD), especially if complicated by acute tubular necrosis (ATN), could increase the risk of later chronic kidney disease. No prospective studies on AKI and RTD in children with type1diabetes mellitus (T1DM) onset are available.
Objective(s): To evaluate the AKI and RTD prevalence and their rate and timing of recovery in children with T1DM onset.
Design(s): Prospective study. Settings and patients: 185 children were followed up after 14 days from T1DM onset. The patients who did not recover from AKI/RTD were followed-up 30 and 60 days later.
Main Outcome Measure(s): AKI was defined according to the KDIGO criteria. RTD was defined by abnormal urinary beta-2-microglobulin and/or neutrophil gelatinase-associated lipocalin and/or tubular reabsorption of phosphate < 85% and/or fractional excretion of Na (FENa) > 2%. ATN was defined by RTD+AKI, prerenal (P)-AKI by AKI+FENa < 1%, and acute tubular damage (ATD) by RTD without AKI.
Result(s): Prevalence of diabetic ketoacidosis (DKA) and AKI were 51.4% and 43.8%, respectively. Prevalence of AKI in T1DM patients with and without DKA was 65.2% and 21.1%, respectively; 33.3% reached AKI stage 2, and 66.7% of patients reached AKI stage 1. RTD was evident in 136/185 (73.5%) patients (32.4% showed ATN; 11.4%, P-AKI; 29.7%, ATD). All patients with DKA or AKI presented with RTD.The physiological and biochemical parameters of AKI and RTD were normal again in all patients. The former within 14 days and the latter within 2months.
Conclusion(s): Most patients withT1DM onset may develop AKI and/or RTD, especially if presenting with DKA. Over time the physiological and biochemical parameters of AKI/ RTD normalize in all patients.

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Publisher
Endocrine Society
Year of Publication
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590.

Fluid overload and acute kidney injury in children with tumor lysis syndrome.
Flood K., Rozmus J., Skippen P., Matsell D.G., Mammen C.
Embase
Pediatric Blood and Cancer. 68(12) (no pagination), 2021. Article Number: e29255. Date of Publication: December 2021.
[Article]
AN: 2013261676
Aim: Tumor lysis syndrome (TLS) is a common oncologic emergency among patients with pediatric hematologic malignancies. The mainstay of TLS management is aggressive intravenous hydration. However, the epidemiology of fluid overload (FO) and acute kidney injury (AKI) in this population is understudied. In this study, we aimed to describe the incidence, severity, and complications of FO and AKI among pediatric patients with TLS.
Method(s): We completed a single-center retrospective cohort study of pediatric patients with a new diagnosis of hematologic malignancy over a 10-year period. Patients with TLS were analyzed in two groups based on the severity of AKI and FO. Charts were reviewed for complications associated with AKI and FO including hypoxemia, mechanical ventilation, hyponatremia, pulmonary edema, pediatric intensive care (PICU) admission, and need for renal replacement therapy (RRT).
Result(s): We analyzed 56 patients with TLS for FO and AKI. We found severe FO (>=10%) occurred in 35.7% (n = 20). PICU admission occurred in 35% of patients with severe FO compared to 8.3% in those with mild/moderate FO <10% (p =.013). Complications of hypoxemia (30% vs. 5.6%, p =.012) and pulmonary edema (25% vs. 2.8%, p =.010) were more common among those with severe FO. AKI occurred in 37.5% (n = 21) patients and resulted in a significant increase in PICU admission and requirement for RRT (p =.001 and <.001, respectively).
Conclusion(s): Our results show FO and AKI are common, and often unrecognized complications of TLS associated with increased morbidity. Prospective, multicenter studies are needed to further dissect the burden of FO and AKI within this vulnerable population.

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591.

MR-Proadrenomedullin as biomarker of renal damage in urinary tract infection in children.
Penalver Penedo R., Ruperez Lucas M., Alvarez-Sala Walther L.A., Torregrosa Benavent A., Casas Losada M.L., Banuelos Andrio L., Rebolledo Poves A.B., Bueno Campana M.
Embase
BMC Pediatrics. 21(1) (no pagination), 2021. Article Number: 292. Date of Publication: December 2021.
[Article]
AN: 2012931723
Background: Midregional-proadrenomedullin (MR-proADM) is a useful prognostic peptide in severe infectious pathologies in the adult population. However, there are no studies that analyze its utility in febrile urinary tract infection (fUTI) in children. An accurate biomarker would provide an early detection of patients with kidney damage, avoiding other invasive tests like renal scintigraphy scans. Our objective is to study the usefulness of MR-proADM as a biomarker of acute and chronic renal parenchymal damage in fUTI within the pediatric population.
Method(s): A prospective cohort study was conducted in pediatric patients with fUTI between January 2015 and December 2018. Plasma and urine MR-proADM levels were measured at admission in addition to other laboratory parameters. After confirmation of fUTI, renal scintigraphy scans were performed during the acute and follow-up stages. A descriptive study has been carried out and sensitivity, specificity and ROC curves for MR-proADM, C-reactive protein, and procalcitonin were calculated.
Result(s): 62 pediatric patients (34 female) were enrolled. Scintigraphy showed acute pyelonephritis in 35 patients (56.5%). Of those patients, the median of plasmatic MR-proADM (P-MR-proADM) showed no differences compared to patients without pyelonephritis. 7 patients (11.3%) developed renal scars (RS). Their median P-MR-proADM levels were 1.07 nmol/L (IQR 0.66-1.59), while in patients without RS were 0.48 nmol/L (0.43-0.63) ($p < 0.01$). The AUC in this case was 0.92 (95% CI 0.77-0.99). We established an optimal cut-off point at 0.66 nmol/L with sensitivity 83.3% and specificity 81.8%.
Conclusion(s): MR-ProADM has demonstrated a poor ability to diagnose pyelonephritis in pediatric patients with fUTI. However, P-MR-proADM proved to be a very reliable biomarker for RS prediction.

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592.

Reducing the burden of cardiovascular disease in children with chronic kidney disease: prevention vs. damage limitation.
Shroff R.
Embase
Pediatric Nephrology. 36(8) (pp 2537-2544), 2021. Date of Publication: August 2021.
[Review]
AN: 2012845200
Cardiovascular disease (CVD) is a life-limiting condition in patients with chronic kidney disease (CKD) and is rapidly progressive, especially in those with stage 5 CKD and on dialysis. Cardiovascular mortality, although reducing, remains at least 30 times higher than in the general pediatric population. The American Heart Association guidelines for cardiovascular risk reduction in high-risk pediatric patients has stratified pediatric CKD patients in the "high risk" category for the development of CVD, with associated pathological and/or clinical evidence for manifest coronary disease before 30 years of age. While improving patient survival is a key priority, other patient-related outcomes, such as psychosocial development, quality of life and growth are of major importance to children and their caregivers. Once vascular damage or calcification has developed, there are no data to suggest that they can be reversed. Treatments such as intensified dialysis and transplantation may attenuate the progression of subclinical cardiovascular disease, but no treatment to date has shown that the inexorable progression of CVD in CKD can be reversed. Thus, our management must focus on early diagnosis and robust preventative strategies to give our patients the best chance of optimal cardiovascular health and survival. In this review, the pathophysiology and importance of preventing the development of CVD in CKD is discussed.

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Publisher
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593.

Cystatin C: best biomarker for acute kidney injury and estimation of glomerular filtration rate in childhood cirrhosis.
Vijay P., Lal B.B., Sood V., Khanna R., Alam S.
Embase
European Journal of Pediatrics. 180(11) (pp 3287-3295), 2021. Date of Publication: November 2021.
[Article]
AN: 2011497523
The objective of the study was to evaluate the diagnostic and prognostic role of serum cystatin C, urinary neutrophil gelatinase-associated lipocalin (NGAL), and renal resistive index (RRI) in AKI among pediatric cirrhotics. The study included cirrhotic children under 18 years of age. AKI was diagnosed as per Kidney Diseases-Improving Global Outcomes (KDIGO) guidelines. All patients underwent measurement of serum cystatin C, urinary NGAL, and RRI at baseline, 3 months, and 6 months. eGFR was calculated using both creatinine- and cystatin-based equations. Of the 247 cirrhotics admitted during the study, 100 gave consent and were included. Forty-one fulfilled the KDIGO definition of AKI of whom 22 showed resolution. Two of these children had a repeat AKI at 2 and 4 months after initial AKI; both resolved with medical management. On logistic regression analysis, serum cystatin C (OR: 544.8, 95% CI: 24.4-12170, p < 0.0005) and urinary NGAL (OR: 1.006, 95% CI: 1001-1.012, p = 0.019) were found to be significantly associated with AKI. Cystatin C alone was the best biomarker for diagnosing AKI in children with decompensation (OR: 486.7, p < 0.0005) or spontaneous bacterial peritonitis (p = 0.02). eGFR calculated by serum cystatin C-based formulas was more reliable than that calculated by creatinine-based equations.
Conclusion(s): Serum cystatin C is the best biomarker for diagnosis of AKI in pediatric cirrhotics, especially with decompensation and SBP. eGFR calculated on serum cystatin C-based equations is more reliable than creatinine-based ones.What is Known:* Acute kidney injury (AKI) is a common complication in cirrhotic adults.* Newer biomarkers have diagnostic and prognostic role in adult cirrhotics.What is New:* Serum cystatin C is a useful biomarker to identify acute kidney injury in cirrhotic children with decompensation.

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Embase
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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
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594.

Severe acute kidney injury in neonates with necrotizing enterocolitis: risk factors and outcomes.
Garg P.M., Britt A.B., Ansari M.A.Y., Sobisek S., Block D.K., Paschal J.L., Ojeda N.B., Askenazi D., Sanderson K.R.
Embase
Pediatric Research. 90(3) (pp 642-649), 2021. Date of Publication: September 2021.
[Article]
AN: 2010176867
Background: To study the risk factors and outcomes of severe acute kidney injury (AKI) in neonates with necrotizing enterocolitis.
Method(s): Retrospective chart review of 202 neonates with necrotizing enterocolitis (NEC) (Bell stage >IIa) from 2013 to 2018. AKI was defined as per-modified neonatal Kidney Disease: Improving Global Outcomes criteria. Demographic, clinical, and outcome data were compared between neonates without severe AKI (stage 0 and 1 AKI) and those with severe AKI (stage 2 and 3 AKI).
Result(s): Severe AKI occurred in 66/202 (32.6%) of neonates after NEC diagnosis and after 61/104 (58.7%) of surgical NEC diagnoses. On adjusted model, surgical NEC [adjusted odds ratio (aOR) = 30.6; 95% confidence interval (CI) = 8.9, 130.6], outborn [aOR = 3.9; 95% CI = 1.54, 11.0], exposure to antenatal steroids [aOR = 3.0; 95% CI = 1.1, 8.9], and positive blood culture sepsis [aOR = 3.5; 95% CI = 1.3, 10.0] had increased odds for severe AKI. Those with severe AKI required longer hospitalization [124 days (interquartile range (IQR) 88-187) vs. 82 days (IQR 42-126), p < 0.001].
Conclusion(s): Severe AKI is common in neonates with NEC who require surgical intervention, are outborn, have positive blood culture sepsis, and receive antenatal steroids. Severe AKI is associated with a significantly longer length of hospitalization. Impact: Neonates with NEC, who are transferred from outside hospitals, require surgical NEC management, and/or have a positive blood culture at NEC onset are at the highest odds for severe (stages 2 and 3) AKI.Assessment of urine output is important for patients with NEC. Without it, 11% of those with severe AKI would have been misdiagnosed using serum creatinine alone.Kidney-protective strategies in the pre-, peri-, and postoperative period may improve the morbidity and mortality associated with severe AKI in neonates with NEC.

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33446918 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33446918]
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Publisher
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595.

Superiority of cystatin c over creatinine for early diagnosis of acute kidney injury in pediatric acute lymphoblastic leukemia/ lymphoblastic lymphoma.
Yamazoe T., Akagawa S., Matsuno R., Akagawa Y., Yamanouchi S., Omachi T., Kimata T., Tsuji S., Kaneko K.
Embase
Tohoku Journal of Experimental Medicine. 254(3) (pp 163-170), 2021. Date of Publication: 2021.
[Article]
AN: 2007878723
The exact incidence of acute kidney injury (AKI) during chemotherapy for acute lymphoblastic leukemia (ALL)/lymphoblastic lymphoma (LBL) is unknown. Furthermore, childhood cancer survivors are at risk of AKI-chronic kidney disease transition. Thus, early diagnosis of AKI is crucial. This study aimed to elucidate the incidence of AKI in patients undergoing chemotherapy for pediatric ALL/LBL and to compare the usefulness of serum cystatin C (CysC)-and creatinine (Cr)-based estimated glomerular filtration rate (eGFR) as diagnostic measures. Data of 16 patients with ALL/LBL treated with a total of 75 courses of chemotherapy were retrospectively analyzed. CysC-and Cr-based eGFR were measured before and three times per week during therapy. To calculate the eGFR, an equation for Japanese children was used. AKI was diagnosed when eGFR dropped by >= 25% from the highest eGFR value obtained during the latest 2 weeks since the start of chemotherapy. AKI was graded based on the pediatric Risk, Injury, Failure, Loss, End Stage Renal Disease scale. All patients developed AKI during chemotherapy; however, more than 90% of the cases were mild and eventually recovered. No significant differences were found in the incidence of AKI between CysC-and Cr-based eGFR (p = 0.104). The median time to AKI diagnosis was significantly shorter in the CysC-based eGFR than in the Cr-based eGFR (8 vs. 17 days, p < 0.001). In this study, all patients with pediatric ALL/LBL could develop mild AKI during treatment. CysC-based eGFR is a more effective measure than Cr-based eGFR for the early diagnosis of AKI.

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Publisher
Tohoku University Medical Press
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596.

Early postoperative acute kidney injury among pediatric liver transplant recipients.
Sahinturk H., Ozdemirkan A., Zeyneloglu P., Gedik E., Pirat A., Haberal M.
Embase
Experimental and Clinical Transplantation. 19(7) (pp 659-663), 2021. Date of Publication: JULY 2021.
[Article]
AN: 2007805116
Objectives: Acute kidney injury after pediatric liver transplant is associated with increased morbidity and mortality. Here, we evaluated children with acute kidney injury early posttransplant using KDIGO criteria to determine incidence, risk factors, and clinical outcomes.
Material(s) and Method(s): In this retrospective cohort study, medical records of all patients < 16 years old who underwent liver transplant from April 2007 to April 2017 were reviewed.
Result(s): Of 117 study patients, 69 (59%) were male and median age at transplant was 72 months (range, 12-120 mo). Forty children (34.2%) had postoperative acute kidney injury, with most having stage 1 disease (n = 21). Compared with children who had acute kidney injury versus those who did not, preoperative activated partial thromboplastin time (median 35.6 s [interquartile range, 32.4-42.8 s] vs 42.5 s [interquartile range, 35-49 s]; P = .007), intraoperative lactate levels at end of surgery (median 5.3 mmol/L [interquartile range, 3.3-8.6 mmol/L] vs 7.9 mmol/L [interquartile range, 4.3-11.2 mmol/L]; P = .044), and need for open abdomen (3% vs 15%; P = .024) were significantly higher. Logistic regression analysis revealed that preoperative high activated partial thromboplastin time (P = .02), intraoperative lactate levels at end of surgery (P = .02), and need for open abdomen (P = .03) were independent risk factors for acute kidney injury. Children who developed acute kidney injury had significantly longer intensive care unit stay (7.1 +/- 8.5 vs 4.4 +/- 5.4 days, P = .04) and mortality (12.8% vs 1.8%; P = .01).
Conclusion(s): Early postoperative acute kidney injury occurred in 34.2% of pediatric liver transplant recipients, with patients having increased mortality risk. High preoperative activated partial throm-boplastin time, high intraoperative end of surgery lactate levels, and need for open abdomen were shown to be associated with acute kidney injury after pediatric liver transplant.

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30880650 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30880650]
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Publisher
Baskent University
Year of Publication
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597.

Epidemiology of Acute Kidney Injury after Neonatal Cardiac Surgery: A Report from the Multicenter Neonatal and Pediatric Heart and Renal Outcomes Network.
Alten J.A., Cooper D.S., Blinder J.J., Selewski D.T., Tabbutt S., Sasaki J., Gaies M.G., Bertrandt R.A., Smith A.H., Reichle G., Gist K.M., Banerjee M., Zhang W., Hock K.M., Borasino S.

Embase
Critical Care Medicine. (pp E941-E951), 2021. Date of Publication: 2021.
[Article]
AN: 2014810253
OBJECTIVES: Cardiac surgery-associated acute kidney injury occurs commonly following congenital heart surgery and is associated with adverse outcomes. This study represents the first multicenter study of neonatal cardiac surgery-associated acute kidney injury. We aimed to describe the epidemiology, including perioperative predictors and associated outcomes of this important complication. DESIGN: This Neonatal and Pediatric Heart and Renal Outcomes Network study is a multicenter, retrospective cohort study of consecutive neonates less than 30 days. Neonatal modification of The Kidney Disease Improving Global Outcomes criteria was used. Associations between cardiac surgery-associated acute kidney injury stage and outcomes (mortality, length of stay, and duration of mechanical ventilation) were assessed through multivariable regression. SETTING: Twenty-two hospitals participating in Pediatric Cardiac Critical Care Consortium. PATIENTS: Twenty-two-thousand forty neonates who underwent major cardiac surgery from September 2015 to January 2018. INTERVENTIONS: None.
MEASUREMENTS AND MAIN RESULTS: Cardiac surgery-associated acute kidney injury occurred in 1,207 patients (53.8%); 983 of 1,657 in cardiopulmonary bypass patients (59.3%) and 224 of 583 in noncardiopulmonary bypass patients (38.4%). Seven-hundred two (31.3%) had maximum stage 1, 302 (13.5%) stage 2, 203 (9.1%) stage 3; prevalence of cardiac surgery-associated acute kidney injury peaked on postoperative day 1. Cardiac surgery-associated acute kidney injury rates varied greatly (27-86%) across institutions. Preoperative enteral feeding (odds ratio = 0.68; 0.52-0.9) and open sternum (odds ratio = 0.76; 0.61-0.96) were associated with less cardiac surgery-associated acute kidney injury; cardiopulmonary bypass was associated with increased cardiac surgery-associated acute kidney injury (odds ratio = 1.53; 1.01-2.32). Duration of cardiopulmonary bypass was not associated with cardiac surgery-associated acute kidney injury in the cardiopulmonary bypass cohort. Stage 3 cardiac surgery-associated acute kidney injury was independently associated with hospital mortality (odds ratio = 2.44; 1.3-4.61). No cardiac surgery-associated acute kidney injury stage was associated with duration of mechanical ventilation or length of stay.
CONCLUSION(S): Cardiac surgery-associated acute kidney injury occurs frequently after neonatal cardiac surgery in both cardiopulmonary bypass and noncardiopulmonary bypass patients. Rates vary significantly across hospitals. Only stage 3 cardiac surgery-associated acute kidney injury is associated with mortality. Cardiac surgery-associated acute kidney injury was not associated with any other outcomes. Kidney Disease Improving Global Outcomes criteria may not precisely define a clinically meaningful renal injury phenotype in this population.

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Publisher
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598.

Postpartum Acute Kidney Injury in Tertiary Care Center: Single-Center Experience from Central India.
Chowdhary P.K., Tibrewal A., Kale S.A.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 32(4) (pp 1111-1117), 2021. Date of Publication: 01 Jul 2021.
[Article]
AN: 637398285
Acute kidney injury (AKI) in postpartum is a rare, but deadly complication of pregnancy. It has great impact on maternal and fetal outcomes. The study aimed to study the incidence and etiological profile with outcomes of postpartum AKI patients and to see whether need for hemodialysis (HD) alters the outcome. This is a retrospective observation study done in a tertiary care center at the Department of Nephrology, Ramkrishnan Care Hospital, Raipur, Chhattisgarh, India. All postpartum women suffering from AKI between May 2011 and May 2017 were included in this study. Demographic, clinical, and laboratory data of the patients were included. Outcome variables including maternal and fetal mortality with renal outcome during discharge and follow-up for three months were noted. Patients were divided into two groups: Group 1 underwent HD and Group 2 was managed conservatively. Statistical analysis was done on the Statistical Package for the Social Sciences software version 17.0. Categorical data were expressed as ratio and proportions, while continuous data were expressed as mean plus standard deviation (SD). Quantitative data were analyzed by percentage, mean, SD, and t-test. Qualitative data were analyzed by Chi-square test. The incidence of postpartum AKI was 3.26% and the mean age of the study population was 27.3 +/- 4.77 years. Multifactorial (53.27%) etiology was the most cause of postpartum AKI, and the second was puerperal sepsis (32.7%). Seventy-three (68.22%) patients had undergone HD. Four (4.47%) patients require lifelong HD. Renal biopsy was done in seven patients, three had cortical necrosis among fetal outcomes, total live births were 92 (85.98%), and 15 (14.01%) died in the neonatal period. There was no statistically significant difference between Group 1 and Group 2 in etiological profile (P >0.55), maternal mortality (P >0.66), and renal outcome (P >0.11). Postpartum AKI was associated with poor maternal outcome and renal recovery. Maternal mortality and renal recovery were not affected by need of

dialysis in our patients. Proper antenatal care and peripartum monitoring with practicing aseptic precaution will definitely help in reduction of postpartum AKI and maternal mortality in our state.
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35229810 [https://www.ncbi.nlm.nih.gov/pubmed/?term=35229810]
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Publisher
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Year of Publication
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599.

Toxin-Related Acute Kidney Injury.
Albuquerque P., Meneses G.
Embase
Contributions to nephrology. 199 (pp 131-142), 2021. Date of Publication: 2021.
[Review]
AN: 635800442
Clinical Background: Nephrotoxic acute kidney injury or toxin-related acute kidney injury (ToxAKI) is a relevant and relatively common category of kidney damage. Exogenous toxins and venomous animals with epidemiologic variations across the world are some nephrotoxic agents. Epidemiology: The epidemiologic features of the toxic agent-related acute kidney injury are associated with different culture, biodiversity of the tropics, and economic status. It seems economic status is the major factor which defines the etiology of ToxAKI. In developing countries, the AKI is commonly associated with self-poisonings by pesticides and herbicides, while developed countries often notify poisonings due to antibiotics, nonsteroidal anti-inflammatory drugs, immunosuppressants (such as methotrexate), and iodinated contrast media. Moreover, envenoming due to snakes, spiders, and scorpions is more frequent in tropical regions. Challenge: Poisoned patients are more susceptible to renal impairment associated with renal replacement therapy and death. Prevention and Treatment: Preventing patient exposure and performing early diagnosis are crucial to beat the main causes of ToxAKI and further complications. Renal replacement therapy may be necessary to manage the patient, and it is associated with poor prognosis and death. According to each poisoning profile, specific measures are suggested. School-base interventions, early identification, treatment, and care of people with mental and substance use disorders, reducing access to chemical agents, making parents aware of the hazards of accidental poisoning in children, and maintaining fully functional poison control centers are vital actions too.

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Publisher
NLM (Medline)
Year of Publication
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600.

Independent predictors of mortality for patients with traumatic renal injury.
Ho P., Hellenthal N.J.
Embase
World journal of urology. 39(9) (pp 3685-3690), 2021. Date of Publication: 01 Sep 2021.
[Article]
AN: 633936467
PURPOSE: To investigate the parameters of renal trauma, including emergent intervention type, that predict the mortality of patients with traumatic renal injury.
METHOD(S): A retrospective database analysis was performed on patients who sustained a traumatic renal parenchymal injury identified by the 2017 National Trauma Data Bank. Data were analyzed to identify differences in hospital length of stay, ER and hospital disposition, and mortality based on patient age, gender, race, Injury Severity Score, renal injury grade, and need for emergent intervention (angioembolization versus open surgery). Logistic regression was used to correlate intervention type and trauma parameters to mortality.
RESULT(S): A total of 4,876 of 1,004,440 trauma patients (0.49%) had a traumatic renal injury. Of those, 220 (4.5%) underwent an emergent intervention-29 (0.59%) angioembolization and 191 (3.9%) open renal surgery. 83 patients with a blunt renal trauma (2.0%) underwent renal intervention, whereas 136 (21.0%) with a penetrating injury required a procedure. Forty-five of the 220 patients (20.5%) who had a renal intervention died, while 377 of 4,656 (8.1%) who did not have an intervention died. Multiple logistic regression identified black race, age>45 years, penetrating trauma, and ISS>15 to be independent predictors of mortality. Neither angioembolization nor open renal surgery was associated with a significantly higher likelihood of mortality in the multivariable model.
CONCLUSION(S): While procedural interventions are associated with higher mortality for patients with traumatic renal injury, other factors, such as race, age, trauma type, and injury severity may be more predictive of death under care.

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Publisher
NLM (Medline)
Year of Publication
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601.

Risk factors of acute kidney injury in patients with Stanford type B aortic dissection involving the renal artery who underwent thoracic endovascular aortic repair.

An X., Guo X., Ye N., Bian W., Han X., Wang G., Cheng H.
Embase
Renal Failure. 43(1) (pp 1130-1136), 2021. Date of Publication: 2021.
[Article]
AN: 2013135449
Background: Acute kidney injury (AKI) is one of the most common and serious complications in patients with type B aortic dissection (TBAD). This study aimed at investigating the incidence and risk factors of in-hospital AKI in TBAD patients involving the renal artery who underwent thoracic endovascular aortic repair (TEVAR) only.
Method(s): A total of 256 patients who were diagnosed as TBAD combined with renal artery involvement were included in this retrospective study. All patients were divided into the AKI group and the non-AKI group according to the KDIGO criteria. The risk factors for AKI were identified using a multivariate logistic regression model.
Result(s): A total of 256 patients were included in this study, and the incidence of AKI was 18% (46/256). Patients in the AKI group were more likely to have a higher proportion of the youth, a higher level of body mass index, and a shorter time from onset to admission. Multivariate logistic regression analysis revealed that the youth (age <=40 years) (OR: 2.853, 95%CI: 1.061-7.668, p =.038) were prone to AKI, and lower estimated glomerular filtration rate (eGFR) (OR: 1.526, per 15-ml/min/1.73 m2 decrease, 95%CI: 1.114-2.092; p =.009), higher diastolic blood pressure (DBP) (OR: 1.418, per 10-mmHg increase; 95%CI: 1.070-1.879; p =.015), and fasting blood glucose (FBG) >=7 mmol/L on admission (OR: 2.592; 95%CI: 1.299-5.174; p =.007) were independent risk factors for AKI.
Conclusion(s): Higher incidence of AKI had been perceived in this study, most of them were young and middle-aged patients. Renopreventive measures should be considered in those high-risk patients with younger age, lower eGFR, higher DBP, and higher FBG on admission.

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Publisher
Taylor and Francis Ltd.
Year of Publication
2021

602.

Relationship between intraventricular hemorrhage and acute kidney injury in premature infants and its effect on neonatal mortality.
Al-Mouqdad M.M., Huseynova R., Khalil T.M., Asfour Y.S., Asfour S.S.
Embase
Scientific reports. 11(1) (pp 13262), 2021. Date of Publication: 24 Jun 2021.
[Article]
AN: 635453432
Intraventricular hemorrhage (IVH) and acute kidney injury (AKI) are important neonatal morbidities in premature infants. This study aimed to investigate the relationship between IVH and AKI in premature infants and whether this association affects the incidence of neonatal

mortality. Infants [gestational age (GA)<=32 weeks; birth weight (BW)<1500 g] were retrospectively evaluated in a large tertiary neonatal intensive care unit. Of 710 premature infants, 268 (37.7%) developed AKI. Infants with IVH were more likely to have AKI than those without IVH. Infants with severe IVH had a higher incidence of AKI than infants with mild IVH. Infants younger than 28 weeks with IVH were more likely to have AKI than those without IVH. An association between IVH grades and AKI stages was observed in the overall study population, in infants with GA<28 weeks, and in infants with GA between 28 and 32 weeks. Mortality was increased 1.5 times in infants with IVH and AKI compared with that in infants with IVH but without AKI. Furthermore, mortality was increased in infants with IVH and AKI compared with infants without IVH or AKI. This study shows a direct relationship between the severity of IVH and the degree of AKI; both IVH and AKI increase the incidence of neonatal mortality.
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34168258 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34168258]
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Publisher
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Year of Publication
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603.

A 7-year retrospective review of renal trauma in paediatric patients in Johannesburg.
Mashavave N.Z., Withers A., Gabler T., Lack V., Harrison D., Loveland J.
Embase
South African journal of surgery. Suid-Afrikaanse tydskrif vir chirurgie. 59(3) (pp 127a-127d), 2021. Date of Publication: 01 Sep 2021.
[Article]
AN: 636126805
BACKGROUND: South African data on paediatric patients with renal trauma that are usually managed conservatively is scarce. This study aimed to review a 7-year experience of paediatric renal trauma and management.
METHOD(S): A retrospective review of all paediatric admissions with renal injury was conducted in the Department of Paediatric Surgery, University of the Witwatersrand, between 1 January 2012 and 31 December 2018. Data from medical records reviewed included patient age, gender, mechanism of injury, severity of injury, management and length of hospital stay.
RESULT(S): Thirty-one patients with renal injuries were identified, of which 30 had complete data. Of these cases, 26/30 (87%) sustained blunt renal injuries and 4/30 (13%) were penetrating. The median age at presentation was 6 years, and 60% were females. Three patients had isolated renal injuries, and 23 had concomitant injuries including hepatic (9), thoracic (8), splenic (5), head (4), facial (3) and ureteric (1). Twenty-three patients were managed non-operatively. Two required renal exploration with resultant nephrectomies and one haemodynamically unstable patient died preoperatively. Four patients required operative

intervention for concomitant injuries with no renal exploration. Two patients required ureteric stenting. The median length of hospital stay was 7 days (Range: 4-11 days, IQR 7 days).
CONCLUSION(S): Renal injuries in haemodynamically stable patients should be managed non-operatively. A 93% renal preservation rate was achieved in this cohort of patients with nephrectomy performed only in haemodynamically unstable patients with Grade V injuries, in keeping with international norms.

PMID
34515431 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34515431]
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Publisher
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Year of Publication
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604.

Risk assessment of acute kidney injury following cardiopulmonary bypass.
Wittlinger T., Maus M., Kutschka I., Baraki H., Friedrich M.G.
Embase
Journal of cardiothoracic surgery. 16(1) (pp 4), 2021. Date of Publication: 06 Jan 2021.
[Article]
AN: 634074416
BACKGROUND: Acute kidney injury (AKI) is a frequent and serious complication of cardiac surgery, associated with a high incidence of morbidity and mortality. Although the RIFLE criteria serve as a prominent tool to identify patients at high risk of AKI, an optimized diagnosis model in clinical practice is desired.
METHOD(S): Based on the SOP-criteria, 365 patients (10%) developed AKI following surgery and were subjected to RRT. In contrast, the incidence of AKI, defined according to the RIFLE criteria, was only 7% (n=251 patients). Prominent risk factors identified by SOP were patients' sex, valve and combined valve and bypass surgery, deep hypothermia, use of intra-aortic balloon pump (IABP) and previous coronary interventions. Ischemia, reperfusion, blood loss and surgery time also served as significant risk factors for patient evaluated by SOP.
RESULT(S): Risk assessment by RIFLE differed in as much as most patients with normothermia and those receiving only cardiovascular bypass developed AKI. However, patients' sex and valve surgery did not serve as a risk factor.
CONCLUSION(S): Evaluation of patients by the RIFLE versus SOP criteria yielded different results with more AKI patients detected by SOP. Based on the present data, it is concluded that patients may not prone to AKI when surgery and ischemia time will be kept short, when blood loss is mitigated to a minimum and when surgery is performed under non-hypothermic conditions.
PMID
33407652 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33407652]
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Publisher
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605.

Positive fluid balance as an early biomarker for acute kidney injury: a prospective study in critically ill adult patients.
Avila M.O.N., Rocha P.N., Perez C.A., Faustino T.N., Batista P.B.P., Yu L., Zanetta D.M.T., Burdmann E.A.
Embase
Clinics (Sao Paulo, Brazil). 76 (pp e1924), 2021. Date of Publication: 2021.
[Article]
AN: 634261745
OBJECTIVES: Positive fluid balance is frequent in critically ill patients and has been considered a potential biomarker for acute kidney injury (AKI). This study aimed to evaluate positive fluid balance as a biomarker for the early detection of AKI in critically ill patients.
METHOD(S): This was a prospective cohort study. The sample was composed of patients >=18 years old who stayed >=3 days in an intensive care unit. Fluid balance, urinary output and serum creatinine were assessed daily. AKI was diagnosed by the Kidney Disease Improving Global Outcome criteria.
RESULT(S): The final cohort was composed of 233 patients. AKI occurred in 92 patients (40%) after a median of 3 (2-6) days following ICU admission. When fluid balance was assessed as a continuous variable, a 100-ml increase in fluid balance was independently associated with a 4% increase in the odds of AKI (OR 1.04; 95% CI 1.01-1.08). Positive fluid balance categorized using different thresholds was always significantly associated with subsequent detection of AKI. The mixed effects model showed that increased fluid balance preceded AKI by 4 to 6 days.
CONCLUSION(S): These results suggest that a positive fluid balance might be an early biomarker for AKI development in critically ill patients.
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33567044 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33567044]
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Publisher
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606.

Systemic immune-inflammation index predicts postoperative acute kidney injury in hepatocellular carcinoma patients after hepatectomy.
Xu J., Hu S., Li S., Wang W., Wu Y., Su Z., Zhou X., Gao Y., Cheng X., Zheng Q.
Embase
Medicine. 100(14) (pp e25335), 2021. Date of Publication: 09 Apr 2021.
[Article]
AN: 634776751
ABSTRACT: The systemic immune-inflammation index (SII) is an independent prognostic predictor of hepatocellular carcinoma (HCC). The present investigation examined whether an association exists between preoperative SII value and postoperative acute kidney injury (pAKI) in HCC patients.The study included 479 hepatitis B virus (HBV)-associated HCC patients undergoing hepatectomy. The SII was calculated as P x N/L, where P, N, and L represent the counts of platelets, neutrophils, and lymphocytes in routine blood test, respectively. After propensity score matching, logistic regression analysis was used to explore independent predictors of pAKI in HCC patients.pAKI was confirmed in 51 patients (10.8%). The average SII value was higher in patients with pAKI than patients without pAKI. After multivariate logistic regression analysis, SII, history of hypertension, and tumor size, among others, were found to be predictors of pAKI. The optimal threshold value of SII for predicting pAKI was found to be 547.84 x 109/L. Multivariate analysis performed after propensity score matching confirmed that SII >= 547.84 x 109/L was an independent predictor of pAKI.The preoperative SII qualifies as a novel, independent predictor of pAKI in HCC patients with HBV infection who underwent hepatectomy.

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33832108 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33832108]
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(Li) Department of Gastroenterology, Wuhan Asia General Hospital, Wuhan, China
Publisher
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Year of Publication
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607.

Diffusion tensor imaging based multiparametric characterization of renal lesions in infants with urinary tract infections: an explorative study.
Simren Y., Stokland E., Hansson S., Hebelka H., Svensson P.-A., Lagerstrand K.M.
Embase
BMC Pediatrics. 21(1) (no pagination), 2021. Article Number: 440. Date of Publication: December 2021.
[Article]
AN: 2013902311

Background: Conventional diffusion weighted imaging (DWI) is a promising non-invasive tool in the evaluation of infants with symptomatic urinary tract infections (UTI). The use of multiparametric diffusion tensor imaging (DTI) provides further information on renal pathology by reflecting renal microstructure. However, its potential to characterize and distinguish between renal lesions, such as acute pyelonephritic lesions, permanent renal damages or dysplastic changes has not been shown. This study aimed to evaluate the potential of multiparametric DTI for characterization of renal lesions with purpose to distinguish acute pyelonephritis from other renal lesions in young infants with their first UTI.
Method(s): Nine kidneys in seven infants, age 1.0-5.6 months, with renal lesions i.e. uptake reductions, on acute scintigraphy performed after their first UTI, were included. The DTI examinations were performed during free breathing without sedation. The signal in the lesions and in normal renal tissue was measured in the following images: b0, b700, apparent diffusion coefficient (ADC), and fractional anisotropy (FA). In addition, DTI tractographies were produced for visibility.
Result(s): There was a difference between lesions and normal tissue in b700 signal (197 +/- 52 and 164 +/- 53, p = 0.011), ADC (1.22 +/- 0.11 and 1.45 +/- 0.15 mm2/s, p = 0.008), and FA (0.18 +/- 0.03 and 0.30 +/- 0.10, p = 0.008) for all nine kidneys. Six kidneys had focal lesions with increased b700 signal, decreased ADC and FA indicating acute inflammation. In three patients, the multiparametric characteristics of the lesions were diverging.
Conclusion(s): Multiparametric DTI has the potential to further characterize and distinguish acute pyelonephritis from other renal lesions in infants with symptomatic UTI.

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34625051 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34625051]
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Publisher
BioMed Central Ltd
Year of Publication
2021

608.

Strategies to prevent acute kidney injury after pediatric cardiac surgery a network meta-analysis.
Van den Eynde J., Cloet N., Van Lerberghe R., Saa M.P.B.O., Vlasselaers D., Toelen J., Verbakel J.Y., Budts W., Gewillig M., Kutty S., Pottel H., Mekahli D.
Embase
Clinical Journal of the American Society of Nephrology. 16(10) (pp 1480-1490), 2021. Date of Publication: October 2021.
[Article]
AN: 2014115047
Background and objectives AKI is a common complication after pediatric cardiac surgery and has been associated with higher morbidity and mortality. We aimed to compare the efficacy of

available pharmacologic and nonpharmacologic strategies to prevent AKI after pediatric cardiac surgery. Design, setting, participants, & measurements PubMed/MEDLINE, Embase, Cochrane Controlled Trials Register, and reference lists of relevant articles were searched for randomized controlled trials from inception until August 2020. Random effects traditional pairwise, Bayesian network meta-analyses, and trial sequential analyses were performed. Results Twenty randomized controlled trials including 2339 patients and 11 preventive strategies met the eligibility criteria. No overall significant differences were observed compared with control for corticosteroids, fenoldopam, hydroxyethyl starch, or remote ischemic preconditioning in traditional pairwise meta-analysis. In contrast, trial sequential analysis suggested a 80% relative risk reduction with dexmedetomidine and evidence of <57% relative risk reduction with remote ischemic preconditioning. Nonetheless, the network meta-analysis was unable to demonstrate any significant differences among the examined treatments, including also acetaminophen, aminophylline, levosimendan, milrinone, and normothermic cardiopulmonary bypass. Surface under the cumulative ranking curve probabilities showed that milrinone (76%) was most likely to result in the lowest risk of AKI, followed by dexmedetomidine (70%), levosimendan (70%), aminophylline (59%), normothermic cardiopulmonary bypass (57%), and remote ischemic preconditioning (55%), although all showing important overlap. Conclusions Current evidence from randomized controlled trials does not support the efficacy of most strategies to prevent AKI in the pediatric population, apart from limited evidence for dexmedetomidine and remote ischemic preconditioning.

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Publisher
American Society of Nephrology
Year of Publication
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609.

Pharmacovigilance study of anti-infective-related acute kidney injury using the Japanese adverse drug event report database.
Nakao S., Hasegawa S., Umetsu R., Shimada K., Mukai R., Tanaka M., Matsumoto K., Yoshida Y., Inoue M., Satake R., Nishibata Y., Liao J., Nakamura M.
Embase
BMC Pharmacology and Toxicology. 22(1) (no pagination), 2021. Article Number: 47. Date of Publication: December 2021.
[Article]
AN: 2013568703
Background: Acute kidney injury (AKI) is associated with significant increases in short- and long-term morbidity and mortality. Drug-induced AKI is a major concern in the present healthcare system. Our spontaneous reporting system (SRS) analysis assessed links between AKI, along with patients' age, as healthcare-associated risks and administered anti-infectives. We also generated anti-infective-related AKI-onset profiles.
Method(s): We calculated reporting odds ratios (RORs) for reports of anti-infective-related AKI (per Medical Dictionary for Regulatory Activities) in the Japanese Adverse Drug Event Report database and evaluated the effect of anti-infective combination therapy. The background factors of cases with anti-infective monotherapy and combination therapy (>= 2 anti-infectives) were matched using propensity score. We evaluated time-to-onset data and hazard types using the Weibull parameter.
Result(s): Among 534,688 reports (submission period: April 2004-June 2018), there were 21,727 AKI events. The reported number of AKI associated with glycopeptide antibacterials, fluoroquinolones, third-generation cephalosporins, triazole derivatives, and carbapenems were 596, 494, 341, 315, and 313, respectively. Crude RORs of anti-infective-related AKI increased among older patients and were higher in anti-infective combination therapies [anti-infectives, >= 2; ROR, 1.94 (1.80-2.09)] than in monotherapies [ROR, 1.29 (1.22-1.36)]. After propensity score matching, the adjusted RORs of anti-infective monotherapy and combination therapy (>= 2 anti-infectives) were 0.67 (0.58-0.77) and 1.49 (1.29-1.71), respectively. Moreover, 48.1% of AKI occurred within 5 days (median, 5.0 days) of anti-infective therapy initiation.
Conclusion(s): RORs derived from our new SRS analysis indicate potential AKI risks and number of administered anti-infectives.

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34462002 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34462002]
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Publisher
BioMed Central Ltd
Year of Publication
2021

610.

Galectin-3-a new player of kidney damage or an innocent bystander in children with a single kidney?.
Latoch E., Kononczuk K., Jander A., Trembecka-Dubel E., Wasilewska A., Taranta-Janusz K.
Embase
Journal of Clinical Medicine. 10(9) (no pagination), 2021. Article Number: 2012. Date of Publication: 01 May 2021.
[Article]
AN: 2007111381
The aim of this study was to evaluate the galectin-3 (Gal-3) level in children with a congenital solitary functioning kidney (cSFK) and determine its association with common renal function parameters. The study consisted of 68 children (49 males) with cSFK. We demonstrated that children with cSFK had a lower level of galectin-3 than that of healthy subjects ($p < 0.001$). No significant differences in serum cystatin C (Cys C) levels between the cSFK children and the reference group were found. The subjects with cSFK and reduced estimated glomerular filtration rate (eGFR) had significantly higher levels of Gal-3 and Cys C compared to those with normal eGFR ($p < 0.05$). Children with eGFR <60 mL/min/1.73 m2 showed significant statistical differences between the values of area under ROC curve (AUC) for Gal-3 (AUC 0.91) and Cys C (AUC 0.96) compared to that for creatinine level (AUC 0.76). Similar analyses carried out among cSFK children with eGFR <90 mL/min/1.73 m2 revealed an AUC value of 0.69 for Gal-3, 0.74 for Cys C, and 0.64 for creatinine; however, no significant superiority was shown for any of them. The receiver operating characteristic (ROC) analyses for identifying the SFK children among all participants based on the serum levels of Gal-3 and Cys C did not show any diagnostic profile (AUCs for Gal-3 and Cys C were 0.22 and 0.59, respectively). A positive correlation between the Gal-3 and Cys C concentrations was found ($r = 0.39$, $p = 0.001$). We demonstrated for the first time that Gal-3 might play an important role in the subtle kidney damage in children with cSFK. However, further prospective studies are required to confirm the potential applicability of Gal-3 as an early biomarker for kidney injury and possible progression to CKD.

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Embase
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Publisher
MDPI AG
Year of Publication
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611.

Temporal trends of acute kidney injury and associated risk exposures in extremely preterm infants.
Chen C.-C., Lin Y.-C., Wang S.-T., Huang C.-C., Yu W.-H., Chen Y.-J., Koh C.-L., Tsai Y.-S., Chen R.-B., Lee K.-J., Hsu C.-C., Chu C.-H., Lin C.-F., Kuo C.-C.
Embase
Clinical Journal of the American Society of Nephrology. 16(8) (pp 1169-1177), 2021. Date of Publication: August 2021.
[Article]
AN: 2013371599
Background and objectives Neonatal AKI in the preterm population is an under-recognized morbidity. Detecting AKI in preterm infants is important for their long-term kidney health. We aimed to examine the yearly trends of incidence and the related morbidities and care practices affecting the occurrence of neonatal AKI in extremely preterm (gestational age <29 weeks) and very preterm (gestational age 29-32 weeks) infants. Design, setting, participants, & measurements The trends and the related risk factors and care practices of AKI were examined in the extremely preterm (n=434) and very preterm (n=257) infants who were admitted within 14 days after birth from 2005 to 2018 to the University Hospital and had at least two serum creatinine measurements during hospitalization. We defined AKI as a serum creatinine rise of 0.3 mg/dl or more within 48 hours or a 1.5-fold increase within 7 days. Results The extremely preterm group had a three-fold higher incidence of AKI (30% versus 10%) than the very preterm group. Among preterm infants with AKI, 92% had one episode of AKI, and 45% experienced stage 2 or 3 AKI; the mean duration of AKI was 12+/-9 days. Across the 14-year period, the crude incidence of AKI declined markedly from 56% to 17% in the extremely preterm group and from 23% to 6% in the very preterm group. After adjustment, a significant decline of AKI incidence was still observed in the extremely preterm group. The declining AKI in the extremely preterm infants was related to the trends of decreasing incidences of neonatal transfer, prolonged aminoglycoside exposure, prophylactic use of nonsteroidal anti-inflammatory drugs, and sepsis. Conclusions We observed a declining trend in the incidence of neonatal AKI among extremely preterm infants from 2005 to 2018, which may be related to improvement of care practices.

PMID
34348930 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34348930]
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Publisher
American Society of Nephrology
Year of Publication
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612.

Perfluoroalkyl substances (PFASs) exposure and kidney damage: Causal interpretation using the US 2003-2018 National Health and Nutrition Examination Survey (NHANES) datasets.
Moon J.
Embase
Environmental Pollution. 288 (no pagination), 2021. Article Number: 117707. Date of Publication: 01 Nov 2021.
[Article]
AN: 2013489578
Introduction: The objective of this study was to validate the hypothesis that increased serum concentrations of perfluoroalkyl substances (PFASs) cause kidney damage. A causal interpretative study was designed using the US 2003-2018 National Health and Nutrition Examination Survey (NHANES) datasets.
Method(s): Three statistical models, including multivariable linear regression, generalized additive model, and regression discontinuity model (RDM), were applied to the US 2003-2018 NHANES datasets to evaluate the causal relationship between the four PFAS agents and estimated glomerular filtration rate (eGFR). Directed acyclic graphs were plotted for a more valid causal inference. Results and Discussion: In the RDM, when the natural logarithm of each PFAS agent increases by 1 ng/mL after each cut-off value, eGFR decreased 4.63 mL/min/1.73 m2 for perfluorooctanoic acid, 3.42 mL/min/1.73 m2 for perfluorooctane sulfonic acid, 2.37 mL/min/1.73 m2 for perfluorohexane sulfonic acid, and 2.87 mL/min/1.73 m2 for perfluorononanoic acid. The possibility of reverse causation that increased serum PFAS concentration is the consequence of reduced eGFR, not the cause, was low, and an additional adjustment of potential confounders was not needed.
Conclusion(s): This study contributes to the understanding of PFAS-induced kidney damage. Further longitudinal epidemiological and toxicological studies are recommended.

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613.

Age appropriate reference intervals for eight kidney function and injury markers in infants, children and adolescents.
Van Donge T., Staub E., Atkinson A., Gotta V., Van Den Anker J., Risch L., Welzel T., Pfister M.
Embase
Clinical Chemistry and Laboratory Medicine. 59(2) (pp 373-382), 2021. Date of Publication: 01 Feb 2021.
[Article]
AN: 2007477668

The use of kidney function and injury markers for early detection of drug-related glomerular or tubular kidney injury in infants, children and adolescents requires age-specific data on reference intervals in a pediatric healthy population. This study characterizes serum values for eight kidney function and injury markers in healthy infants, children and adolescents. A single center prospective observational study was conducted between December 2018 and June 2019. Serum samples from 142 healthy infants, children and adolescents aged between 0 and <=15 years were collected. Statistical analyses for eight markers (albumin (ALB), beta2-microglobulin (B2M), beta-trace protein (BTP), creatinine (SCR), cystatin C (CYSC), kidney injury molecule-1 (KIM-1), neutrophil gelatinase-associated lipocalin (NGAL), uromodulin (URO)) were performed to obtain reference intervals and associations with age, sex and weight were investigated (Pearson correlation, linear and piecewise regression). ALB and SCR increased with age ($p<0.01$), whereas B2M, BTP and KIM-1 values decreased with advancing age ($p<0.05$) in this healthy pediatric study population. CYSC showed dependency on sex (lower concentration in females) and decreased with age until reaching approximately 1.8 years; thereafter an increase with age was seen. NGAL and URO did not show any age-dependency. This study provides age appropriate reference intervals for key serum kidney function and injury markers determined in healthy infants, children and adolescents. Such reference intervals facilitate the interpretation of changes in kidney function and injury markers in daily practice, and allow early detection of glomerular and tubular injury in infancy, childhood and adolescence.

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32759403 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32759403]
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Publisher
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614.

Neonatal Acute Kidney Injury: Understanding of the Impact on the Smallest Patients.
Kavanaugh K.J., Jetton J.G., Kent A.L.
Embase
Critical Care Clinics. 37(2) (pp 349-363), 2021. Date of Publication: April 2021.
[Review]
AN: 2011423981

The study of neonatal acute kidney injury (AKI) has transitioned from small, single-center studies to the development of a large, multicenter cohort. The scope of research has expanded from assessment of incidence and mortality to analysis of more specific risk factors, novel urinary biomarkers, interplay between AKI and other organ systems, impact of fluid overload, and quality improvement efforts. The intensification has occurred through collaboration between the neonatology and nephrology communities. This review discusses 2 case scenarios to illustrate the clinical presentation of neonatal AKI, important risk factors, and approaches to minimize AKI events and adverse long-term outcomes.

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33752860 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33752860]
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Embase
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Publisher
W.B. Saunders
Year of Publication
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615.

Incidence, risk factors, and adverse outcomes of acute kidney injury in very premature neonates: A single center experience.
Ustun N.
Embase
Turkish Journal of Medical Sciences. 51(5) (pp 2641-2648), 2021. Date of Publication: 2021.
[Article]
AN: 2014754223
Background/aim: Acute kidney injury (AKI) is a serious morbidity in premature neonates. The aim of this study was to determine the incidence of AKI and to evaluate its impact on morbidity and mortality in very premature infants.
Material(s) and Method(s): This retrospective cohort study was conducted in the neonatal intensive care unit (NICU). A total of 410 preterm infants who were born before 32 gestational weeks were screened and 318 were included in this analysis. AKI was defined according to the modified neonatal Kidney Disease: Improving Global Outcomes criteria.
Result(s): The incidence of AKI was 32.1% (102/318). Regression analyses revealed that lower gestational age, vasopressor use, and hemodynamically significant patent ductus arteriosus were significantly associated with an increased risk for AKI. After adjustment for potential confounders, those with AKI had a higher risk of death before 36 weeks of corrected gestational age (adjusted hazard ratio: 3.02, 95% confidence interval 1.47- 6.22). Additionally, the AKI group had a higher rate of bronchopulmonary dysplasia (BPD) (46% vs. 24%, $p < 0.001$) and longer hospital stay with a mean difference of 38 days.

Conclusion(s): AKI is common in very premature neonates and associated with higher mortality, longer hospital stay, and BPD. Identification of risk factors and preventive strategies for AKI may improve the outcomes in this vulnerable population.

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34284537 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34284537]
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Publisher
Turkiye Klinikleri
Year of Publication
2021

616.

Kidney injury in children infected with HIV, Followed at the Teaching Hospital of Borgou (Benin): Epidemiological and clinical aspects.
Ahoui S., Agbeille F., Kpanidja G., Noudamadjo A., Toutche M.F., Agboton B.L., Eteka E., Vigan J., Adedemy J.D., Agossou J.
Embase
Journal of Renal and Hepatic Disorders. 5(2) (pp 50-56), 2021. Date of Publication: 2021.
[Article]
AN: 2015720783
The history of kidney disease associated with HIV infection dates back to the years of HIV breakthrough. The objective was to study kidney damage in children infected with HIV at the Teaching Hospital of Borgou (Benin) in 2019. This was a cross-sectional, descriptive, analytical, matching-type study carried out from June 1, 2019 to September 30, 2019 at the pediatrics department of Teaching Hospital of Borgou (Benin). The study included HIV-positive children, followed in consultations, and whose parents gave their consent. The biological markers were demonstrated with urine dipstick. Glomerular filtration rate was calculated using the Schwartz test and classified according to stages. The dependent variable was the presence of at least one impairment (biological or functional). Sample size was determined by Schwartz's method on the basis of one case for two controls. Sociodemographic, clinical, biological, and therapeutic data were collected. Comparisons were made using the Chi-square test or Fisher's exact test. The identification of associated factors was possible using a multiple logistic regression model at 5% threshold. In total, we included 117 children, including 39 HIV-positive children. The average age was 8 +/- 4.81 years and the gender ratio was 1:17. The frequency of kidney damage was 76.5%. Permanent proteinuria and at least two crosses on urine dipstick were present in 20.5%, leukocyturia in 2.6%, and proximal tubular dysfunction in 5.1%. Glomerular hyperfiltration was found in 38.5%, acute kidney injury in 38.5%, and chronic kidney injury in 5.1%. Associated factors were age (P = 0.004), presence of opportunistic infections (P = 0.00), and treatment adherence (P = 0.004). Kidney damage is common in HIV-positive children. Careful follow-up is necessary to avoid complications.

Status
Embase
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Publisher
Codon Publications
Year of Publication
2021

617.

Serum fibroblast growth factor 23 for early detection of acute kidney injury in critical illness.
Sun S., Liu Z., Chen C., Wang Z., Jin H., Meng X., Dai B., Zhang L., Zhou C., Xue C., Li X.
Embase
American Journal of Translational Research. 13(11) (pp 12141-12151), 2021. Date of Publication: 2021.
[Review]
AN: 2015771421
Background: Serum fibroblast growth factor 23 (FGF23) is associated with acute kidney injury (AKI) and mortality in patients with critical illnesses. However, the accurate predictive performance of FGF23 on AKI remains inconclusive.
Method(s): Meta-analysis was performed using data sources including PubMed, Web of Science, EMBASE, and Cochrane (until June 1, 2021). Cohort or observational studies including patients with AKI and serum FGF23 level as the index test were included. The primary outcome was the AKI detective accuracy. This study has been registered in PROSPERO (CRD42021249930).
Result(s): Eleven studies with 1946 patients in seven countries were included. Across all settings, the sensitivity and specificity for serum FGF23 levels to predict AKI were 82% (95% CI, 66-91%) and 77% (95% CI, 67-85%), respectively. The diagnostic odds ratio of FGF23 was 15.51 (95% CI, 4.89-49.19), with the pooled positive likelihood ratio of 3.62 (95% CI, 2.25-5.83) and a negative likelihood ratio of 0.23 (95% CI, 0.11-0.50). The area under the receiver operating characteristic curve to detect AKI was 0.86 (95% CI, 0.82-0.88). C-terminal FGF23 had a better performance than intact FGF23.
Conclusion(s): Plasma FGF23 is a valuable biomarker for incident AKI in critically ill patients. Comparisons of FGF23 with other biomarkers in AKI still need more studies to prove.

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Publisher
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618.

A Study of Acute Kidney Injury in a Tertiary Care Pediatric Intensive Care Unit.
Parikh A.C., Tullu M.S.
Embase
Journal of Pediatric Intensive Care. 10(4) (pp 264-270), 2021. Article Number: 2000084. Date of Publication: December 2021.
[Article]
AN: 633048758
The objective of this study was to calculate the incidence, severity, and risk factors for acute kidney injury (AKI) in a tertiary care pediatric intensive care unit (PICU). Also, to assess the impact of AKI and its varying severity on mortality and length of hospital and PICU stays. A prospective observational study was performed in children between 1 month and 12 years of age admitted to the PICU between July 1, 2013, and July 31, 2014 (13 months). The change in creatinine clearance was considered to diagnose and stage AKI according to pediatric risk, injury, failure, loss, and end-stage renal disease criteria. The risk factors for AKI and its impact on PICU stay, hospital stay, and mortality were evaluated. Of the total 220 patients enrolled in the study, 161 (73.2%) developed AKI, and 59 cases without AKI served as the no AKI (control) group. Majority (57.1%) of children with AKI had Failure grade of AKI, whereas 26.1% had Risk grade and 16.8% had Injury grade of AKI. Infancy (p = 0.000), hypovolemia (p = 0.005), shock (p = 0.008), and sepsis (p = 0.022) were found to be significant risk factors for AKI. Mortality, PICU stay, and hospital stay were comparable in children with and without AKI as well as between the various grades of renal injury (i.e., Failure, Risk, and Injury). An exceedingly high incidence of AKI, especially of the severe Failure grade was observed in critically ill children. Infancy and frequent PICU occurrences such as sepsis, hypovolemia, and shock predisposed to AKI.

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Publisher
Georg Thieme Verlag
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619.

Acute Kidney Injury in Pediatric Acute SARS-CoV-2 Infection and Multisystem Inflammatory Syndrome in Children (MIS-C): Is There a Difference?.
Grewal M.K., Gregory M.J., Jain A., Mohammad D., Cashen K., Ang J.Y., Thomas R.L., Valentini R.P.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 692256. Date of Publication: 09 Aug 2021.
[Article]
AN: 635776526

Objective: To evaluate the prevalence and factors associated with the risk of acute kidney injury (AKI) in pediatric patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and multisystem inflammatory syndrome in children (MIS-C).
Study Design: We performed a retrospective chart review of 113 patients with SARS-CoV-2 infection with or without MIS-C admitted at Children's Hospital of Michigan (CHM) from March to August 2020. Patient demographic details, laboratory data, imaging studies, echocardiography reports, and treatment data were collected.
Result(s): Of the 92 patients included in the final analysis, 22 (24%) developed AKI with 8/22 (36%) developing stage 3 AKI. The prevalence of AKI was much higher in patients with MIS-C 15/28 (54%) vs. those with acute SARS-CoV-2 infection 7/64 (11%), ($p < 0.001$). Overall, when compared to patients without AKI, patients with AKI were older in age (11 vs. 6.5 years, $p = 0.007$), African American (86 vs. 58%, $p = 0.028$), had MIS-C diagnosis (68 vs. 19%, $p < 0.001$), required ICU admission (91 vs. 20%, $p < 0.001$), had cardiac dysfunction (63 vs. 16%, $p < 0.001$), required inotropic support (59 vs. 6%, $p < 0.001$) and had a greater elevation in inflammatory markers. In a multivariate analysis, requirement of inotropes [Odds Ratio (OR)-22.8, $p < 0.001$], African American race (OR-8.8, $p = 0.023$) and MIS-C diagnosis (OR-5.3, $p = 0.013$) were the most significant predictors for AKI. All patients had recovery of kidney function, and none required kidney replacement therapy.
Conclusion(s): Children with acute SARS-CoV-2 infection and MIS-C are at risk for AKI, with the risk being significantly greater with MIS-C. The pathogenesis of AKI in acute SARS-CoV-2 infection appears to be a combination of both renal hypo-perfusion and direct renal parenchymal damage whereas in MIS-C, the renal injury appears to be predominantly pre-renal from cardiac dysfunction and capillary leak from a hyperinflammatory state. These factors should be considered by clinicians caring for these children with a special focus on renal protective strategies to aid in recovery and prevent additional injury to this high-risk subgroup.

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Publisher
Frontiers Media S.A.
Year of Publication
2021

620.

Relationship between Renal Damage and Serum Complement C3 in Children with Anti-Neutrophil Cytoplasmic Antibody-Associated Vasculitis.
Zhang P., Yang X., He X., Hu J., Gao C.-L., Xia Z.-K.
Embase
Nephron. 145(6) (pp 633-641), 2021. Date of Publication: 01 Nov 2021.
[Article]

AN: 2013576160
Background: Anti-neutrophil cytoplasmic antibody-Associated vasculitis (AAV) disease is a well-known antibody-induced autoimmune disease. The pathogenesis of AAV has not yet been completely clarified, but may be related to heredity, infection, environmental factors, cellular immunity, etc. In recent years, complement in AAV pathogenesis has become the latest research hotspot, and the decrease of serum complement C3 is associated with poor prognosis of anti-neutrophil cytoplasmic antibody-Associated glomerulonephritis. In the current study, we investigated the associations between serum complement C3 and kidney injury in AAV children.
Method(s): Twenty-four children with AAV admitted to our hospital from June 2014 to June 2019 were divided into the low C3 group and the normal C3 group. All the children have undergone renal biopsy. The clinical manifestations, laboratory tests, renal pathology, treatment, and prognosis of the 2 groups were observed. The primary end point was end-stage renal disease (ESRD).
Result(s): It was shown that kidney injury was more obvious in patients with low C3 than in patients with normal C3 serum. The values of ESR, Scr, and UA before treatment in the low C3 group were higher than those in the normal C3 group ($p < 0.01$); the values of RBC, Hb, PLT, ALB, LDH, and eGFR in the normal C3 group were higher than those in the low C3 group ($p < 0.01$). The values of urinary protein and NAG enzyme in the low C3 group were higher than those in the normal C3 group ($p < 0.01$). The area of glomerular abandonment, sclerosis, segmental sclerosis, crescent, cellular crescent, cellular fibrous crescent, fibrous crescent, segmental loop necrosis, and the number of cases with acute renal tubulointerstitial lesions in the low C3 group were bigger than those in the normal C3 group ($p < 0.05$ and < 0.01). The number of cases with C3 deposition in the low C3 group was higher than that in the normal C3 group ($p < 0.05$). The number of patients receiving CRRT and PE in the low C3 group was higher than that in the normal C3 group ($p < 0.05$ and < 0.01). In this study, 3 children entered the stage of ESRD and 1 died in the low C3 group.
Conclusion(s): The kidney injury of AAV children with low complement C3 is serious, and the prognosis is poor. We should pay attention to the influence of decreased complement C3 on the condition and prognosis of AAV children.

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Publisher
S. Karger AG
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621.

Frequency of pre-eclampsia induced acute kidney injury.
Rasool B., Akbar H., Muhammad A., Malik M.R.
Embase
Pakistan Journal of Medical and Health Sciences. 15(10) (pp 2580-2581), 2021. Date of Publication: October 2021.
[Article]
AN: 2015667671

Aim: To determine the frequency of preeclampsia induced acute kidney injury in patients presenting in a tertiary care hospital. Study design: Cross sectional study. Study setting: Department of Nephrology, KEMU/Mayo Hospital Gynecology, Lady Atchison Hospital Lahore, Methodology: All 180 pregnant females having acute kidney injury as per operational definition between 15 years to 50 years presenting in 3rd trimester of pregnancy for delivery were included in study after taking informed consent. Pregnant females with Blood Pressure >140/90mmHg after 20 weeks of pregnancy and laboratory investigation i.e. proteinuria were recorded. All investigations were done from laboratory of KEMU /Mayo hospital Lahore. After the diagnosis was made, the patients were treated according to the guidelines in hospital setting.
Result(s): In this study, out of 180 cases, 118(65.56%) were between 15-32 years of age whereas 62(34.44%) were between 33-55 years of age, mean+/-SD was calculated as 30.21+/-5.35 years, mean blood pressure of the patients was recorded as 154.27+/-108.15mmHg, mean serum creatinine of the patients was calculated as 4.39+/-0.28 mg/dl, frequency of urinary protein was recorded as 62(62.22%) while 68(37.78%) patients had no proteinuria, frequency of preeclampsia induced AKI in pregnancy was recorded in 47(26.11%).
Conclusion(s): Frequency of preeclampsia induces acute kidney injury is very high and it must be diagnosed and treated appropriately in time to reduce maternal mortality and morbidity.

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Publisher
Lahore Medical And Dental College
Year of Publication
2021

622.

Factors predicting the recovery from acute kidney injury in children with primary nephrotic syndrome.
Guan N., Yao Y., Xiao H., Ding J., Zhong X., Wang F., Liu X., Zhang H., Su B.
Embase
Clinical and Experimental Nephrology. 25(9) (pp 1011-1017), 2021. Date of Publication: September 2021.
[Article]
AN: 2011518352
Background: The prognosis of acute kidney injury (AKI) varies in children with nephrotic syndrome (NS), data on factors predicting the recovery and recurrence of AKI in children with NS are limited. This study aimed to explore the possible factors predicting the recovery from and recurrence of AKI in children with primary NS.
Method(s): Children with primary NS complicated with AKI from 1993 to 2017 in a single centre were reviewed retrospectively. The clinical pictures and possible factors predicting the recovery from and recurrence of AKI in children with primary NS were investigated.
Result(s): Sixty-eight episodes of AKI in 59 children with NS were analysed: 88.2% of AKI recovered within 3 months, and 2.9% of AKI did not recover after 3 months. Survival analysis revealed that leucocyturia is significantly related to the AKI recovery time (P = 0.001), and children with leucocyturia [22 (4, 79) days] recovered significantly slower than did children without

leucocyturia [12.0 (2, 39) days]. Renal tubular and interstitial injury were prominent in children with leucocyturia, and 11.9% of children with index AKI experienced the recurrence of AKI. Conclusion(s): Most episodes of AKI that occurred in children with NS recovered completely. Leucocyturia is a significant factor predicting the recovery time of AKI.

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Publisher
Springer
Year of Publication
2021

623.

The place of retroperitoneoscopic hemi-nephroureterectomy for duplex kidney in children; risk of damage to the remnant moiety and strategies to reduce the risk.
Wadham B., DeSilva A., Connolly T., Alshafei A., Keene D., Hennayake S.
Embase
Journal of Pediatric Urology. 17(5) (pp 708.e1-708.e8), 2021. Date of Publication: October 2021.
[Article]
AN: 2014252802
Objective: To analyse the outcomes of retroperitoneoscopic upper and lower moiety hemi-nephroureterectomy (HNU) and to assess the different variables that may have an impact on outcome; remnant moiety damage, morbidity and the need for secondary surgery.
Method(s): Prospectively recorded data of retroperitoneoscopic HNU's performed by a single surgeon from 2005 to 2018 were analysed. Patients were split into 2 groups according to moiety affected (UMHNU and LMHNU). Clinical presentation, underlying pathology, remnant moiety DRF on renal scintigraphy, and need for further surgery were recorded. Detailed operation notes were studied regards to renal vasculature, degree of dilatation, inflammatory changes and operative difficulties encountered. Renal loss was defined as remnant moiety DRF <10% post-operatively. Change in DRF was assessed regards to the moiety, pathology and age at surgery (<1 year, 1-2 years and >=2 years). UMHNU group was further sub-divided into 3 subgroups: ureteroceles, ectopic ureters and 'other' pathology. Statistical analysis was performed using Fishers Exact test; findings were considered statistically significant at $p < 0.05$.
Result(s): 78 operations met the inclusion criteria on 75 patients (3 bilateral). There were no conversions to open, and 67% were performed as day-case procedures (53/78 patients). In 91.2% (71/78) patients the procedure was definitive in resolving pathology and symptoms. 7 patients needed further procedures after HNU, 5 for ureterocele/ureteric stump. Overall, there was remnant moiety renal loss in 5.1% (4/78) patients, all with UM surgery (3 ectopic ureters and 1 ureterocele). All 4 operations were recorded prospectively as 'difficult operations' due to grossly dilated UM ureter/pelvis measuring >2 cm in diameter. 2 patients had a thinned out lower moiety (LM) sitting on top of the UM renal pelvis like a pancake with all vessels stretched over this dilated pelvis/ureter causing difficulty in accurate identification. There was intra-operative concern about some damage to LM vessels in 3 patients. Age <1year was also related to increased renal loss (2/8 patients <1 year, 1/25 patients 1-2 years, 1/45 patients >=2 years of age P = 0.005).

Conclusion(s): Retroperitoneoscopic LMHNU is a safe and definitive procedure with rapid recovery and minimal scarring. UMHNU has higher rates of remnant moiety loss due to more complex renal pathology, but remains a safe, successful operation on the majority of patients. Renal damage was also related to age <1year (p = 0.005) and re-operation risk after UMHNU correlated to the presence of ureterocele (p = 0.003). [Table presented]

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Publisher
Elsevier Ltd
Year of Publication
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624.

Relationship between acute kidney injury and mortality in poisoning-a systematic review and metanalysis.
Vodovar D., Peyre H., Megarbane B.
Embase
Clinical Toxicology. 59(9) (pp 771-779), 2021. Date of Publication: 2021.
[Review]
AN: 2012310052
Rationale: Three consensus classifications of acute kidney injury have been published. These are RIFLE (Risk, Injury, Failure, Loss of kidney function, and End-stage kidney disease published by the Acute Dialysis Quality Initiative workgroup), AKIN (published by the Acute Kidney Injury Network) and KDIGO (published by the Kidney Disease Improving Global Outcome workgroup). Acute kidney injury has been reported consistently as associated with worsened outcomes. However, toxicant-related acute kidney injury has been excluded from the studies used to validate the classifications of acute kidney injury.
Objective(s): To study whether poisoned patients who develop acute kidney injury, as defined by consensus definitions/classifications, have higher mortality compared to those who did not.
Method(s): Databases were searched from 2004 to 2019 using the following keywords (KDIGO OR "Kidney Disease: Improving Global Outcomes" OR "Kidney Disease Improving Global Outcomes" OR AKIN OR "AKI network" OR "Acute kidney Injury Network" OR ADQI OR RIFLE OR "Acute dialysis quality initiative") AND (intoxication OR poisoning OR overdose OR ingestion) AND (AKI OR kidney OR renal OR ARF). If data were available, we used a random-effects meta-analysis model and Fisher's exact test to compare mortality in patients according to kidney function definitions (acute kidney injury vs not) and stages (stages vs no acute kidney injury), respectively. If data were available, we assessed the correlation between mortality and renal function (no acute kidney injury, risk/stage 1, injury/stage 2 and failure/stage 3) using the Spearman correlation. If available, we collected the results of statistical analyses in studies that have used acute kidney injury to predict mortality.

Result(s): Study selection. Thirty-three relevant studies were found, 22/33 retrospective studies (67%) and 11/33 prospective studies (33%). Paraquat was the most frequent toxicant involved (13/33, 39%). We found a disparity between studies regarding the timeframe during which mortality was assessed, the temporality of the renal function considered to predict mortality (initial/worst) and the criteria used to define/grade acute kidney injury across studies. Univariate association between acute kidney injury definitions/stages and mortality. Consensus definitions/staging of acute kidney injury were associated with higher mortality, using univariate analyses, in twenty-eight (RIFLE = 7; AKIN = 12; KDIGO = 9) studies included but not in five (AKIN = 4, KDIGO = 1). When available data were pooled, RIFLE (5 studies), AKIN (16 studies) and KDIGO definitions (8 studies) of acute kidney injury were associated with a higher mortality (Log unadjusted Odds ratios [95%-confidence interval], 2.60 [2.23; 2.97], 2.02 [1.48; 2,52] and 3.22 [2,65; 3.78], respectively). However, we found high heterogeneity (I2=54,7%) and publication bias among studies using AKIN. In ten studies with available data, the correlation between renal function (no acute kidney injury, risk/stage 1, injury/stage 2, failure/stage 3) and mortality was significant in 5 studies (RIFLE = 2; AKIN = 3), but not in five studies (RIFLE = 1; AKIN = 3; KDIGO = 1). Multivariate association between acute kidney injury definitions/stages and mortality. The definitions of acute kidney injury were associated with higher mortality in two studies (RIFLE = 2), but not in four studies (AKIN = 1 and KDIGO = 3. The stages of acute kidney injury (including one or more stages) were associated with higher mortality in four (RIFLE = 1, AKIN = 1 and KDIGO = 2).
Conclusion(s): All three consensus definitions/classifications were associated independently with increased mortality in poisoning but with disparity between studies reporting acute kidney injury.

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Publisher
Taylor and Francis Ltd.
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2021

625.

Urinary neutrophil gelatinase-associated lipocalin rules out nephrotoxic acute kidney injury in children.
Goldstein S.L., Krallman K.A., Schmerge A., Dill L., Gerhardt B., Chodaparavu P., Radomsky A., Kirby C., Askenazi D.J.
Embase
Pediatric Nephrology. 36(7) (pp 1915-1921), 2021. Date of Publication: July 2021.
[Article]

AN: 2010194693
Background: Nephrotoxic medication exposure is a common cause of acute kidney injury (AKI) in hospitalized children. A key component of the NINJA quality improvement initiative is systematic daily serum creatinine assessment in non-critically ill children exposed to >= 3 nephrotoxic medications on 1 day, or intravenous aminoglycoside or vancomycin for >= 3 days. Daily venipuncture is invasive and associated with disposable and personnel healthcare costs. Urine neutrophil gelatinase-associated lipocalin (uNGAL) is a marker of renal tubular injury associated with certain nephrotoxic medications. We investigated whether uNGAL is a reliable screening tool for AKI in NINJA and could decrease the need for daily venipuncture.
Method(s): This two-center prospective study enrolled 113 children who met NINJA criteria from May 2018 through March 2019. Daily urine samples were obtained for up to the first 7 days of qualifying exposure and 2 days after exposure ended. Our primary outcome was severe AKI (KDIGO stage 2 or 3 AKI). Maximum uNGAL was highest concentration on the day of, or 3 days prior to, severe AKI. The highest uNGAL level from all assessment days was used for patients who did not develop AKI or severe AKI.
Result(s): Urine NGAL thresholds of 150 and 300 ng/ml demonstrated excellent specificity (92.4 and 97.1% respectively) and negative predictive values (93.3 and 92.8% respectively) for ruling out severe AKI.
Conclusion(s): We suggest that uNGAL could be used to supplant some of the daily serum creatinine venipunctures in NINJA. The most optimal combination of serum creatinine and uNGAL assessment requires further study.

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Publisher
Springer Science and Business Media Deutschland GmbH
Clinical Trial Number
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2021

626.

Surprise diagnosis in an adolescent case with chronic kidney damage: Answers.
Dogan G., Akinci N., Sharifov R., Cakir F.B., Senturk H., Turk H.M.
Embase
Pediatric Nephrology. 36(7) (pp 1997-1999), 2021. Date of Publication: July 2021.
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627.

Decreased urinary uromodulin is potentially associated with acute kidney injury: a systematic review and meta-analysis.
You R., Zheng H., Xu L., Ma T., Chen G., Xia P., Fan X., Ji P., Wang L., Chen L.
Embase
Journal of Intensive Care. 9(1) (no pagination), 2021. Article Number: 70. Date of Publication: December 2021.
[Article]
AN: 2014186084
Background: Urinary uromodulin (uUMOD) is one of the novel biomarkers for predicting AKI. However, currently available publications showed inconsistent results. We designed this meta-analysis to evaluate the potential association between uUMOD and AKI.
Method(s): We searched research articles with no language restriction in Medline, Web of Science, Cochrane Library, Embase, and 3 Chinese datasets from inception to February 2021. We used random-effects models to estimate the standardized mean difference (SMD) between patients with AKI or not, while the leave-one-out method and random-effects meta-regression to evaluate the sensitivity and the impact of potential confounders such as age and surgery.
Result(s): The meta-analysis comprising 3148 subjects from 11 studies showed that the uUMOD of the AKI group is significantly lower than the non-AKI group (SMD: - 0.71; 95% confidence interval (CI), - 1.00, - 0.42, P < 0. 001, I2 = 78.8%). Subgroup analysis revealed the difference is also significant in a different age, surgery condition, and assay time but not acute rejection (AR) group, especially in children (SMD: - 1.21, 95% CI: - 1.80, - 0.61; P < 0.001) and patients undergoing surgery (SMD: - 1.03, 95% CI: - 1.75, - 0.30; P < 0.001). Lower uromodulin is associated with higher odds for AKI incidence (odds ratio = 2.47, 95% CI: 1.12, 5.47; P < 0.001, I2 = 89%). Meta-reggression found that age was associated with the SMD of uUMOD. The study outcome was reliably confirmed by the sensitivity analysis.

Conclusion(s): The present study suggested a negative association between uUMOD and AKI especially in children and surgical patients.

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Publisher
BioMed Central Ltd
Year of Publication
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628.

Impact of acute kidney injury on overall survival in children and young adults undergoing allogeneic hematopoietic stem cell transplantation.
Matsuoka D., Hirabayashi K., Murase T., Saito S., Nakazawa Y.
Embase
Pediatric Blood and Cancer. 68(9) (no pagination), 2021. Article Number: e29167. Date of Publication: September 2021.
[Article]
AN: 2012312781
Background: Acute kidney injury (AKI) is a complication after allogeneic hematopoietic stem cell transplantation (allo-HSCT). Increasing severity of AKI is associated with an increased risk of death. However, the impact of AKI in patients with malignant versus nonmalignant disease has not been reported. We investigated the incidence of AKI within the first 100 days after allo-HSCT and the impact of AKI on both 3-year overall survival (OS) and cumulative incidence of death after allo-HSCT in all patients and in patients with/without malignant primary diseases.
Method(s): We performed a retrospective analysis of 107 consecutive pediatric and young adult patients who received their first allo-HSCT. AKI was classified into three grades according to the Acute Kidney Injury Network classification system.
Result(s): The cumulative incidences of AKI stages 1-3, 2-3, and 3, at day 100 after allo-HSCT were 34.6% (95% confidence interval [CI], 25.7%-43.6%), 17.8% (95% CI, 11.2%-25.6%), and 3.7% (95% CI, 1.2%-8.6%), respectively. OS was reduced for patients with AKI compared with patients without AKI (60.4% vs. 79.6%, p =.038). The cumulative incidence of death in the AKI group with nonmalignant disease was significantly higher than that in the no-AKI group (44.4% vs. 0%, p =.003).
Conclusion(s): AKI after allo-HSCT was not only a frequent event but also related to reduced OS. We recommend that all patients receiving allo-HSCT, especially patients with nonmalignant diseases, be closely monitored for AKI.

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Publisher
John Wiley and Sons Inc
Year of Publication
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629.

Evaluation of neonatal acute kidney injury after critical congenital heart disease surgery.
Beken S., Akbulut B.B., Albayrak E., Guner B., Unlu Y., Temur B., Aydin S., Odemis E., Erek E., Korkmaz A.
Embase
Pediatric Nephrology. 36(7) (pp 1923-1929), 2021. Date of Publication: July 2021.
[Article]
AN: 2010258699
Background: Acute kidney injury (AKI) is a common complication of congenital heart diseases (CHDs) after cardiac surgery. This study aimed to define the frequency and critical course, risk factors and short-term outcomes of AKI in postoperative CHD neonates.
Method(s): Postoperatively followed term CHD newborn infants were enrolled in the study. Infants with congenital anomalies of the urinary tract and other major congenital anomalies were excluded. Neonatal modified KDIGO criteria were used to assess AKI.
Result(s): A total of 199 postoperatively followed newborn infants were included in the study. Acute kidney injury was detected in 71 (35.6%) patients. Of these patients, 24 (33.8%) were in stage 1, 14 (19.7%) in stage 2, and 33 (46.5%) in stage 3. Acute kidney injury occurred within the first week (median 1 day [IQR 1-2 days]) of cardiac surgery in 93% of the patients. The duration of invasive respiratory support and extracorporeal membrane oxygenation (ECMO) and mortality were significantly higher in stage 3 patients. Higher vasoactive-inotropic score (OR, 1.02; 95% CI, 1.0-1.04; p = 0.008) and receiving ECMO (OR, 7.9; 95% CI, 2.6-24.4; p = 0.001) were associated with risk for the development of AKI. The mortality rate was 52.1% in the AKI (+) patients, and having AKI (OR 7.1; 95% CI, 3.5-14.18) was significantly associated with mortality.
Conclusion(s): Acute kidney injury, a common early complication after critical neonatal CHD cardiac surgery, is associated with increased morbidity and mortality. Stage 3 AKI is associated with significantly higher mortality rates. Graphical Abstract: [Figure not available: see fulltext.].

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33492453 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33492453]
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Publisher
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630.

The Incidence and Risk Factors for Persistent Acute Kidney Injury Following Total Cavopulmonary Connection Surgery: A Single-Center Retrospective Analysis of 465 Children.
Jia Y., Luo Q., Su Z., Xiong C., Wang H., Li Y., Wu X., Yuan S., Yan F.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 566195. Date of Publication: 07 Jul 2021.
[Article]
AN: 635534803
Background: Acute kidney injury (AKI) after cardiac surgery contributes to adverse outcomes. We aimed to assess the incidence and identify the predictors for persistent AKI after total cavopulmonary connection (TCPC) surgery.
Method(s): A retrospective study, including 465 children undergoing TCPC surgery from 2010 to 2019, was conducted. We used pRIFLE criteria to define AKI and defined persistent AKI as AKIs occurring between post-operative day1 (POD1) and POD3 and sustaining at least on POD7. Univariate and multivariate logistic regressions were applied to analyze the predictors for persistent AKI.
Result(s): A total of 35.3% patients developed AKI between POD1 to POD3 and 15.5% patents had persistent AKI after TCPC. Patients with persistent AKI had prolonged mechanical ventilation and ICU stay, and had higher rates of renal replacement treatment and reintubation, which was associated with higher hospitalization costs and in-hospital mortality. The independent predictors for persistent AKI were peripheral oxygen saturation (SpO2) upon admission, intraoperative fluid balance, POD0 maximal lactic acid, renal perfusion pressure (RPP), POD0 estimated glomerular filtration rate and POD0 total bilirubin. The areas under receiver operating characteristic curve (AUC) in the total cohort and the subgroup undergoing TCPC surgery after 2017 were 0.75 (95% CI, 0.66-0.82) and 0.87 (95% CI, 0.77-0.97), respectively. The acceptable AUCs (nearly 0.7) were achieved in other 5 subgroups and good calibration ability (p >= 0.05) were achieved in the total cohort and all six subgroups.
Conclusion(s): Persistent AKI after TCPC was common and strongly associated with poorer in-hospital outcomes in Chinese pediatric patients. Six perioperative variables, including SpO2, intraoperative fluid balance, POD0 maximal lactic acid, RPP, POD0 moderate-to-severe kidney injury and POD0 total bilirubin, were identified as independent predictors for persistent AKI. Our findings may help to perform an early risk stratification for these vulnerable patients and improve their outcomes.

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Publisher
Frontiers Media S.A.
Year of Publication
2021

631.

Hsa_circRNA_0045861 promotes renal injury in ureteropelvic junction obstruction via the microRNA-181d-5p/sirtuin 1 signaling axis.
Fan X., Yin X., Zhao Q., Yang Y.
Embase
Annals of Translational Medicine. 9(20) (no pagination), 2021. Article Number: 1571. Date of Publication: October 2021.
[Article]
AN: 2015369314
Background: Ureteropelvic junction obstruction (UPJO) is one of the most common causes of hydronephrosis in children. This study explored the effects and the regulatory mechanisms of the circular RNA (circRNA) hsa_circRNA_0045861 (circRNA_0045861) in UPJO.
Method(s): RNA sequencing was used to identify the differentially expressed circRNAs in UPJO. The effects of circRNA_0045861 on renal cell apoptosis was investigated by flow cytometry and Western blot analysis. Furthermore, we used bioinformatics methods to predict the possible target genes of circRNA_0045861. Fluorescence in-situ hybridization and dual-luciferase reporter assays were performed to validate the target genes of circRNA_0045861. Finally, we evaluated the effects of circRNA_0045861 target gene miR-181d-5p on UPJO-induced renal fibrosis in vivo.
Result(s): RNA sequencing identified 63 upregulated and 64 downregulated circRNAs in UPJO patients. The expression of circRNA_0045861 was significantly elevated in kidney damage both in vivo and in vitro. Silencing circ_0045861 inhibited transforming growth factor (TGF)-beta1-induced apoptosis in vitro in human kidney 2 (HK-2) cells. Furthermore, circ_0045861 was shown to directly interact with the microRNA miR-181d-5p and regulate the expression of sirtuin 1 (SIRT1), thereby promoting the progression of apoptosis and renal injury. In addition, overexpression of miR-181d-5p inhibited cell apoptosis and renal fibrosis in a mouse model through downregulating the SIRT1/p53 pathway.
Conclusion(s): Circ_0045861 may be a novel candidate circRNA in the pathogenesis of UPJO by acting as a pro-apoptotic factor via the miR-181d-5p/SIRT1 axis.

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Publisher
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632.

Incidence, Risk Factors, and Outcomes of Neonatal Acute Kidney Injury: Protocol of a Multicentric Prospective Cohort Study [The Indian Iconic Neonatal Kidney Educational Registry].
Agrawal G., Wazir S., Sethi S.K., Tibrewal A., Dhir R., Bajaj N., Gupta N.P., Mirgunde S., Sahoo J., Balachandran B., Afzal K., Shrivastava A., Bagla J., Krishnegowda S., Konapur A., Soni K., Kolukula V.K., Jangid R., Bunchman T., Raina R.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 690559. Date of Publication: 09 Jul 2021.
[Article]
AN: 635540373
Background: Acute kidney injury (AKI) is a significant problem in neonates, but the evidence is sparse. Neonatal AKI is an independent risk factor for increased mortality and prolonged hospital stay. There are stark differences in the epidemiology of AKI in neonates amongst the developing and the developed world. Increased prevalence of neonatal sepsis, lack of awareness about neonatal AKI and poor access to pediatric nephrologists add to the improper management of neonatal AKI in the developing countries.
Method(s): This study is a multicentric, national, prospective cohort study [The Indian iconic Neonatal Kidney Educational Registry (TINKER)] conducted in level 2-3 NICUs in 11 centers across India. We have enrolled nearly 2,000 neonates over the study period. Neonates (<= 28 days) who were admitted in NICU and those who received intravenous (IV) fluids for at least 48 h for hydration and/or nutrition have been included. Data collection included: (1) baseline demographics (2) daily physiologic and laboratory parameters (3) discharge data. KDIGO workgroup AKI definition modified for neonates was used for defining AKI. Data entry was carried out by individual participating centers using a web-based database (akiregistry.org). De-identified data has been maintained and handled by the principal investigator (PI). This collaboration plans to disseminate data through peer-reviewed publications and through presentations at educational conferences.
Conclusion(s): The purpose of this study is to create the first prospective neonatal all-cause AKI data repository and describe the incidence of neonatal AKI in NICUs in the country and determine the risk factors as well as the outcomes of such neonates-both short-term and long-term outcomes. This will eventually spur therapeutic advancements, facilitate decipherment of epidemiological trends, risk factors as well as outcomes and identify disparities in management across the nation.

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Publisher
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633.

Impact of acute kidney injury in patients prescribed angiotensin-converting enzyme inhibitors over the first two years of life.
Hirano D., Miwa S., Kakegawa D., Umeda C., Takemasa Y., Tokunaga A., Yuhei K., Ito A.
Embase
Pediatric Nephrology. 36(7) (pp 1907-1914), 2021. Date of Publication: July 2021.
[Article]
AN: 2010194690
Background: The association of long-term acute kidney injury (AKI) risk with angiotensin-converting enzyme (ACE) inhibitor use in neonates/infants is poorly understood. We examined this association to identify potential AKI risk factors.
Method(s): We retrospectively evaluated 119 children aged < 2 years (72 boys; median age, 5.0 months) who received ACE inhibitors for congenital heart disease for >= 6 months between January 2009 and June 2019. We monitored the occurrence of AKI, defined according to the Kidney Disease Improving Global Outcomes guidelines. Demographic and clinical data were extracted from medical records. Risk factors associated with AKI onset were identified by a Cox proportional hazards regression analysis of variables previously identified as risk factors of AKI and those significant in a univariate analysis.
Result(s): Thirty-three of 119 patients (28%) developed AKI at a median follow-up of 1.3 years (interquartile range, 0.8-3.2 years). AKI incidence was 1257 events per 10,000 patient-years. Concomitant tolvaptan use (hazard ratio [HR], 3.81; 95% confidence interval [CI], 1.82-7.97; P < 0.01) and Down syndrome (HR, 3.22; 95% CI, 1.43-7.29; P < 0.01) were identified as independent risk factors of AKI onset.
Conclusion(s): AKI was strongly associated with concomitant tolvaptan use and Down syndrome in our study population. Physicians should consider these factors when prescribing ACE inhibitors for neonates/infants. Low-dose ACE inhibitors slow CKD progression because of their antifibrotic properties. ACE inhibitors may be beneficial for patients with Down syndrome who have underlying CKD in a non-acute setting. Therefore, they should be administered to such patients with caution.

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634.

Biomarkers as predictors of renal damage in neonates undergoing cardiac surgery.
Borchert E., de la Fuente R., Guzman A.M., Gonzalez K., Rolle A., Morales K., Gonzalez R., Jalil R., Lema G.
Embase
Perfusion (United Kingdom). 36(8) (pp 825-831), 2021. Date of Publication: November 2021.
[Article]
AN: 2007157306
Background: Acute Kidney Injury is a complication in children with heart disease undergoing cardiac surgery with cardiopulmonary bypass. The aim of this study is to describe the behavior of KIM-1 (Kidney Injury Molecule) and NGAL (Neutrophil Gelatinase Associated Lipocalin) as early predictors of renal damage, comparing them with serum creatinine and creatinine clearance, in neonates undergoing cardiac surgery.
Method(s): Twenty-one (21) neonates, under 4 kg, with complex congenital heart diseases, RACHS-1 > 3, without preoperative renal failure, were studied. Serum creatinine and creatinine clearance were measured preoperatively and at 24, 48, 72, 96 hours postoperatively. Urinary samples of KIM-1(pg/ml) and NGAL (ng/ml) were collected after induction of anesthesia at 24 and 48 hours post-operatively.
Result(s): nRIFLE criteria were used to divide cohorts in "NO AKI" (12 patients) and "AKI" (nine patients). In the AKI group, serum creatinine increased significantly and creatinine clearance decreased significantly at 24, 48, and 72 hours compared with their respective baseline values. There was no difference in KIM-1 and NGAL values between patients who developed AKI and those who did not at any measured time.
Conclusion(s): The deterioration of renal function continues to be one of the most frequent complications in this population. In our study, biomarkers did not show any correlation with the appearance of AKI. It remains to be seen whether this behavior of the biomarkers is linked with the non-consistent release of these types of molecules in immature kidneys. It is likely that a larger panel of biomarkers together with other glomerular filtration rate assessment methods will provide more information about AKI diagnosis.

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635.

A rare cause of recurrent acute kidney injury in a 3-year-old girl: Answers.
Kar S., Krishnamurthy S., Karunakar P., Maya M., Thangaraj A., Agarwal Y.
Embase
Pediatric Nephrology. 36(7) (pp 2033-2037), 2021. Date of Publication: July 2021.
[Article]
AN: 2010155294
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33427983 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33427983]
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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
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636.

Early Acute Kidney Injury in Preterm and Term Neonates: Incidence, Outcome, and Associated Clinical Features.
Gallo D., De Bijl-Marcus K.A., Alderliesten T., Lilien M., Groenendaal F.
Embase
Neonatology. 118(2) (pp 174-179), 2021. Date of Publication: June 2021.
[Article]
AN: 634671347
Background: Critically ill neonates are at high risk of kidney injury, mainly in the first days of life. Acute kidney injury (AKI) may be underdiagnosed due to lack of a uniform definition. In addition, long-term renal follow-up is limited.
Objective(s): To describe incidence, etiology, and outcome of neonates developing AKI within the first week after birth in a cohort of NICU-admitted neonates between 2008 and 2018. Renal function at discharge in infants with early AKI was assessed. Methods and Subjects: AKI was

defined as an absolute serum Cr (sCr) value above 1.5 mg/dL (132 mumol/L) after the first 24 h or as stage 2-3 of the NIDDK neonatal definition. Clinical data and outcomes were collected from medical records and retrospectively analyzed.
Result(s): From January 2008 to December 2018, a total of 9,376 infants were admitted to the NICU of Wilhelmina Children's Hospital/UMC Utrecht, of whom 139 were diagnosed with AKI during the first week after birth. In 72 term infants, the most common etiology was perinatal asphyxia (72.2%), followed by congenital kidney and urinary tract malformations (CAKUT) (8.3%), congenital heart disease (6.9%), and sepsis (2.8%). Associated conditions in 67 preterm infants were medical treatment of a hemodynamic significant PDA (27.2%), -CAKUT (21%), and birth asphyxia (19.4%). Among preterm neonates and neonates with perinatal asphyxia, AKI was mainly diagnosed by the sCr >1.5 mg/dL criterion. Renal function at discharge improved in 76 neonates with AKI associated with acquired conditions. Neonates with stage 3 AKI showed increased sCr values at discharge. Half of these were caused by congenital kidney malformations and evolved into chronic kidney disease (CKD) later in life. Neurodevelopmental outcome (NDO) at 2 years was favorable in 93% of surviving neonates with detailed follow-up.
Conclusion(s): During the first week after birth, AKI was seen in 1.5% of infants admitted to a level III NICU. Renal function at discharge had improved in most neonates with acquired AKI but not in infants diagnosed with stage 3 AKI. Long-term renal function needs further exploration, whereas NDO appears to be good.

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637.

Evaluating and Mitigating Risk of Acute Kidney Injury with the Combination of Vancomycin and Piperacillin-Tazobactam in Children.
Tillman E.M., Goldman J.L.
Embase
Pediatric Drugs. 23(4) (pp 373-380), 2021. Date of Publication: July 2021.
[Review]
AN: 2013093172
The antibiotic combination of vancomycin (VAN) and piperacillin-tazobactam (PTZ) has been associated with an increased risk of acute kidney injury (AKI) in both adult and pediatric patients. In this review, we highlight some of the limitations of existing pediatric studies evaluating the combination of VAN/PTZ, focusing on AKI risk in specific pediatric patient populations. We also review the variability in defining AKI in children and provide guidance to clinicians for use of prospective surveillance and stewardship in mitigating the risk of AKI in pediatric patients treated with combination of VAN/PTZ. Based on review of available pediatric studies, if the combination of VAN/PTZ is selected as an empirical antibiotic combination, it should be used in those at low risk for AKI and should be used with extreme caution in patients with additional nephrotoxic risks.

Systems should be in place to monitor the use of VAN/PTZ and associated renal function in those receiving this antibiotic combination.

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Publisher
Adis
Year of Publication
2021

638.

Association between Elevated Urine Neutrophil Gelatinase-Associated Lipocalin and Postoperative Acute Kidney Injury in Neonates.
Slagle C.L., Goldstein S.L., Gavigan H.W., Rowe J.A., Krallman K.A., Kaplan H.C., Liu C., Ehrlich S.R., Kotagal M., Bondoc A.J., Poindexter B.B.
Embase
Journal of Pediatrics. 238 (pp 193-201.e2), 2021. Date of Publication: November 2021.
[Article]
AN: 2014315647
Objective: To examine the incidence of postoperative neonatal acute kidney injury (AKI) following general surgical procedures and to test the hypothesis that postoperative urine neutrophil gelatinase-associated lipocalin (uNGAL) concentrations predict AKI. The secondary objective was to evaluate for an association between AKI and hospital mortality. Study design: Prospective observational study of infants undergoing abdominal and thoracic surgical procedures in the neonatal intensive care unit from October 2018 to March 2020. The primary outcome was incidence of neonatal AKI (defined by the neonatal modified Kidney Diseases Improving Global Outcomes criteria) following each procedure to postoperative day 5. Severe AKI was defined as stage 2 or 3 AKI. Urine samples were obtained pre- and postoperatively at 6 time points to evaluate for levels of uNGAL. Secondary outcomes were in-hospital mortality and length of stay. Result(s): Subjects (n = 141) underwent a total of 192 general surgical procedures during the study period. Neonatal AKI and severe AKI occurred following 36 (18%) and 15 (8%) procedures (n = 33 subjects). Percent change of uNGAL from 24 hours preoperatively to 24 hours postoperatively was greater in subjects with neonatal AKI (190.2% [IQR 0.0, 1666.7%] vs 0.7% [IQR -31.2%,140.2%], P = .0374). The strongest association of uNGAL and AKI occurred at 24 hours postoperatively (area under the receiver operator curves of 0.81, 95% CI 0.72, 0.89). Increased mortality risk was observed in subjects with any postoperative AKI (aOR 11.1 95% CI 2.0, 62.8, P = .0063) and severe AKI (aOR 13.8; 95% CI 3.0, 63.1, P = .0007). Conclusion(s): Elevation in uNGAL 24 hours postoperative was associated with AKI. Neonates with postoperative AKI had increased mortality.

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639.

Trial of Furosemide to Prevent Acute Kidney Injury in Critically Ill Children: A Double-Blind, Randomized, Controlled Trial.
Abraham S., Rameshkumar R., Chidambaram M., Soundravally R., Subramani S., Bhowmick R., Sheriff A., Maulik K., Mahadevan S.
Embase
Indian Journal of Pediatrics. 88(11) (pp 1099-1106), 2021. Date of Publication: November 2021.
[Article]
AN: 2011042172
Objective: To study whether furosemide infusion in early-onset acute kidney injury (AKI) in critically ill children would be associated with a reduced proportion of patients progressing to the higher stage (Injury or Failure) as compared to placebo.
Method(s): A double-blind, placebo-controlled, randomized pilot trial was conducted. The authors enrolled children aged 1-mo (corrected) to 12-y, who were diagnosed with AKI ("risk" stage) using pediatric-Risk, Injury, Failure, Loss, End stage kidney disease (p-RIFLE) criteria, and achieved immediate resuscitation goals within 24 h of admission. Participants received either furosemide (0.05 to 0.4 mg/kg/h) or placebo (5%-dextrose) infusion. The primary outcome was the proportion of patients progressing to a higher stage (injury or failure). Secondary outcomes were (i) need for renal replacement therapy, (ii) the effect on neutrophil gelatinase-associated lipocalin (urine and blood), (iii) fluid balance, (iv) adverse effects, (v) time to achieve renal recovery, (vi) duration of hospital stay and mechanical ventilation, and (vii) all-cause 28-d mortality.
Result(s): The trial was stopped for futility, and data were analyzed on an intention-to-treat basis (furosemide-group: n = 38; placebo-group: n = 37). No significant difference was noted in the

progression of AKI to a higher stage between furosemide and placebo groups (10.5% vs. 21.6%; relative risk = 0.49, 95% CI 0.16 to 1.48) (p = 0.22). There were no differences in the secondary outcomes between the study groups. All-cause 28-d mortality was similar between the groups (10.5% vs. 10.8%). No trial-related severe adverse events occurred.
Conclusion(s): Furosemide infusion in early-onset AKI did not reduce the progression to a higher stage of AKI. A future trial with large sample size is warranted.

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Publisher
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640.

Association of pulsatile stress in childhood with subclinical renal damage in adults: A 30-year prospective cohort study.
Liao Y., Chu C., Wang Y., Zheng W., Ma Q., Hu J., Yan Y., Yang J., Yang R., Wang K., Yuan Y., Chen C., Sun Y., Wu Y., Mu J.
Embase
Journal of Clinical Hypertension. 23(10) (pp 1843-1851), 2021. Date of Publication: October 2021.
[Article]
AN: 2013643184
The pulsatile stress in the microcirculation may contribute to development or progression of chronic kidney disease. However, there is no prospective data confirming whether pulsatile stress in early life affect renal function in middle age. The authors performed a longitudinal analysis of 1738 participants aged 6-15 years at baseline, an ongoing Adolescent Prospective Cohort with a follow-up of 30 years. The authors evaluated the association between pulsatile stress in childhood and adult subclinical renal damage (SRD), adjusting for related covariates. Pulsatile stress was calculated as resting heart rate x pulse pressure. Renal function was assessed with estimated glomerular filtration rate (eGFR) and urine albumin-to-creatinine ratio (uACR). The results showed that pulsatile stress in childhood was associated with adult SRD (Relative Risk, 1.43; p =.032), and the predictive value of combined pulse pressure and heart rate for SRD was higher than either of them alone. The high pulsatile stress in childhood increased the risk of adult SRD in males (RR, 1.92; p =.003), but this association was not found in females (RR, 0.91; p =.729). Further, the participants were categorized into four groups on the basis of pulsatile stress status in childhood and adulthood. Male patients with high pulsatile stress during childhood but normal pulsatile stress as adults still had an increased risk of SRD (RR, 2.04; 95% CI, 1.18-3.54), while female patients did not (RR, 0.96; 95% CI, 0.46-1.99). The study demonstrated that high

pulsatile stress in childhood significantly increased the risk of adult SRD, especially in males. Adequate control of pulse pressure and heart rate from childhood, in the long-term, is very important for preventing kidney damage.

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641.

Serial urinary neutrophil gelatinase associated lipocalin in pediatric diabetic ketoacidosis with acute kidney injury.
Williams V., Jayashree M., Nallasamy K., Dayal D., Rawat A., Attri S.V.
Embase
Clinical Diabetes and Endocrinology. 7(1) (no pagination), 2021. Article Number: 20. Date of Publication: December 2021.
[Article]
AN: 2014088716
Background: Acute kidney injury (AKI) due to Diabetic Ketoacidosis (DKA) is rather common. Novel biomarkers to diagnose AKI are being increasingly used in different settings. The use of urinary Neutrophil Gelatinase-Associated Lipocalin (uNGAL) in predicting persistent AKI in pediatric DKA cases is still not thoroughly investigated.
Method(s): This was a secondary analysis of Saline versus Plasma-Lyte in Ketoacidosis (SPinK) trial data; 66 children (> 1 month-12 years) with DKA, defined by the International Society for Pediatric and Adolescent Diabetes (ISPAD), were analyzed. Children with cerebral edema, chronic kidney disease and those who received pre-referral fluids and/or insulin were excluded. uNGAL and urine NGAL-creatinine ratio (uNCR) at 0 and 24 h were measured in all. Persistent AKI was defined as a composite outcome of continuance of AKI defined by the Kidney Disease Improving Global Outcomes (KDIGO) stage 2 or 3 beyond 48 h from AKI onset, progression of AKI from either KDIGO stage 0 or 1 to a worse stage, need of renal replacement therapy or death. Main outcomes: Thirty-five (53%) children had AKI at admission; 32 (91.4%) resolved within 48 h. uNGAL was significantly higher in the AKI group at admission [79.8 +/- 27.2 vs 54.6 +/- 22.0, p = 0.0002] and at 24 h [61.4 +/- 28.3 vs 20.2 +/- 14.5, p = 0.0003]. Similar trend was observed with uNCR at admission [6.7 +/- 3.7 vs 4.1 +/- 2.6, p = 0.002] and at 24 h [6.3 +/- 2.5 vs 1.2 +/- 1.0, p = 0.01]. Furthermore, uNGAL at admission showed a moderate positive linear correlation with serum creatinine. Additionally, elevated uNGAL at 0 and 24 h correlated with corresponding KDIGO stages. Admission uNGAL >88 ng/ml and uNCR of >11.3 ng/mg had a

sensitivity of 66% and 67%, specificity of 76% and 95%, and Area under the receiver operating characteristic curve (AUC) of 0.78 and 0.89 respectively for predicting persistent AKI at 48 h. Conclusion(s): Majority of AKI resolved with fluid therapy. While uNGAL and uNCR both correlated with serum creatinine and AKI stages, serial uNCR was a better predictor of persistent AKI than uNGAL alone. However, feasibility of routine uNGAL measurement to predict persistent AKI in DKA needs further elucidation. Trial registration: This was a secondary analysis of the data of SPinK trial [CTRI/2018/05/014042 (ctri.nic.in)].

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642.

In-Hospital Outcomes of Acute Kidney Injury After Pediatric Cardiac Surgery: A Meta-Analysis.
Van den Eynde J., Rotbi H., Gewillig M., Kutty S., Allegaert K., Mekahli D.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 733744. Date of Publication: 03 Sep 2021.
[Review]
AN: 635996429
Background: Cardiac surgery-associated acute kidney injury (CS-AKI) is associated with increased morbidity and mortality in both adults and children. This study aimed to investigate the in-hospital outcomes of CS-AKI in the pediatric population.
Method(s): PubMed/MEDLINE, Embase, Scopus, and reference lists of relevant articles were searched for studies published by August 2020. Random-effects meta-analysis was performed, comparing in-hospital outcomes between patients who developed CS-AKI and those who did not.
Result(s): Fifty-eight publications between 2008 and 2020 consisting of 18,334 participants (AKI: 5,780; no AKI: 12,554) were included. Higher rates of in-hospital mortality (odds ratio [OR] 7.22, 95% confidence interval [CI] 5.27-9.88), need for renal replacement therapy (RRT) (OR 18.8, 95% CI 11.7-30.5), and cardiac arrhythmias (OR 2.67, 95% 1.86-4.80) were observed in patients

with CS-AKI. Furthermore, patients with AKI had longer ventilation times (mean difference [MD] 1.76 days, 95% CI 1.05-2.47), pediatric intensive care unit (PICU) length of stay (MD 3.31, 95% CI 2.52-4.10), and hospital length of stay (MD 5.00, 95% CI 3.34-6.67).
Conclusion(s): CS-AKI in the pediatric population is associated with a higher risk of mortality, cardiac arrhythmias and need for RRT, as well as greater mechanical ventilation time, PICU and hospital length of stay. These results might help improve the clinical care protocols prior to cardiac surgery to minimize the disease burden of CS-AKI in children. Furthermore, etiology-specific approaches to AKI are warranted, as outcomes are likely impacted by the underlying cause.

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643.

Incidence and risk factors for acute kidney injury in hospitalized children receiving piperacillin-tazobactam.
Lu H., Thurnherr E., Meaney C.J., Fusco N.M.
Embase
Journal of Pediatric Pharmacology and Therapeutics. 26(6) (pp 597-602), 2021. Date of Publication: 2021.
[Article]
AN: 2013661381
OBJECTIVE Drug-induced kidney injury contributes to morbidity and mortality in hospitalized children. Antibiotics such as TZP have been implicated in the development of acute kidney injury (AKI) in adults; however, data are limited in children. The purpose of this study was to determine the incidence of AKI in hospitalized children receiving TZP. METHODS This was a retrospective cohort study of hospitalized children between 2 months and 19 years of age who received TZP for at least 48 hours. Acute kidney injury was defined as a 50% increase from the initial serum creatinine (SCr) prior to TZP initiation. Serum creatinine values were adjusted for fluid balance using a validated approach. Severity of AKI was characterized using the Pediatric Risk, Injury, Failure, Loss, End-Stage Renal Disease (pRIFLE) criteria. Descriptive and inferential statistics were used to describe the incidence and risk factors of AKI, with an alpha = 0.05. RESULTS A total of 65 subjects were included. Twenty-five (38.5%) required PICU admission. The incidence

of AKI was 7.7% (n = 5) using adjusted SCr (13.37 cases/1000 patient-days). According to pRIFLE, 6.15% (n = 4) subjects met criteria for Risk (n = 3) or Injury (n = 1), and none developed Failure, Loss, or End-Stage (10.70 cases/1000 patient-days for Risk and Injury categories). No risk factors were identified. Hospital length of stay was longer in subjects who experienced AKI compared with those who did not (p = 0.04). CONCLUSIONS The incidence of AKI in hospitalized children exposed to TZP was low. In those who did develop AKI, peak SCr occurred approximately 1 week after TZP initiation.

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644.

Detection of occult kidney injury in glucose 6 phosphate dehydrogenase deficiency anemia.
Aasam A.I.A., Abdulkadhem S., Hashim J.M., Al Kufy M.A.H., Nasrawi A.J.M.
Embase
Current Pediatric Research. 25(8) (pp 752-755), 2021. Date of Publication: 2021.
[Article]
AN: 2015249184
Patients with Glucose-6-Phosphatase Dehydrogenase (G6PD) enzyme deficiency may develop hemolysis after administering different food, drugs, and herbs. Renal damage could be mild, resolving after administration of high-volume hydration and alkylating agents, or be severe and life-threatening due to acute renal failure.
Material(s) and Method(s): All children older than 28 days of age who were experiencing the first episode of the hemolytic crisis were enrolled in this prospective cohort study. In a period between February to May 2017. An acute hemolytic crisis is defined as the acute presence of pallor or jaundice, tea-color urine, normochromic normocytic anemia, reticulocytosis, indirect hyperbilirubinemia, and normal liver function test. Demographic information and laboratory investigation were taken to assess renal damage.
Result(s): Totally, fifty children were included in the study, there was a significant decrease in GFR during the hemolytic crisis (mean=56.1 ml/min/1.73 m2), but the value increased to reach near normal (but still less than normal) during the next three weeks (mean=82.9 ml/min/1.73 m2). Surprisingly, the serum creatinine and BUN during the crisis and three weeks later were in the normal range.
Discussion(s): In the recent survey, we found that the mean of GFR increased but did not reach the normal range three weeks after the hemolysis, although sCr levels were in the normal range. Therefore, we thought that G6PD deficiency per se might have an adverse outcome on the kidney functions. This finding was consistent with the study conducted by Hakeem et al., showing that the damage to the kidneys persisted even after the cessation of hemolysis, while the level of cystatin C was significantly higher compared to the control group fourteen days after hemolysis.

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645.

Value of urinary Neutrophil Gelatinase-Associated Lipocalin (NGAL) in predicting acute kidney injury in neonates with perinatal asphyxia.
Ali W.H., Ahmed H.H., Hasanin H.M., Kamel I.H., Ahmed W.O.
Embase
Current Pediatric Research. 25(9) (pp 919-928), 2021. Date of Publication: 2021.
[Article]
AN: 2015249211
Background: Acute Kidney Injury (AKI) affects 30%-55% of asphyxiated neonates, with a 60%-66% mortality rate. Because novel biomarkers measured at the time of Intensive Care Unit (ICU) admission have been shown to predict short and long-term outcomes, the purpose of this study was to assess the role of urinary Neutrophil Gelatinase-Associated Lipocalin (NGAL) as an early biomarker for detecting Acute Kidney Injury (AKI) in neonates with perinatal asphyxia.
Method(s): This study included 91 full-term neonates (45 of whom were asphyxiated and 46 of whom were not). The asphyxiated group was subdivided further into AKI and non-AKI groups. UNGAL was measured 6 hours after birth, while CRP, creatinine, potassium, and blood urea nitrogen levels were measured 48 hours later. The biomarkers' diagnostic value was determined using Receiver Operating Characteristic (ROC) curves.
Result(s): In terms of age and gender, there was no significant difference between the two groups (asphyxiated and non-asphyxiated). In contrast, there was a significant difference between the two groups in terms of the need for resuscitation, the need for oxygen support, the need for ventilation, the need for total parenteral nutrition, and the mode of delivery, with a P value of (<0.001, <0.001, <0.001, <0.001 and <0.018 respectively). The results of laboratory tests (uNGAL, potassium, blood urea nitrogen, and creatinine) were significantly higher in the asphyxiated group than in the nonasphyxiated group, with a P value of (<0.001, 0.03, <0.001 and <0.001 respectively). The nonasphyxiated group had significantly higher Apgar scores at one and five minutes, urine output, albumin, and base excess than the asphyxiated group, with a P value of (<0.001, <0.001, <0.001 and <0.012 respectively). In the asphyxiated group with AKI, uNGAL showed a significant positive correlation with serum creatinine (P<0.001) and a significant negative correlation with (pH, base excess, and Apgar score at (1 min-5 min) with P value (<0.001, <0.021, and <0.001 respectively).
Conclusion(s): As a result, early detection of uNGAL as a novel and non-invasive biomarker can predict the occurrence of AKI in neonates with perinatal asphyxia, allowing for early intervention and the avoidance of complications.

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646.

Recovery after critical illness and acute kidney injury.
Vijayan A., Abdel-Rahman E.M., Liu K.D., Goldstein S.L., Agarwal A., Okusa M.D., Cerda J.
Embase
Clinical Journal of the American Society of Nephrology. 16(10) (pp 1601-1609), 2021. Date of Publication: October 2021.
[Article]
AN: 2014115058
AKI is a common complication in hospitalized and critically ill patients. Its incidence has steadily increased over the past decade.Whether transient or prolonged, AKI is an independent risk factor associated with poor shortand long-term outcomes, even if patients do not require KRT.Most patients with early AKI improve with conservative management; however, some will require dialysis for a few days, a few weeks, or even months. Approximately 10%-30% of AKI survivors may still need dialysis after hospital discharge. These patients have a higher associated risk of death, rehospitalization, recurrent AKI, and CKD, and a lower quality of life. Survivors of critical illness may also suffer from cognitive dysfunction, muscle weakness, prolonged ventilator dependence, malnutrition, infections, chronic pain, and poor wound healing. Collaboration and communication among nephrologists, primary care physicians, rehabilitation providers, physical therapists, nutritionists, nurses, pharmacists, and other members of the health care team are essential to create a holistic and patient-centric care plan for overall recovery. Integration of the patient and family members in health care decisions, and ongoing education throughout the process, are vital to improve patient well-being. From the nephrologist standpoint, assessing and promoting recovery of kidney function, and providing appropriate short- and long-term follow-up, are crucial to prevent rehospitalizations and to reduce complications. Return to baseline functional status is the ultimate goal for most patients, and dialysis independence is an important part of that goal. In this review, we seek to highlight the varying aspects and stages of recovery from AKI complicating critical illness, and propose viable strategies to promote recovery of kidney function and dialysis independence.We also emphasize the need for ongoing research and multidisciplinary collaboration to improve outcomes in this vulnerable population.

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647.

IgA nephropathy associated with acute kidney injury in young patients: The clinicopathological features and risk factors analysis.
Huang G., Shen H., Fu H.
Embase
Hong Kong Journal of Paediatrics. 26(4) (pp 197-203), 2021. Date of Publication: 2021.
[Article]
AN: 2014179889
Objective: Little is known about the clinicopathological markers of IgA nephropathy (IgAN) to identify the acute kidney injury (AKI) among young patients. This work aimed to explore the possible risk factors of AKI.
Method(s): From 2012 to 2017, 110 patients aging from 2.5 to 16 with biopsy-proven primary IgAN were studied in our medical centre. The patients were divided into the AKI group (n=13) and the non-AKI group (n=97).
Result(s): The occurrence of AKI among young patients with IgAN was 11.82% (13/110). Most AKI patients showed more proteinuria higher proneness to hypertension and higher content of uric acid. The proportion of glomeruli with crescents to the normal glomeruli was higher in the AKI group. The multivariate logistic regression analysis suggested that the elevated levels of proteinuria and uric acid might be the risk factors of AKI.
Conclusion(s): AKI was common in young IgAN patients (age 2.5-16), who showed more severe clinicopathological symptoms than those without AKI. Some symptoms might be helpful in terms of determining the risk factors of AKI.

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648.

Prevention of acute kidney injury after cardiac surgery when fixing broken hearts, is breaking kidneys avoidable?.
Basu R.K., Gist K.M.
Embase
Clinical Journal of the American Society of Nephrology. 16(10) (pp 1459-1461), 2021. Date of Publication: October 2021.
[Article]

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649.

Urine biomarkers of kidney tubule health, injury, and inflammation are associated with progression of CKD in children.
Greenberg J.H., Abraham A.G., Xu Y., Schelling J.R., Feldman H.I., Sabbisetti V.S., Ix J.H., Jogalekar M.P., Coca S., Waikar S.S., Shlipak M.G., Warady B.A., Vasan R.S., Kimmel P.L., Bonventre J.V., Denburg M., Parikh C.R., Furth S.
Embase
Journal of the American Society of Nephrology. 32(10) (pp 2664-2677), 2021. Date of Publication: October 2021.
[Article]
AN: 2014934938
Background Novel urine biomarkers may improve identification of children at greater risk of rapid kidney function decline, and elucidate the pathophysiology of CKD progression. Methods We investigated the relationship between urine biomarkers of kidney tubular health (EGF and a-1 microglobulin), tubular injury (kidney injury molecule-1; KIM-1), and inflammation (monocyte chemoattractant protein-1 [MCP-1] and YKL-40) and CKD progression. The prospective CKD in Children Study enrolled children aged 6 months to 16 years with an eGFR of 30-90ml/min per 1.73m2. Urine biomarkers were assayed a median of 5 months [IQR: 4-7] after study enrollment. We indexed the biomarker to urine creatinine by dividing the urine biomarker concentration by the urine creatinine concentration to account for the concentration of the urine. The primary outcome was CKD progression (a composite of a 50% decline in eGFR or kidney failure) during the follow-up period. Results Overall, 252 of 665 children (38%) reached the composite outcome over a median follow-up of 6.5 years. After adjustment for covariates, children with urine EGF concentrations in the lowest quartile were at a seven-fold higher risk of CKD progression versus those with concentrations in the highest quartile (fully adjusted hazard ratio [aHR], 7.1; 95% confidence interval [95% CI], 3.9 to 20.0). Children with urine KIM-1, MCP-1, and a-1 microglobulin concentrations in the highest quartile were also at significantly higher risk of CKD progression versus those with biomarker concentrations in the lowest quartile. Addition of the five biomarkers to a clinical model increased the discrimination and reclassification for CKD progression. Conclusions After multivariable adjustment, a lower urine EGF concentration and higher urine KIM-1, MCP-1, and a-1 microglobulin concentrations were each associated with CKD progression in children.

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650.

Application of the "Yang-Monti principle" in children with iatrogenic ureteral injuries.
Patil N., Javali T.
Embase
Journal of Pediatric Urology. 17(4) (pp 543.e1-543.e7), 2021. Date of Publication: August 2021.
[Article]
AN: 2012120845
Background: Iatrogenic ureteral injuries in children are rare, due to its retroperitoneal position. The Yang -Monti ileal substitution serves as a good surgical option in such injuries associated with long segment defects of the ureter.

Objective(s): To review our experience using the Yang Monti principle of ileal ureter substitution in children with long segment ureteric defects and analyse its intermediate term outcomes. Study design: This was a prospective study, conducted from 2014 to 2019. All children with iatrogenic ureteral injuries with delayed presentations, undergoing the Yang Monti principle of ileal ureter substitution, were included (as illustrated in summary image). These injuries were divided into upper, mid, and distal ureteral injuries and were diagnosed based on a standardized protocol. At follow up, findings of the CT urogram, functional isotope renogram, and renal functions were the key points monitored. The demographic, clinical profile, operative, post-operative complications and follow up data were collated and analyzed.
Result(s): 22 children were diagnosed with iatrogenic ureteral injuries. Of these, 14 children with delayed presentations underwent the Yang Monti principle of ileal ureter substitution. The primary pathology was gangrenous appendicitis (9 cases), calculus cholecystitis (3 cases) and torsion ovary (2 cases). Laparoscopic procedures were the commonest approach for the injury (10). The average age was 11.5 years, with a male predominance. The right ureter was affected in 12 cases. The average time to detection was 7 days. All children underwent an ultrasound guided nephrostomy tube insertion at presentation and the mid ureter (9) was most affected. The mean length of ureteric injury was 3.75 cm. Intra operatively, one ileal segment (2), two ileal segments (11) and three ileal segments (1) were used according to the length of the ureteric defect. Complications were urinary tract infections (2), adhesions (3) and leak (2) which were conservatively managed with no redo surgeries. The median follow up period was 4 years. At follow up CT urogram and isotope diuretic renogram were normal, with preserved renal functions and no metabolic complications in all. Discussion & conclusion: In children associated with iatrogenic ureteral injuries of long lengths, the "Yang Monti ileal substitution" serves as a good and simple option with lesser complications permitting the preservation of the renal function at follow up.[Formula presented]

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651.

Diagnosis and incidence of acute kidney injury in a mixed paediatric intensive care unit: Retrospective analysis, 2005 and 2015.
Basu S.K., Fincher S.H., Wilkins B.H.
Embase
Anaesthesia and Intensive Care. 49(3) (pp 198-205), 2021. Date of Publication: May 2021. [Article]
AN: 2011638814
Acute kidney injury (AKI) is common in intensive care patients. While creatinine definitions for AKI have been validated, oliguria criteria are less well evaluated in children. Our study compared the validity and agreement of creatinine and oliguria criteria for diagnosing AKI in a large mixed medical, surgical and cardiac paediatric intensive care unit (PICU), and assessed the significance

of their independent and combined effects on predicted mortality relative to paediatric index of mortality (PIM risk of death) on admission. Creatinine measurements during PICU admissions in 2005 and 2015 were obtained from the electronic medical record. Urine output was reviewed to identify periods of oliguria of more than eight hours. We used the PIM3 model for predicted risk of death. AKI based on creatinine rise occurred in 23.6% of the total 2203 admissions (10.0%, 8.2% and 5.6% for mild, moderate and severe categories, respectively). Oliguria occurred in 11.4% (8.4%, 1.8% and 1.2% for mild, moderate and severe categories, respectively) and overlapped only partially with creatinine criteria. Mortality relative to predicted mortality increased with increasing creatinine and oliguria severity, but was lower than predicted where oliguria occurred without creatinine rise. AKI by creatinine criteria and/or oliguria are common in the PICU, but criteria overlap only partially. Increasing severity of creatinine rise and oliguria confers increasing risk-adjusted mortality, especially for admissions with low PIM3 risk of death. The mortality of patients with AKI defined by oliguria alone is low. Defining AKI by oliguria alone has less clinical utility and may not represent true AKI.

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652.

Comparative analysis between urinary calprotectin and serum creatinine for early detection of intrinsic acute kidney injury.
Vakili M., Fahimi D., Esfahani S.-T., Sharifzadeh M., Moghtaderi M.
Embase
Indian Journal of Nephrology. 31(4) (pp 353-357), 2021. Date of Publication: July-August 2021.
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AN: 635876807
Background: Acute kidney injury (AKI) is a common and important clinical condition that may lead to chronic kidney disease if it is not diagnosed and treated in its early stages. Urinary calprotectin is a valuable recognized biomarker that can be used to differentiate prerenal and intrinsic AKI. However, till date only a few reports on urine calprotectin measurement in early diagnosis of intrinsic AKI are available. In this study, we compared the sensitivity and specificity of urinary calprotectin with those of serum creatinine in detecting early intrinsic AKI.
Method(s): Over 6 months period (April to October 2018), 81 of 408 patients admitted to the pediatric intensive care unit met the criteria of this cross-sectional study. Their serum creatinine and urinary calprotectin were measured on the first and third day of admission using Jaffe and Elisa radioimmunoassay methods, respectively. The AKI was defined according to the pRIFLE criteria.
Result(s): Of the total 81 patients, 67 had the criteria of intrinsic AKI. Of these 62% were female and 38% were male. The mean age of the patients was 22 months. According to data analysis, the area under the curve of ROC of urinary calprotectin on day-1 to detect renal failure is 0.93

with the best cutoff point obtained at 530 ng/mL. The sensitivity, specificity, positive, and negative predictive values of urinary calprotectin levels in diagnosing AKI at this cutoff point are 92.5%, 92.8%, 98.4, and 72.2%, respectively. Besides, urinary calprotectin changes occur much earlier than the rising of serum creatinine.
Conclusion(s): Urinary level of calprotectin is a very sensitive biomarker for early diagnosis of intrinsic AKI in children and it can be used in intensive care units or anywhere critically ill children admitted to detect intrinsic AKI. Besides, this study shows that urine calprotectin may be a more sensitive and specific biomarker than serum creatinine in the early phases of intrinsic AKI.

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653.

Acute Kidney Injury, Fluid Overload, and Renal Replacement Therapy Differ by Underlying Diagnosis in Neonatal Extracorporeal Support and Impact Mortality Disparately.
Murphy H.J., Gien J., Sahay R., King E., Selewski D.T., Bridges B.C., Cooper D.S., Fleming G.M., Paden M.L., Zappitelli M., Gist K.M., Basu R.K., Jetton J.G., Askenazi D.
Embase
Blood Purification. 50(6) (pp 808-817), 2021. Date of Publication: 01 Sep 2021.
[Article]
AN: 634044035
Introduction: We aimed to characterize acute kidney injury (AKI), fluid overload (FO), and renal replacement therapy (RRT) utilization by diagnostic categories and examine associations between these complications and mortality by category.
Method(s): To test our hypotheses, we conducted a retrospective multicenter, cohort study including 446 neonates (categories: 209 with cardiac disease, 114 with congenital diaphragmatic hernia [CDH], 123 with respiratory disease) requiring extracorporeal membrane oxygenation (ECMO) between January 1, 2007, and December 31, 2011.
Result(s): AKI, FO, and RRT each varied by diagnostic category. AKI and RRT receipt were most common in those neonates with cardiac disease. Subjects with CDH had highest peak %FO (51% vs. 28% cardiac vs. 32% respiratory; $p < 0.01$). Hospital survival was 55% and varied by diagnostic category (45% cardiac vs. 48% CDH vs. 79% respiratory; $p < 0.001$). A significant interaction suggested risk of mortality differed by diagnostic category in the presence or absence of AKI. In its absence, diagnosis of CDH (vs. respiratory disease) (OR 3.04, 95% CL 1.14-8.11) independently predicted mortality. In all categories, peak %FO (OR 1.20, 95% CL 1.11-1.30) and RRT receipt (OR 2.12, 95% CL 1.20-3.73) were independently associated with mortality.

Discussion/Conclusions: Physiologically distinct ECMO diagnoses warrant individualized treatment strategies given variable incidence and effects of AKI, FO, and RRT by category on mortality.

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654.

Long-term kidney outcomes following dialysis-treated childhood acute kidney injury: A population-based cohort study.
Robinson C.H., Jeyakumar N., Luo B., Wald R., Garg A.X., Nash D.M., McArthur E., Greenberg J.H., Askenazi D., Mammen C., Thabane L., Goldstein S., Parekh R.S., Zappitelli M., Chanchlani R.
Embase
Journal of the American Society of Nephrology. 32(8) (pp 2005-2019), 2021. Date of Publication: August 2021.
[Article]
AN: 2013945283
Background AKI is common during pediatric hospitalizations and associated with adverse short-term outcomes. However, long-term outcomes among survivors of pediatric AKI who received dialysis remain uncertain. Methods To determine the long-term risk of kidney failure (defined as receipt of chronic dialysis or kidney transplant) or death over a 22-year period for pediatric survivors of dialysis-treated AKI, we used provincewide health administrative databases to perform a retrospective cohort study of all neonates and children (aged 0-18 years) hospitalized in Ontario, Canada, from April 1, 1996, to March 31, 2017, who survived a dialysis-treated AKI episode. Each AKI survivor was matched to four hospitalized pediatric comparators without dialysis-treated AKI, on the basis of age, sex, and admission year. We reported the incidence of each outcome and performed Cox proportional hazards regression analyses, adjusting for relevant covariates. Results We identified 1688 pediatric dialysis-treated AKI survivors (median age 5 years) and 6752 matched comparators. Among AKI survivors, 53.7% underwent mechanical ventilation and 33.6% had cardiac surgery. During a median 9.6-year follow-up, AKI survivors were at significantly increased risk of a composite outcome of kidney failure or death

versus comparators. Death occurred in 113 (6.7%) AKI survivors, 44 (2.6%) developed kidney failure, 174 (12.1%) developed hypertension, 213 (13.1%) developed CKD, and 237 (14.0%) had subsequent AKI. AKI survivors had significantly higher risks of developing CKD and hypertension versus comparators. Risks were greatest in the first year after discharge and gradually decreased over time. Conclusions Survivors of pediatric dialysis-treated AKI are at higher long-term risks of kidney failure, death, CKD, and hypertension, compared with a matched hospitalized cohort.

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Year of Publication
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655.

Sirtuins play critical and diverse roles in acute kidney injury.
Peasley K., Chiba T., Goetzman E., Sims-Lucas S.
Embase
Pediatric Nephrology. 36(11) (pp 3539-3546), 2021. Date of Publication: November 2021.
[Review]
AN: 2010129211
Acute kidney injury (AKI) is an extremely common medical affliction affecting both adult and pediatric patients resulting from hypoxic, nephrotoxic, and septic insults affecting approximately 20% of all hospital patients and up to 50% of patients in the intensive care unit. There are currently no therapeutics for patients who suffer AKI. Much recent work has focused on designing and implementing therapeutics for AKI. This review focuses on a family of enzymes known as sirtuins that play critical roles in regulating many cellular and biological functions. There are 7 mammalian sirtuins (SIRT1-7) that play roles in regulating the acylation of a wide variety of

pathways. Furthermore, all but one of the mammalian sirtuins have been shown to play critical roles in mediating AKI based on preclinical studies. These diverse enzymes show exciting potential for therapeutic manipulation. This review will focus on the specific roles of each of the investigated sirtuins and the potential for manipulation of the various sirtuins and their effector pathways in mediating kidney injury.

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Publisher
Springer Science and Business Media Deutschland GmbH
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656.

Are tubular injury markers ngal and kim-1 useful in pediatric neurogenic bladder?.
Baginska J., Korzeniecka-Kozerska A.
Embase
Journal of Clinical Medicine. 10(11) (no pagination), 2021. Article Number: 2353. Date of Publication: 01 Jun 2021.
[Article]
AN: 2007333263
The lack of early biomarkers of renal damage in children with neurogenic bladder (NB) prompts us to investigate the role of promising proteins: neutrophil gelatinase-associated lipocalin (NGAL) and kidney injury molecule-1 (KIM-1). This prospective analysis was conducted on 58 children with NB and 25 healthy children. We assessed urinary levels of NGAL and KIM-1 in both groups. Age, sex, anthropometric measurements, activity assessment, renal function, and urody-namics parameters were analyzed. The differences between the median uNGAL and uKIM-1 in the NB group compared to control were recorded. However, only uNGAL levels were statistically significantly higher. Statistically significant correlation was found between gender, recurrent urinary tract infections, bladder trabeculation, its compliance, activity assessment, and uNGAL. To conclude, elevated levels of uNGAL may be considered a biomarker of tubular injury in children with NB due to MMC in contrast to uKIM-1.

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657.

Outcome of delayed perineal anastomotic urethroplasty in children with post-traumatic urethral stricture in a tertiary center, addis ababa, ethiopia.
Setato T., Mammo T.N., Wondemagegnehu B.
Embase
Research and Reports in Urology. 13 (pp 631-637), 2021. Date of Publication: 2021.
[Article]
AN: 2013622727
Background: Urethral stricture is a challenging urologic problem resulting from congenital, idiopathic, traumatic, iatrogenic,and inflammatory causes. Road traffic accidents and falling-down accidents are the most common traumatic causes. Although most management principles are extrapolated from adults, stricture in children has a unique anatomic challenge. The outcome of urethroplasty is reported to be good in nearly all patients according to different studies. Since there is no study from Ethiopia on this subject, our work will show our experience with the problem.
Patients and Methods: We conducted a retrospective study of children who underwent delayed urethroplasty for post-traumatic urethral stricture from November 2011 to November 2019. A retrospective study was conducted on boys for whom delayed perineal anastomotic urethroplasty was performed after they sustained trauma. Sociodemographic data, pre-operative presentation of patients, and intraoperative conditions were assessed. The need of any further procedure to micturate, stream of urine and urethral caliber on post-operative cystourethrography were parameters used to measure the outcome. Data were entered into SPSS version 24 and analyzed, taking a p-value of 0.05 as statistically significant.
Result(s): Nineteen boys had delayed perineal anastomotic urethroplasty in the study period, with a mean age at the time of surgery being 9.8 years. Out of these 19 patients, nine had been involved in road traffic accidents, eight had fallen from a height, and two had bullet injuries. The membranous urethra was the most commonly affected part and, in seven of them, associated pelvic bone fracture was documented. The affected urethral segment length ranged from 1-3 cm, with a mean of 1.77 cm. For all of them delayed perineal urethroplasty was performed after a minimum of 3 months. Successful outcome after primary surgery and re-do surgery was 58% and 82%, respectively.
Conclusion(s): Urethral stricture is an uncommon condition in children but is one of the challenging conditions a pediatric urologist faces. Our study showed that perineal urethro-plasty can be done safely in most children with urethral stricture, but unless adequate pre-operative evaluation and strict surgical principles are followed the outcome will be poor.

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658.

Severe acute kidney injury and mortality in extremely low gestational age neonates.
Hingorani S., Schmicker R.H., Brophy P.D., Heagerty P.J., Juul S.E., Goldstein S.L., Askenazi D.
Embase
Clinical Journal of the American Society of Nephrology. 16(6) (pp 862-869), 2021. Date of Publication: June 2021.
[Article]
AN: 2007627950
Background and objectives AKI is associated with poor short- and long-term outcomes. Questions remain about the frequency and timing of AKI, and whether AKI is a cause of death in extremely low gestational age neonates. Design, setting, participants, & measurements The Recombinant Erythropoietin for Protection of Infant Kidney Disease Study examines the kidney outcomes of extremely low gestational age neonates enrolled in the Preterm Epo Neuroprotection study, a randomized, placebo-controlled trial of recombinant human erythropoietin.We included 900 of 941 patients enrolled in Preterm Epo Neuroprotection. Baseline characteristics were compared by primary exposure (severe AKI versus none/stage 1 AKI) using unadjusted logistic regression models. Cox regression models estimated the relationship between severe AKI and death after adjustment for potential confounders. Time-dependent AKI was modeled as a binary outcome and a categorical variable by stage of AKI. We fit Coxmodels using time-dependent AKI status lagged by,7 days before death. Landmark analyses examined the relationship of death with development of severe AKI. Results Severe AKI occurred in 168 of 900 (19%, 95% confidence interval, 17% to 20%) neonates, and stage 3 AKI occurred in 60 (7%, 95% confidence interval, 5% to 8%). Stage 3 AKI occurring 7 days before death (hazard ratio, 3.88; 95% confidence interval, 1.26 to 11.96), intraventricular hemorrhage (hazard ratio, 2.01; 95% confidence interval, 1.01 to 3.99) and sepsis (hazard ratio, 2.85; 95% confidence interval, 1.12 to 7.22) were all independently associated with death. Severe AKI occurring 7 days before death (hazard ratio, 2.21; 95% confidence interval, 0.92 to 5.26) was associated with death but not statistically significant. In a landmark analysis, after adjusting for potential confounders, late (after day 14 and before day 28) severe AKI was strongly associated with higher hazard of death (hazard ratio, 4.57; 95% confidence interval, 1.82 to 11.5). Conclusions Severe AKI occurs frequently in extremely low gestational age neonates. Stage 3 AKI is associated with mortality, and this association is present 7 days before death.

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659.

For Whom the Bell Tolls: Acute Kidney Injury and Electronic Alerts for the Pediatric Nephrologist.
Nguyen E.D., Menon S.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 628096. Date of Publication: 12 Apr 2021.
[Review]
AN: 634857969
With the advent of the electronic medical record, automated alerts have allowed for improved recognition of patients with acute kidney injury (AKI). Pediatric patients have the opportunity to benefit from such alerts, as those with a diagnosis of AKI are at risk of developing long-term consequences including reduced renal function and hypertension. Despite extensive studies on the implementation of electronic alerts, their overall impact on clinical outcomes have been unclear. Understanding the results of these studies have helped define best practices in developing electronic alerts with the aim of improving their impact on patient care. As electronic alerts for AKI are applied to pediatric patients, identifying their strengths and limitations will allow for continued improvement in its use and efficacy.

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660.

Current concepts of pediatric acute kidney injury-are we ready to translate them into everyday practice?.
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Embase
Journal of Clinical Medicine. 10(14) (no pagination), 2021. Article Number: 3113. Date of Publication: 02 Jul 2021.
[Review]
AN: 2007814891
Pediatric acute kidney injury (AKI) is a major cause of morbidity and mortality in children undergoing interventional procedures. The review summarizes current classifications of AKI and acute kidney disease (AKD), as well as systematizes the knowledge on pathophysiology of kidney injury, with a special focus on renal functional reserve and tubuloglomerular feedback. The aim of this review is also to show the state-of-the-art in methods assessing risk and prognosis by discussing the potential role of risk stratification strategies, taking into account both glomerular function and clinical settings conditioned by fluid overload, urine output, or drug nephrotoxicity. The last task is to suggest careful assessment of eGFR as a surrogate marker of renal functional

reserve and implementation of point-of-care testing, available in the case of biomarkers like NGAL and [IGFBP-7] x [TIMP-2] product, into everyday practice in patients at risk of AKI due to planned invasive procedures or treatment.

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661.

Evaluating renal lesions using deep-learning based extension of dual-energy FoV in dual-source CT-A retrospective pilot study.
Schwartz F.R., Clark D.P., Ding Y., Ramirez-Giraldo J.C., Badea C.T., Marin D.
Embase
European Journal of Radiology. 139 (no pagination), 2021. Article Number: 109734. Date of Publication: June 2021.
[Article]
AN: 2011875546
Purpose: Dual-source (DS) CT, dual-energy (DE) field of view (FoV) is limited to the size of the smaller detector array. The purpose was to establish a deep learning-based approach to DE extrapolation by estimating missing image data using data from both tubes to evaluate renal lesions.
Method(s): A DE extrapolation deep-learning (DEEDL) algorithm had been trained on DECT data of 50 patients using a DSCT with DE-FoV = 33 cm (Somatom Flash). Data from 128 patients with known renal lesions falling within DE-FoV was retrospectively collected (100/140 kVp; reference dataset 1). A smaller DE-FoV = 20 cm was simulated excluding the renal lesion of interest (dataset 2) and the DEEDL was applied to this dataset. Output from the DEEDL algorithm was evaluated using ReconCT v14.1 and Syngo.via. Mean attenuation values in lesions on mixed images (HU) were compared calculating the root-mean-squared-error (RMSE) between the datasets using MATLAB R2019a.
Result(s): The DEEDL algorithm performed well reproducing the image data of the kidney lesions (Bosniak 1 and 2: 125, Bosniak 2F: 6, Bosniak 3: 1 and Bosniak 4/(partially) solid: 32) with RSME values of 10.59 HU, 15.7 HU for attenuation, virtual non-contrast, respectively. The measurements performed in dataset 1 and 2 showed strong correlation with linear regression (r2: attenuation = 0.89, VNC = 0.63, iodine = 0.75), lesions were classified as enhancing with an accuracy of 0.91.
Conclusion(s): This DEEDL algorithm can be used to reconstruct a full dual-energy FoV from restricted data, enabling reliable HU value measurements in areas not covered by the smaller FoV and evaluation of renal lesions.

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662.

Clinicopathological features and outcomes of SLE patients with renal injury characterised by thrombotic microangiopathy.
Chen W., Liang S., Zuo K., Yang L., Zeng C., Hu W.
Embase
Clinical Rheumatology. 40(7) (pp 2735-2743), 2021. Date of Publication: July 2021.
[Article]
AN: 2010374123
Objectives: Non-immune complex (IC)-mediated renal thrombotic microangiopathy (TMA) has been reported in patients with systemic lupus erythematosus (SLE), but most studies included patients with both renal TMA and IC-mediated lupus nephritis (LN). In this study, the clinicopathological features and outcomes of renal injury characterised by only renal TMA were retrospectively analyzed.
Method(s): Patients with glomerular and/or vascular TMA in the absence of subendothelial or epithelial immune deposits were screened from 2,332 biopsied of SLE patients. The TMA lesions were divided into glomerular, vascular or both. Acute tubular-interstitial injury was semi-quantitatively analyzed. The podocyte foot process effacement (FPE) was measured by electronic microscopy.
Result(s): Two hundred fifty-seven (11.0%) renal biopsies revealed TMA, among which 237 biopsies showed TMA coexisting with LN, and 20 (0.9%) biopsies had only renal TMA without or with only mesangial immune deposits. All patients manifested with acute kidney injury and haematological disorders. Among them, 11 (55%) required renal replacement therapy, 12 (60%) had nephrotic syndrome and 13 (65.0%) showed microvascular haemolytic anaemia with thrombocytopenia. Seventeen (85%) biopsies revealed both glomerular TMA and vascular TMA, two had only glomerular TMA and one had vascular TMA. Eight (40%) had no glomerular immune deposits and 12 (60%) showed only mesangial immune deposits. The acute tubulointerstitial injury in patients requiring dialysis was more severe than those not needing dialysis ((43.6 +/- 24.9) % vs. (21.7 +/- 20.1) %, p = 0.047). FPE of podocytes was positively correlated with proteinuria (r2 = 0.347, p = 0.006). All patients received high-dose methylprednisolone pulse therapy. Four patients received plasma exchange. The renal function of 11 patients requiring dialysis initially recovered after 16.0 (interquartile range [IQR] 9.0, 30.0) days of treatment. During the follow-up of 58.0 (IQR 36.0, 92.3) months, remission was achieved in 19 (95%) patients; only one patient had no response. No patient died or progressed to end-stage renal disease; six patients (30%) relapsed.

Conclusion(s): Renal TMA, usually accompanying severe renal injury, was not uncommon in SLE patients with renal disease and should be distinguished from immune complex-mediated severe classes of LN. Early intensive immunosuppressive treatment may be associated with a good long-term renal outcome.Key Points* Most previous reports of renal TMA in SLE patients were associated with severe types of immune complex-mediated lupus nephritis;* Renal TMA with glomerular pauci-immune or only mesangial immune deposits was found in SLE patients and clinically presented with severe acute renal injury but good renal outcome;* Renal TMA should be considered as a unique type of SLE-associated renal injury.

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Publisher
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663.

Silent neurological lesions detected by magnetic resonance imaging: Relationship to hyperparathyroidism among end-stage renal disease young patients on haemodialysis.
Zaki H.M., Sliem H.A., Ibrahim H.R., Yassine I.A.
Embase
International Journal of Clinical Practice. 75(10) (no pagination), 2021. Article Number: e14569. Date of Publication: October 2021.
[Article]
AN: 2013052923
Background: End-stage renal disease (ESRD) patients on haemodialysis (HD) suffer from several peripheral and central neurological complications. They are at high risk for developing silent neurological lesions (SNL) that may be detected accidentally by magnetic resonance imaging (MRI). Many factors are implicated in the development of neurological deficits in ESRD patients on HD. Aim of the Work: Evaluation of SNL in young ESRD patients by using MRI and assessing its correlation with hyperparathyroidism.
Method(s): The study involved 48 young ESRD patients (mean age of 19.6 +/- 6 years) with HD and do not have any apparent abnormalities in the neurological examination. Laboratory investigations and conventional brain MRI were done on all.
Result(s): 79.2% have SBI and 45.8% have white matter lesions. Regression analysis revealed that calcium level and duration of dialysis were independent predictor factors for the presence of silent brain MRI lesions (P =.034 & 0.045 respectively). ROC curve showed that parathyroid hormone (PTH) level >585 pg/mL, duration of dialysis >2 years, and calcium level >7.5 mg/dL predicted the presence of SNL.
Conclusion(s): The duration of HD and hyperparathyroidism (HPT) were independent predictors for the presence of SNL. MRI brain is considered as a mandatory affordable tool for HD patients

>2 years and has HPT for early detection of SNL to help early intervention and avoid neurological complications and disabilities.

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664.

Acute Kidney Injury in Pediatric Diabetic Kidney Disease.
Piani F., Reinicke T., Borghi C., Tommerdahl K.L., Cara-Fuentes G., Johnson R.J., Bjornstad P.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 668033. Date of Publication: 15 Jun 2021.
[Review]
AN: 635392595
Diabetic kidney disease (DKD) is a common complication of type 1 and 2 diabetes and often presents during adolescence and young adulthood. Given the growing incidence of both type 1 and type 2 diabetes in children and adolescents, DKD represents a significant public health problem. Acute kidney injury (AKI) in youth with diabetes is strongly associated with risk of DKD development. This review will summarize the epidemiology and pathophysiology of AKI in children with diabetes, the relationship between AKI and DKD, and the potential therapeutic interventions. Finally, we will appraise the impact of the recent COVID-19 infection pandemic on AKI in children with diabetes.

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Publisher
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665.

Risk factors of postoperative acute kidney injury in patients with complex congenital heart disease and significance of early detection of serum transcription factor Nkx2.5.
Chen H., Ke Q., Weng G., Bao J., Huang J., Yan L., Zheng F.
Embase
American Journal of Translational Research. 13(6) (pp 6468-6477), 2021. Date of Publication: 2021.
[Article]
AN: 2013389129
Objective: This study was designed to investigate the risk factors of postoperative acute kidney injury (AKI) in patients with complex congenital heart disease (CHD) and the significance of early detection of serum transcription factor Nkx2.5.
Method(s): A total of 121 CHD patients admitted to the Shengli Clinical Medical College of Fujian Medical University were selected as study participants, among whom 69 patients with AKI after cardiac surgery were set as the research group (RG), and the rest of the 52 patients without AKI were set as the control group (CG). Cardiopulmonary bypass (CPB) duration, aortic occlusion time, postoperative creatinine (Cr) level and mechanical ventilation (MV) time were compared between the two groups. The expression and clinical significance of Nkx2.5 in the two groups were detected. Intensive Care Unit (ICU) residence time and total hospital stay were compared, and the risk factors were analyzed.
Result(s): The RG presented remarkably longer CPB duration and aortic occlusion time, evidently higher postoperative Cr level and longer MV time, and observably lower Nkx2.5 level in comparison to the CG (all P<0.05). According to the analysis of receiver operating characteristic (ROC) curves, Nkx2.5 displayed a favorable diagnostic value in predicting the occurrence of CHD complicated with AKI. ICU residence time and total hospital stay were longer in the RG than in the CG (P<0.05). CPB time and aortic occlusion time were independent risk factors for AKI in CHD patients, while surgical methods and Nkx2.5 detection were independent protective factors (P<0.05).
Conclusion(s): CPB time, aortic occlusion time and surgical methods, as well as Nkx2.5 detection are independent factors affecting AKI in patients with CHD. Early detection of serum transcription factor Nkx2.5 is of particular importance for clinical diagnosis of CHD patients complicated with AKI.

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Publisher
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666.

Risk factors for subclinical renal damage and its progression: Hanzhong Adolescent Hypertension Study.
Wang Y., Du M.-F., Gao W.-H., Fu B.-W., Yan Y., Yuan Y., Chu C., Chen C., Liao Y.-Y., Gao K., Wang K.-K., Li M., Sun Y., Hu J.-W., Chen X., Ma Q., Wang D., Zhang X.-Y., Li C.-H., Zhou H.-W., Lu W.-H., Yuan Z.-Y., Chang J., Mu J.-J.
Embase
European Journal of Clinical Nutrition. 75(3) (pp 531-538), 2021. Date of Publication: March 2021.
[Article]
AN: 2006815351
Background/Objectives: Chronic kidney disease (CKD) is a global public health problem, including in China. The aim of this study was to identify the risk factors for the development and progression of subclinical renal disease (SRD) in a Chinese population. We also examined whether the impact of the risk factors on SRD changed over time. Subjects/Methods: To identify the predictors of SRD, we performed a cross-sectional study of the 2432 subjects in our Hanzhong Adolescent Hypertension Cohort. A subgroup of 202 subjects was further analyzed over a 12-year period from 2005 to 2017 to determine the risk factors for the development and progression of SRD.
Result(s): In cross-sectional analysis, elevated blood pressure, male gender, diabetes, body mass index, and triglyceride were independently associated with a higher risk of SRD. In longitudinal analysis, an increase in total cholesterol over a 4-year period and an increase in serum triglyceride over a 12-year period were independently associated with progression of albuminuria. Finally, increases in both total cholesterol and serum uric acid over a 4-year follow-up showed an independent association with a modest reduction in estimated glomerular filtration rate (eGFR).
Conclusion(s): In this study of a Chinese cohort, we show several metabolic abnormalities as independent risk factors for subclinical renal disease in a Chinese cohort. In addition, we demonstrate that the effects of total cholesterol, triglycerides and uric acid on the development and progression of albuminuria or the decline in eGFR vary at different points of follow-up. These findings highlight the importance of early detection of metabolic abnormalities to prevent SRD.

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Clinical Trial Number
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2021

667.

Evaluation of Urinary Kidney Injury Molecule-1 (kim-1) as prognostic Biomarker in Children with Type-1 Diabetic nephropathy.
Hammoud M.S., Baban R.S., Ali S.H.
Embase
Biochemical and Cellular Archives. 21(1) (pp 715-719), 2021. Date of Publication: April 2021.
[Article]
AN: 2011712478
Diabetic nephropathy (DN) Is one complications of micro vascular which represent the major reason of end-stage kidney disease in diabetes mellitus patients. Kidney injury molecule-1(KIM-1) is a form I Trans membrane glycoprotein, after ischemia/injury removing of debris is necessary, the removal debris mechanism is dependent on the KIM-1 function. By using an ELISA kit for level of KIM-1 in urine. The level of KIM-1was measured in eighty Iraqi subjects: forty diabetic children with DN and forty diabetic children without DN. Renal function test recorded highly significant higher level in diabetic children with DN than diabetic children without DN: urea 40.92+/-4.78 vs 33.62+/-3.79, creatinine 1.04+/-0.21 vs 0.72+/-0.14 and ACR 52.69+/-39.48 vs 18.28+/-4.32), while a significant eGFR decrease (P<0.001) in diabetic children with DN when compared to diabetic children without DN was noticed: 84.35+/-12.28 vs 109.22+/-8.81. The mean levels of urinary KIM-1were significantly higher in diabetic patients with DN(2.91+/-0.94 ng/ml) than diabetic patients without DN (1.71+/- 0.18 ng/ml). P- value <0.001. Urine KIM-1 levels demonstrated a significant positive association with each of urea (p=0.006), creatinine (p= 0.04) and duration of diabetes mellitus (p=0.002) in type 1 DN. Higher urine KIM-1 levels in Type 1 diabetic children particularly those with nephropathy and its positive correlation with urea and creatinine might show role of KIM-1 as diagnosis and prognostic biomarker for diabetic nephropathy in children with type 1 diabetes.

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668.

Dexmedetomidine attenuates acute kidney injury in children undergoing congenital heart surgery with cardiopulmonary bypass by inhibiting the TLR3/NF-kappaB signaling pathway.
Xie Y., Jiang W., Cao J., Xie H.
Embase
American Journal of Translational Research. 13(4) (pp 2763-2773), 2021. Date of Publication: 2021.
[Article]
AN: 2011969705
Objective: To investigate the effect of dexmedetomidine (DMED) on acute kidney injury in children undergoing congenital heart surgery (CHS) with cardiopulmonary bypass (CPB).
Method(s): The children undergoing CHS with CPB were randomized to the control and the DMED groups. The children in the DMED group were injected with DMED (1 mug/kg) followed by DMED infusion (0.5 mug/kg/h) until 12 h after operation; the controls received normal saline. Markers were detected before operation (T0), 30 min after anesthesia induction (T1), and at 24 h, 48 h, and 72 h after operation (T2, T3, T4).
Result(s): The heart rate and mean arterial pressure in the DMED group decreased at T1 and differed from controls at T1-T3 (all P<0.05). No intergroup differences were observed in the central venous pressure and caspase-3 level (all P>0.05). The DMED group had higher central venous pressure at T3 than at T0 (P<0.05). At T2-T4, the DMED group had lower percentages of TLR3+cells than the controls (all P<0.05). In the DMED group, the percentagesof TLR3+cells decreased with time; whereas in the control group, the percentage increased with time (all P<0.05). Compared with the controls, the DMED group had lower levels of NF-kappaB and TLR3 at T2-T4, lower levels of sCr, IL-1beta, and TNF-a at T3-T4, and lower incidence of AKI at T3 (all P=0.01).
Conclusion(s): DMED can reduce the risk of AKI in children undergoing CHS with CPB, which may be because DMED can inhibit TLR3/NF-kappaB signaling and its downstream inflammatory mediators.

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Publisher
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669.

A Precision Medicine Approach to Biomarker Utilization in Pediatric Sepsis-Associated Acute Kidney Injury.
Odum J.D., Wong H.R., Stanski N.L.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 632248. Date of Publication: 14 Apr 2021.
[Review]
AN: 634866520

Sepsis is a leading cause of morbidity and mortality in critically ill children, and acute kidney injury (AKI) is a frequent complication that confers an increased risk for poor outcomes. Despite the documented consequences of sepsis-associated AKI (SA-AKI), no effective disease-modifying therapies have been identified to date. As such, the only treatment options for these patients remain prevention and supportive care, both of which rely on the ability to promptly and accurately identify at risk and affected individuals. To achieve these goals, a variety of biomarkers have been investigated to help augment our currently limited predictive and diagnostic strategies for SA-AKI, however, these have had variable success in pediatric sepsis. In this mini-review, we will briefly outline the current use of biomarkers for SA-AKI, and propose a new framework for biomarker discovery and utilization that considers the individual patient's sepsis inflammatory response. Now recognized to be a key driver in the complex pathophysiology of SA-AKI, understanding the dysregulated host immune response to sepsis is a growing area of research that can and should be leveraged to improve the prediction and diagnosis of SA-AKI, while also potentially identifying novel therapeutic targets. Reframing SA-AKI in this manner - as a direct consequence of the individual patient's sepsis inflammatory response - will facilitate a precision medicine approach to its management, something that is required to move the care of this consequential disorder forward.

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Clinical Trial Number
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670.

Non-selective beta-blockers decrease infection, acute kidney injury episodes, and ameliorate sarcopenic changes in patients with cirrhosis: A propensity-score matching tertiary-center cohort study.
Li T.-H., Liu C.-W., Huang C.-C., Tsai Y.-L., Huang S.-F., Yang Y.-Y., Tsai C.-Y., Hou M.-C., Lin H.-C.
Embase
Journal of Clinical Medicine. 10(11) (no pagination), 2021. Article Number: 2244. Date of Publication: 01 Jun 2021.
[Article]
AN: 2007251628
Background: Cirrhotic complications resulting from portal hypertension can be consider-ably reduced by non-selective beta-blockers (NSBBs); however, scarce studies have investigated therapeutic agents for other complications. We aimed to investigate the effects of NSBBs on common cirrhotic complications of infection, acute kidney injury (AKI), chronic renal function declina-tion, and sarcopenic changes.
Method(s): Medical records of hospitalization for cirrhosis with at least a 4-year follow-up were analyzed and selected using propensity-score matching (PSM). Generalized estimating equation (GEE) was applied to assess the association of NSBBs with infection requiring hospitalization and AKI. Chronic renal function declination was evaluated by slope of regression lines derived from

reciprocal of the serum creatinine level. The covariates of CT-measured skeletal muscle index (SMI) alterations were analyzed by generalized linear mixed model.
Result(s): Among the 4946 reviewed individuals, 166 (83 NSBB group, 83 non-NSBB group) were eligible. Using GEE, Charlson comorbidity index, Child-Pugh score and non-NSBB were risk factors for infection; non- NSBB group revealed a robust trend toward AKI, showed no significant difference with chronic renal function declination of NSBB group, and was negatively associated with SMI alteration. Con-clusion: Chronic NSBB use lowered the episodes of infection requiring hospitalization and AKIs, whereas non-NSBB was associated with sarcopenic changes.

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671.

Incidence and risk factors of acute kidney injury in neonatal intensive care unit.
Farhadi R., Gholamrezaei M., Mohammadjafari H., Alipour A.
Embase
Iranian Journal of Neonatology. 12(2) (pp 33-39), 2021. Date of Publication: June 2021.
[Article]
AN: 2012179626
Background: Acute kidney injury (AKI) is a clinical syndrome in which the sudden loss of kidney function leads to kidney failure to maintain fluid hemostasis and electrolytes. Considering the increased hospitalization of patients in the neonatal intensive care unit (NICU), the prevalence of AKI due to common diseases, surgical procedures, various drugs, as well as the importance of long-term complications, this study aimed to determine the prevalence and related risk factors for the development of AKI in neonates admitted to NICU.

Method(s): This descriptive cross-sectional study was conducted on 173 newborns admitted to Boo-Ali-Sina Hospital in Sari, Iran, during 2016-2018. Patients' demographic characteristics, clinical findings, laboratory results, clinical outcomes, and risk-related disease factors were recorded. Data were analyzed using SPSS software (version 16).
Result(s): The prevalence rate of AKI in infants admitted to Neonatal intensive care unit was 26.6%, consisting of 87% (n=40) prerenal, 8.7% (n=4) renal, and 2.2% (n=1) postrenal AKI cases. Furthermore, 6.4%, 9.2%, and 11% of the patients had grade 1, grade 2, and grade 3 AKI, based on RIFLE criteria. It should be mentioned that RDS, TTN, and seizure were the most common causes of hospitalization in the NICU. The most common laboratory disorders were acidosis, hyponatremia, anemia, and leukocytosis. Furthermore, anemia (89.1% vs. 19.7 %), hypernatremia (8.7% vs. 2.4%), and hyperkalemia (26% vs. 8%) were significantly greater in AKI than in the non-AKI group.
Conclusion(s): AKI was common in NICU, and accounted for about one-fourth of the admitted patients. The most common type of AKI was prerenal. The patients were equally distributed in all three stages. Eventually, anemia, hypernatremia, and hyperkalemia can be considered risk factors for AKI.

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Publisher
Mashhad University of Medical Sciences
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672.

Association of Urine Platinum With Acute Kidney Injury in Children Treated With Cisplatin for Cancer.
Lebel A., Chui H., McMahon K.R., Lim Y.J., Macri J., Wang S., Devarajan P., Blydt-Hansen T.D., Zappitelli M., Urquhart B.L.
Embase
Journal of Clinical Pharmacology. 61(7) (pp 871-880), 2021. Date of Publication: July 2021.
[Article]
AN: 2011174517
Cisplatin is a chemotherapeutic agent highly excreted in urine and known to cause acute kidney injury (AKI). As AKI diagnosis by serum creatinine (SCr) is usually delayed, endeavors for finding early AKI biomarkers continue. This study aims to determine if urine platinum (UP) concentration 24 hours after cisplatin infusion is associated with AKI, and to evaluate the association between urine platinum and tubular damage biomarkers: neutrophil gelatinase-associated lipocalin (NGAL) and kidney injury molecule-1 (KIM-1). Children treated with cisplatin in 12 Canadian centers (April 2013 to December 2017) were included. Urine from the morning after the first cisplatin infusion of the first or second cisplatin cycle was measured for urine platinum, NGAL, and KIM-1. SCr and serum electrolytes were used to detect AKI by either SCr elevation or urinary electrolyte wasting (potassium, magnesium, phosphate). The associations of urine platinum with AKI, NGAL, and KIM-1 were assessed. A total of 115 participants (54% boys, median age, 8.5 years; interquartile

range, 4.0-13.4) were included, of which 29 (25%) and 105 (91%) developed AKI defined by SCr and electrolyte criteria, respectively. Higher urine platinum was associated with higher cisplatin dose (Spearman rho, 0.21) and with younger age (Spearman rho, -0.33). Urine platinum was not associated with postinfusion AKIor KIM-1, but was weakly associated with NGAL, particularly in participants without SCr AKI (Pearson's r, 0.22). Urine platinum may be a marker of mild tubular injury but is not likely to be a useful biomarker of clinically evident AKI.

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673.

Acute peritoneal dialysis is an efficient and reliable alternative therapy in preterm neonates with acute kidney injury.
Xing Y., Sheng K., Liu H., Wu S., Wei H., Li R., Wang J., Li Z., Tong X.
Embase
Translational Pediatrics. 10(4) (pp 893-899), 2021. Date of Publication: April 2021.
[Article]
AN: 2012054659
Background: This study aimed to assess the underlying causes and outcomes of acute peritoneal dialysis (APD) and the complications of PD procedure in preterm neonates with acute kidney injury (AKI).
Method(s): A retrospective study of 21 preterm neonates who underwent APD in a neonatal intensive care unit (NICU) in Peking University Third Hospital between 2016 and 2019 was conducted. The demographic, clinical, biochemistry, and PD procedure-related information of the neonates was analyzed.
Result(s): Of the 21 preterm neonates, the average gestational age (GA) was 28.9+/-2.6 weeks, and the average birth weight was 1,226.7+/-495.3 g, and included 5 (23.8%) low-birth-weight infants (LBWIs), 7 (33.3%) very LBWIs (VLBWIs), and 9 (42.9%) extremely LBWIs (ELBWIs). The major underlying causes for APD were asphyxia (66.7%, n=14) and twin-twin transfusion syndrome (47.6%, n=10). PD procedure-related complications mainly involved inadequate drainage (n=5, 23.8%) and drainage infections (n=2, 9.5%). The median duration of PD was 3

days (range, 1 hour-20 days). Compared to pre-PD, blood urea nitrogen (BUN) and serum K+ levels were significantly decreased post-PD (P<0.05). After PD, edema disappeared in 77.8% (n=14/18) of patients, and 42.9% patients (n=9/21) gained normal urine output. Although 8 of the 21 (38.1%) patients died and 6 (29.6%) abandoned therapy, 7 (33.3%) patients including 1 VLBWI and 3 ELBWI survived.
Conclusion(s): APD is an efficient and reliable alternative route of renal replacement therapy particularly for reducing BUN and K+ levels in preterm neonates with AKI. APD is practicable in critically ill preterm neonates, even in LBWIs and ELBWIs.

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674.

Association of pediatric cardiac surgery-associated acute kidney injury with post-discharge healthcare utilization, mortality and kidney outcomes.
Nunes S., Hessey E., Dorais M., Perreault S., Jouvet P., Phan V., Lacroix J., Lafrance J.-P., Samuel S., Zappitelli M.
Embase
Pediatric Nephrology. 36(9) (pp 2865-2874), 2021. Date of Publication: September 2021.
[Article]
AN: 2010960095
Background: Acute kidney Injury (AKI) in children undergoing cardiac surgery (CS) is strongly associated with hospital morbidity. Post-discharge CS AKI outcomes are less clear. We evaluated associations between AKI and post-discharge (a) healthcare utilization, (b) chronic kidney disease (CKD) or hypertension and (c) mortality.
Method(s): This is a retrospective two-centre cohort study of children surviving to hospital discharge after CS. Primary exposures were post-operative >=Stage 1 AKI and >=Stage 2 AKI defined by Kidney Disease Impoving Global Outcomes. Association of AKI with time to outcomes was determined using multivariable Cox-Proportional Hazards analysis.
Result(s): Of 350 participants included (age 3.1 (4.5) years), 180 [51.4%] developed AKI and 60 [17.1%] developed >=Stage 2 AKI. Twenty-eight (9%) participants developed CKD or hypertension (composite outcome), and 17 (5%) died within 5 years of discharge. Post-operative >=Stage 1 and >=Stage 2 AKI were not associated with post-discharge hospitalizations, emergency room (ER) visits, physician visits or CKD or hypertension in adjusted analyses. A trend was observed between >=Stage 2 AKI and mortality but was not statistically significant. In unadjusted stratified analyses, AKI was associated with post-discharge hospitalizations in children with RACHS-1 score >=3, complex chronic disease classification and children living in urban areas.
Conclusion(s): Post-CS AKI is not associated with post-discharge healthcare utilization, death and CKD or hypertension, though it may be associated with healthcare utilization in more complex paediatric CS children. Studies should aim to better understand post-CS healthcare

utilization patterns and non-AKI risk factors for CKD, hypertension and mortality, to reduce adverse long-term outcomes after CS.

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675.

Acute kidney injury in children hospitalized for community acquired pneumonia.
Marzuillo P., Pezzella V., Guarino S., Di Sessa A., Baldascino M., Polito C., Miraglia del Giudice E., Nunziata F.
Embase
Pediatric Nephrology. 36(9) (pp 2883-2890), 2021. Date of Publication: September 2021.
[Article]
AN: 2010857756
Background: Acute kidney injury (AKI) enhances the risk of later chronic kidney disease. Significant prevalence of AKI is reported in adults with community acquired pneumonia (CAP). We investigated prevalence of and prognostic factors for AKI in children hospitalized for CAP.
Method(s): We retrospectively collected clinical and biochemical data of 186 children (48.4% male; mean age 2.6+/-2.4 years) hospitalized for X-ray-confirmed CAP. AKI was defined according to Kidney Disease/Improving Global Outcomes creatinine criteria. We considered as basal serum creatinine the value estimated with Hoste (age) equation assuming basal eGFR were median age-based eGFR normative values for children <= 2 years of age and eGFR= 120 mL/min/1.73m2 for children > 2 years. Univariate and multivariate logistic regression models were used to explore associations with AKI.
Result(s): AKI was found in 38/186 (20.4%) patients. No patient required hemodialysis nor reached AKI stage 3, 5 (2.7%) reached AKI stage 2, and 33 (17.7%) AKI stage 1. Mean length of stay was 6.0+/-1.7, 6.9+/-2.3, and 12.2+/-1.5 days, for patients without AKI, stage 1 AKI, and stage 2 AKI ($p < 0.001$), respectively. Duration of symptoms before hospitalization (OR 1.2; 95%CI 1.09-1.43; $p = 0.001$), severe pneumonia (OR 11.9; 95%CI 4.3-33.3; $p < 0.001$), and serum C-reactive protein levels (OR 1.1; 95%CI 1.04-1.23; $p = 0.004$) were independent AKI predictors.

Conclusion(s): About 1/5 of children hospitalized for CAP present a generally mild AKI with a longer stay for those with more severe AKI. Attention should be paid to kidney health of children with CAP especially in presence of higher duration of symptoms before hospitalization, severe pneumonia and higher serum CRP levels. Graphical Abstract: [Figure not available: see fulltext.]

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33745060 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33745060]
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676.

Regional oxygen saturation and acute kidney injury in premature infants.
Dorum B.A., Ozkan H., Cetinkaya M., Koksal N.
Embase
Pediatrics International. 63(3) (pp 290-294), 2021. Date of Publication: March 2021.
[Article]
AN: 2010605958
Background: Decreased renal blood flow plays a vital role in the etiology of acute kidney injury (AKI). In this study, we aim to investigate the role of renal regional oxygen saturation (rSO2) reductions in predicting AKI in the first 24 h of life.
Method(s): One hundred premature babies with a gestational age of <=32 weeks were included. Renal and cerebral rSO2s were monitored for 24 h by near-infrared spectroscopy. Infants were followed up for the first 7 days for the diagnosis of AKI.
Result(s): Infants' median gestational age was 29 (23-32) weeks, and their birthweight was 1,192 +/- 355 g. It was found that the renal rSO2 values were lower in the first 24 h of life in patients who developed AKI, and this decrease was statistically significant in the first 6 h of life.
Conclusion(s): The low renal rSO2 values in the early hours of life in premature babies may have a role in predicting AKI.

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Publisher
John Wiley and Sons Inc
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677.

Long-Term Renal Outcomes in Children With Acute Kidney Injury Post Cardiac Surgery.
Sethi S.K., Sharma R., Gupta A., Tibrewal A., Akole R., Dhir R., Soni K., Bansal S.B., Jha P.K., Bhan A., Kher V., Raina R.
Embase
Kidney International Reports. 6(7) (pp 1850-1857), 2021. Date of Publication: July 2021.
[Article]
AN: 2012114667
Introduction: The long-term renal outcomes of survivors of pediatric acute kidney injury (AKI) are varied within the current literature, and we aim to establish long-term renal outcomes for pediatric patients after cardiac surgery. We studied long-term renal outcomes and markers of kidney injury in pediatric patients after congenital cardiac surgery.
Method(s): In a prospective case-control observational study (the Renal Outcomes in Children with acute Kidney injury post cardiac Surgery [ROCKS] trial) we reviewed all children who underwent cardiac surgery on cardiopulmonary bypass (December 2010-2017).
Result(s): During the study period, 2035 patients underwent cardiac surgery, of whom 9.8% developed AKI postoperatively. Forty-four patients who had postoperative AKI had a long-term follow-up, met our inclusion criteria, and were compared with 49 control subjects. We conducted a univariate analysis of reported parameters. At a median follow-up of 41 months, the cases had significantly higher urine levels of neutrophil gelatinase-associated lipocalin (NGAL), interleukin-18 (IL-18), and kidney injury molecule-1 (KIM-1). The biomarkers remained higher after adjusting for the urine creatinine, and the ratio of urine KIM-1/urine creatinine was significantly higher among cases. None of the patients had proteinuria or hypertension on follow-up. The presence of AKI, AKI stage, and younger age were not associated with the occurrence of low glomerular filtration rate (GFR) at follow-up.
Conclusion(s): Urinary biomarker abnormalities persist years after a congenital cardiac surgery in children, who may have a low GFR on follow-up. The presence of AKI, AKI stage, and younger age at surgery are not associated with the occurrence of low GFR at follow-up. Children with a higher surgical complexity score have lower GFR on follow-up.

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Publisher
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678.

The role of the neutrophil-lymphocyte ratio for pre-operative risk stratification of acute kidney injury after tetralogy of Fallot repair.
Manuel V., Miana L.A., Turquetto A., Guerreiro G.P., Fernandes N., Jatene M.B.
Embase
Cardiology in the Young. 31(6) (pp 1009-1014), 2021. Date of Publication: June 2021.
[Article]
AN: 635118805
Introduction: Acute kidney injury is a risk factor for chronic kidney disease and mortality after congenital heart surgery under cardiopulmonary bypass. The neutrophil-lymphocyte ratio is an inexpensive and easy to measure biomarker for predicting outcomes in children with congenital heart disease undergoing surgical correction.
Objective(s): To identify children at high risk of acute kidney injury after tetralogy of Fallot repair using the neutrophil-lymphocyte ratio.
Method(s): This single-centre retrospective analysis included consecutive patients aged < 18 years who underwent tetralogy of Fallot repair between January 2014 and December 2018. The pre-operative neutrophil-lymphocyte ratio was measured using the last pre-operative complete blood count test. We used the Acute Kidney Injury Network definition.
Result(s): A total of 116 patients were included, of whom 39 (33.6%) presented with acute kidney injury: 20 (51.3%) had grade I acute kidney injury, nine had grade II acute kidney injury (23.1%), and 10 (25.6%) had grade III acute kidney injury. A high pre-operative neutrophil-lymphocyte ratio was associated with grade III acute kidney injury in the post-operative period (p = 0.04). Patients with acute kidney injury had longer mechanical ventilation time (p = 0.023), intensive care unit stay (p < 0.001), and hospital length of stay (p = 0.002).
Conclusion(s): Our results suggest that the pre-operative neutrophil-lymphocyte ratio can be used to identify patients at risk of developing grade III acute kidney injury after tetralogy of Fallot repair.

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Publisher
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679.

Trends and racial disparities for acute kidney injury in premature infants: the US national database.
Elgendy M.M., Othman H.F., Younis M., Puthuraya S., Matar R.B., Aly H.

Embase
Pediatric Nephrology. 36(9) (pp 2789-2795), 2021. Date of Publication: September 2021.
[Article]
AN: 2010548824
Background: To assess prevalence and outcomes of acute kidney injury (AKI) in very-low-birth-weight infants.
Method(s): This cross-sectional study utilized the National Inpatient Sample (NIS) dataset for years 2000-2017. All premature infants with birth weight (BW) <1500g and/or gestational age (GA) <=32 weeks were included. Analyses were conducted for overall population and two BW categories: <1000g and 1000-1499g. Adjusted odds ratios were calculated after controlling for confounding variables in logistic regression analysis. Cochrane-Armitage test was used to assess for statistically significant trends in AKI frequency over the years.
Result(s): In total, 1,311,681 hospitalized premature infants were included; 19,603 (1.5%) were diagnosed with AKI. The majority (74.3%) were BW <1000g and 63.9% <=28 weeks gestation. Prevalence of AKI differed by ethnicity; White had significantly less AKI than Black (OR=0.79, p<0.001) and Hispanic (OR=0.83, p<0.001). AKI was significantly associated with higher mortality compared to controls (35.1 vs. 3.0%, p<0.001). AKI was associated with comorbidities such as necrotizing enterocolitis, patent ductus arteriosus, bronchopulmonary dysplasia, intraventricular hemorrhage, and septicemia. In a regression model, AKI was associated with higher mortality after controlling confounding factors (aOR=7.79, p<0.001). AKI was associated with significant increase in length of stay (p<0.001) and cost of hospitalization in survivors (p<0.001). There is a significant trend for increased AKI frequency over the years (Z score=4.33, p<0.001).
Conclusion(s): AKI is associated with increased mortality and comorbidities in preterm infants, especially in infants with BW <1000g. Further studies are needed to understand precipitating factors and assess preventative measures for this serious complication.

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680.

Higher total ultrafiltration volume during cardiopulmonary bypass-assisted infant cardiac surgery is associated with acute kidney injury and fluid overload.
Zanaboni D., Min J., Seshadri R., Gaynor J.W., Dreher M., Blinder J.J.
Embase
Pediatric Nephrology. 36(9) (pp 2875-2881), 2021. Date of Publication: September 2021.
[Article]

AN: 2010641821
Background: Ultrafiltration (UF) is used for fluid removal during and after infant cardiopulmonary bypass (CPB) surgery to reduce fluid overload. Excessive UF may have the opposite of its intended effect, resulting in acute kidney injury (AKI), oliganuria, and fluid retention.
Method(s): This is a single-center, retrospective review of infants treated with conventional and/or modified UF during CPB surgery. UF volume was indexed to weight. AKI was defined using serum creatinine "Kidney Disease Improving Global Outcome (KDIGO)" criteria. Fluid balance was defined according to: [total intake(mL)-total output(mL)preoperative weight(g)]x100. Peak fluid overload was determined on postoperative day 3. Multivariable logistic regression adjusted for multiple covariates was used to explore associations with UF, AKI, and fluid overload.
Result(s): Five hundred thirty subjects < 1 year of age underwent CPB-assisted congenital heart surgery with UF. Sixty-four (12%) developed postoperative AKI. On multivariable regression, higher indexed total UF volume was associated with increased AKI risk (OR 1.11, 95% CI=1.04-1.19, p = 0.003). UF volume > 119.9 mL/kg did not reduce peak fluid overload. Subjects with AKI took longer to reach a negative fluid balance (2 vs. 3 days, p = 0.04). Those with more complex surgery were at highest AKI risk (STAT 3 [25-75 percentile: 3-4] in AKI group versus STAT 3 [25-75 percentile: 2-4] in non-AKI group, p = 0.05). AKI was reduced in subjects undergoing more complex surgery and treated with UF volume < 119.9 mL/kg.
Conclusion(s): Judicious use of UF in more complex congenital cardiac surgery reduces the risk of AKI.

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Publisher
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681.

Outcomes of kidney injury including dialysis and kidney transplantation in pediatric oncology and hematopoietic cell transplant patients.
Wu N.L., Hingorani S.
Embase
Pediatric Nephrology. 36(9) (pp 2675-2686), 2021. Date of Publication: September 2021.
[Article]
AN: 2010129207
Pediatric oncology and hematopoietic cell transplant (HCT) patients are susceptible to both acute kidney injury (AKI) and chronic kidney disease (CKD). The etiologies of AKI vary but include tumor infiltration, radiation, drug-induced toxicity, and fluid and electrolyte abnormalities including tumor lysis syndrome. HCT patients can also have additional complications such as sinusoidal

obstructive syndrome, graft-versus-host disease, or thrombotic microangiopathy. For patients with severe AKI requiring dialysis, multiple modalities can be used successfully, although continuous kidney replacement therapy (CKRT) is often the principal modality for critically ill patients. While increasing numbers of pediatric cancer and HCT patients are now surviving long term, they remain at risk for a number of chronic medical conditions, including CKD. Certain high-risk patients, due to underlying risk factors or treatment-related complications, eventually develop kidney failure and may require kidney replacement therapies. Management of co-morbidities and complications associated with kidney failure, including use of erythropoietin for anemia and potential need for ongoing cancer-related treatment while on dialysis, is an additional consideration in this patient population. Kidney transplantation can be successfully performed in pediatric cancer survivors, although additional features such as specific cancer diagnosis and duration of remission should be considered.

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Publisher
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682.

Improving Acute Kidney Injury-Associated Outcomes: From Early Risk to Long-Term Considerations.
Gist K.M., Mayen A., Sutherland S.M.
Embase
Current Treatment Options in Pediatrics. 7(3) (pp 99-108), 2021. Date of Publication: September 2021.
[Review]
AN: 2013148178
Purpose of the review: Acute kidney injury (AKI) is a common complication after pediatric cardiac surgery in children and is associated with adverse outcomes including increased risk of death. The purpose of this review is to discuss the contemporary prevention and management considerations for children with critical cardiac disease who are at risk for and have experienced AKI. Recent findings: Despite numerous clinical trials, there has been little success in preventing or treating AKI. In adults and children, implementation of electronic health care alerts and care bundles have been shown to reduce AKI incidence, but the effect on long-term outcomes is variable. Follow-up with nephrology after an episode of AKI may reduce the risk for long-term complications.

Summary: Prevention and treatment of AKI are paramount to reducing the risk for long-term complications which may be improved by primary, secondary, and tertiary prevention strategies. Follow-up clinics should become routine across pediatric centers to survey the development of chronic kidney disease and implement measures to mitigate progression.

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683.

Acute kidney injury, metabolic acidosis, and hypercalcemia with proximal tubular dysfunction-a diagnostic challenge: Answers.
Koksoy A.Y.
Embase
Pediatric Nephrology. 36(9) (pp 2705-2707), 2021. Date of Publication: September 2021.
[Article]
AN: 2010811588
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Publisher
Springer Science and Business Media Deutschland GmbH
Year of Publication
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684.

Critical analysis of acute kidney injury in pediatric COVID-19 patients in the intensive care unit.
Raina R., Chakraborty R., Mawby I., Agarwal N., Sethi S., Forbes M.
Embase
Pediatric Nephrology. 36(9) (pp 2627-2638), 2021. Date of Publication: September 2021.
[Article]
AN: 2011424641
Background and objectives: COVID-19 is responsible for the 2019 novel coronavirus disease pandemic. Despite the vast research about the adult population, there has been little data collected on acute kidney injury (AKI) epidemiology, associated risk factors, treatments, and mortality in pediatric COVID-19 patients admitted to the ICU. AKI is a severe complication of COVID-19 among children and adolescents.
Method(s): A comprehensive literature search was conducted in PubMed/MEDLINE and Cochrane Center Trials to find all published literature related to AKI in COVID-19 patients, including incidence and outcomes.
Result(s): Twenty-four studies reporting the outcomes of interest were included. Across all studies, the overall sample size of COVID positive children was 1,247 and the median age of this population was 9.1 years old. Among COVID positive pediatric patients, there was an AKI incidence of 30.51%, with only 0.56% of these patients receiving KRT. The mortality was 2.55% among all COVID positive pediatric patients. The incidence of multisystem inflammatory syndrome in children (MIS-C) among COVID positive patients was 74.29%.
Conclusion(s): AKI has shown to be a negative prognostic factor in adult patients with COVID-19 and now also in the pediatric cohort with high incidence and mortality rates. Additionally, our findings show a strong comparison in epidemiology between adult and pediatric COVID-19 patients; however, they need to be confirmed with additional data and studies. Graphical abstract: [Figure not available: see fulltext.]

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33928439 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33928439]
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Publisher
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685.

The validity of urinary neutrophil gelatinase-associated lipocalin (Ngal) as a biomarker of acute kidney injury in pediatric patients with sepsis.
Budi N.S., Utariani A., Hanindito E., Semedi B.P., Asmaningsih N.
Embase

Critical Care and Shock. 24(2) (pp 93-103), 2021. Date of Publication: 2021.
[Article]
AN: 2006972185
Background: Septic patients with acute kidney injury (AKI) are associated with increased morbidity and mortality compared to septic patients without AKI. These usually occur within 24 hours of admission into ICU. The measurement of serum creatinine is usually used to di-agnose AKI. However, the concentrations do not change until a decline in kidney function has reached 50% or less within a few days. Many studies have shown urinary neutrophil gelatinase-associated lipocalin (NGAL) as a predictor of AKI with different cut-off points.
Objective(s): This study aimed to determine the cut-off point of urinary NGAL in predicting the occurrence of AKI in pediatric septic patients within 48 to 72 hours after being admitted into ICU.
Method(s): This was an observational analytic study with prospective longitudinal design, car-ried out on patients who met the inclusion and exclusion criteria at the resuscitation room in the Emergency Room (ER) at Dr. Soetomo Hos-pital Surabaya. The urine was taken at the 0th, 6th, 12th, and 24th hours for urinary NGAL examination. Every procedure taken on each patient was recorded and followed until the third day to determine factors correlated with AKI.
Result(s): Of the total 41 pediatric septic patients, 30 met the inclusion and exclusion criteria and about 56.7% had AKI. The urinary NGAL at 0th hour had significant value. A cut-off point of 1242 ng/ml was a better determinant of the incidence of AKI with a sensitivity of 76.5%, specificity of 61.5%, area under the curve (AUC) of 0.715, and relative risk of 2.2. Fur-thermore, the urinary NGAL at 0th hour was able to differentiate each level of AKI. Yet, the urine values of NGAL at 6th, 12th, and 24th hours were invalid as predictor of AKI.
Conclusion(s): Urinary NGAL at 0th hour is a val-id predictor of occurrence of AKI grades 1, 2, and 3 in pediatric septic patients 48-72 hours after being admitted into the hospital.

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Publisher
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686.

Novel kidney injury biomarkers in a large cohort of children with sickle cell anemia.
Belisario A.R., S Filha R.D., De Almeida J.A., Mendes F.G., Rezende P.V., Vieira E.L.M., E Silva A.C.S.
Embase
Biomarkers in Medicine. 15(12) (pp 999-1009), 2021. Date of Publication: August 2021.
[Article]
AN: 635693648
Aim: The aim of this study was to compare novel kidney injury biomarkers in sickle cell anemia (SCA) children with and without albuminuria or glomerular hyperfiltration.
Material(s) and Method(s): A total of 358 Brazilian children with SCA were studied. Fifteen kidney injury biomarkers in urine were measured. Albuminuria was defined as urine albumin/creatinine ratio >100 mg/g. Glomerular hyperfiltration was defined as estimated glomerular filtration rate >=140 ml/min/1.73 m.

Result(s): After adjustment for age, sex and modifying therapies in use, EGF and collagen IV urinary levels were associated with albuminuria. Renin and clusterin levels were associated with hyperfiltration.
Conclusion(s): Levels of novel kidney injury biomarkers were associated with albuminuria and hyperfiltration in Brazilian children with SCA, suggesting concomitant structural and functional abnormalities.

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687.

A pharmacologically-based approach to high dose methotrexate administration to investigate nephrotoxicity and acute kidney injury biomarkers in children and adolescents with newly diagnosed osteosarcoma.
Fox E., Busch C., DeBernardo A., Segers B., Gottschalk J., Womer R., Balamuth N., Bagatell R., Balis F.
Embase
Cancer Chemotherapy and Pharmacology. 87(6) (pp 807-815), 2021. Date of Publication: June 2021.
[Article]
AN: 2010719723
Purpose: High dose methotrexate (HDMTX) acute kidney injury (AKI) results in prolonged hospitalization and treatment delays. Using a pharmacologically-based approach, HDMTX was administered with standard combination therapy to patients with osteosarcoma; nephrotoxicity was assessed.
Method(s): Patients were randomized by cycle to 4 h or 12 h HDMTX (12 g/m2) infusions administered with hydration, alkalization and leucovorin rescue. Urinalysis, AKI biomarkers, and estimated glomerular filtration rate using serum creatinine or cystatin C (GFRCr or GFRcysC) were obtained. Serum and urine methotrexate concentrations [MTX] were measured.
Result(s): Patients (n = 12), median (range) age 12.4 (5.7-19.2) years were enrolled; 73 MTX infusions were analyzed. Median (95% Confidence Interval) serum and urine [MTX] were 1309 (1190, 1400) microM and 16.4 (14.7, 19.4) mM at the end of 4 h infusion and 557 (493, 586) microM and 11.1 (9.9, 21.1) mM at the end of 12 h infusion. Time to serum [MTX] < 0.1 microM was 83 (80.7, 90.7) h and 87 (82.8, 92.4) h for 4 and 12 h infusions. GFRCr was highly variable, increased after cisplatin, and exceeded 150 ml/min/1.73 m2. GFRcysC was less variable and decreased at the end of therapy. AKI biomarkers were elevated indicating acute tubular

dysfunction, however, did not differ between 4 and 12 h infusions. Radiographic and histological response were similar for patients receiving 4 h or 12 h infusions; the median percent tumor necrosis was > 95%.
Conclusion(s): Reducing peak serum and urine MTX concentration by prolonging the infusion duration did not alter risk of acute kidney injury. GFRcysC was decreased at the end of therapy. Proteinuria and elevations in AKI biomarkers indicate that direct tubular damage contributes to HDMTX nephrotoxicity. Clinical Trial: NCT01848457.

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33677616 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33677616]
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688.

Impact of Acute Kidney Injury on Critically Ill Children and Neonates.
Leghrouz B., Kaddourah A.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 635631. Date of Publication: 26 Apr 2021.
[Review]
AN: 634953980
Acute kidney injury (AKI) is a clinical syndrome that manifests as an abrupt impairment of kidney function. AKI is common in critically ill pediatric patients admitted to the pediatric intensive care units. AKI is a deleterious complication in critically ill children as it is associated with increased morbidity and mortality. This review provides an overview of the incidence, morbidity, and mortality of AKI in critically ill children in general and specific cohorts such as post-cardiac surgeries, sepsis, critically ill neonates, and post stem cell transplantation.

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689.

The serum level of soluble CXCL16 is increased in preeclampsia and associated with hepatic/renal damage.
Tok A., Seyithanoglu M., Ozer A., Erkayiran U., Karakucuk S., Celebi A.
Embase
Journal of Maternal-Fetal and Neonatal Medicine. 34(9) (pp 1435-1440), 2021. Date of Publication: 2021.
[Article]
AN: 628446681
Objective: To compare the serum level of the chemokine, CXCL 16, in preeclamptic and healthy pregnant patients.
Method(s): This prospective case control study was conducted between January and December 2018 in a tertiary level hospital. The study group was formed of 70 pregnant women diagnosed with preeclampsia, and the control group was formed of 70 healthy pregnant women matched to the study group in respect of age, gestational week and body mass index (BMI). The study group was separated into two subgroups of mild preeclampsia (n = 35) and severe preeclampsia (n = 35). The groups were compared in terms of demographic and clinical parameters and the levels of serum CXCL 16.
Result(s): No statistically significant difference was determined between the study and control groups in respect of maternal age, gravida, parity, BMI, and gestational age at sampling. Neonatal birth weight was significantly lower in the study group than in the control group. Mean serum alanine aminotransferase (ALT), aspartate amino transferase (AST) and creatinine levels of the study group were significantly higher than those of the control group (p <.05 for all). There was a statistically significant difference between the study and control groups regarding the mean platelet count. Compared to the control group, the severe and mild preeclampsia groups had a significantly higher serum level of CXCL 16. The serum level of CXCL 16 was significantly higher in patients with severe preeclampsia than in patients with mild preeclampsia (2.94 +/- 3.89 pg mL-1 vs. 1.08 +/- 1.87 pg mL-1, p =.14). Correlation analysis revealed a significant positive correlation of serum CXCL 16 level with serum ALT level (r = 0.320, p <=.001) and serum AST level (r = 0.373, p <=.001) and serum creatinine level (r = 0.279, p =.01) in both groups. High values indicated presence of preeclampsia, with a diagnostic cut-off point of 0.225, sensitivity of 75.7% and specificity of 72.9% for CXCL 16 (area under curve: 0.820, p <.001 CI: 0.753-0.888).
Conclusion(s): This is the first study in literature to show a significantly higher level of CXCL 16 in patients with severe preeclampsia compared to those with mild preeclampsia. The study can also be considered of value in respect of showing that CXCL 16 could play a role in the etiopathogenesis of preeclampsia and the emergence of renal-hepatic damage. Blocking the CXCL 16/CXCR six axis in preeclampsia treatment could lay the ground for the development of new drugs which could be used in the treatment of preeclampsia.

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690.

Risk factors for acute kidney injury in neonates with congenital diaphragmatic hernia.
Liberio B.M., Brinton J.T., Gist K.M., Soranno D.E., Kirkley M.J., Gien J.
Embase
Journal of Perinatology. 41(8) (pp 1901-1909), 2021. Date of Publication: August 2021.
[Article]
AN: 2012391507
Objective: To examine incidence of acute kidney injury (AKI), antenatal and postnatal predictors, and impact of AKI on outcomes in infants with congenital diaphragmatic hernia (CDH). Study design: Single center retrospective study of 90 CDH infants from 2009-2017. Baseline characteristics, CDH severity, possible AKI predictors, and clinical outcomes were compared between infants with and without AKI.
Result(s): In total, 38% of infants developed AKI, 44% stage 1, 29% stage 2, 27% stage 3. Lower antenatal lung volumes and liver herniation were associated with AKI. Extracorporeal life support (ECLS), diuretics, abdominal closure surgery, hypotension, and elevated plasma free hemoglobin were associated with AKI. Overall survival was 79%, 47% with AKI, and 35% with AKI on ECLS. AKI is associated with increased mechanical ventilation duration and length of stay.
Conclusion(s): AKI is common among CDH infants and associated with adverse outcomes. Standardized care bundles addressing AKI risk factors may reduce AKI incidence and severity.

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691.

Does routine repeat imaging for blunt high-grade renal trauma lead to unnecessary interventions?.
Loftus C.J., Hagedorn J.C., Johnsen N.V.
Embase
Journal of Trauma and Acute Care Surgery. 90(1) (pp 143-147), 2021. Date of Publication: 2021.
[Conference Paper]
AN: 634997153
BACKGROUND Most high-grade renal injuries with urinary extravasation (UE) may be managed conservatively without intervention. For such patients, the American Urological Association Urotrauma guidelines recommend repeat imaging within 48 to 72 hours of injury. We sought to examine whether routine, proactive follow-up renal imaging was associated with need for urologic intervention or risk of complications. METHODS Patients treated to an urban level 1 trauma center for a five-state region, between 2005 and 2017 were identified by International Classification of Diseases, Ninth Revision and Tenth Revision, codes from a prospectively collected institutional trauma registry. Individual patient charts and imaging were reviewed to identify all patients with American Association for the Surgery of Trauma grade IV renal injuries. Those with UE were included, and patients with penetrating trauma, immediate urologic surgery, or in-hospital mortality were excluded. RESULTS Of 342 patients with grade IV injuries, 108 (32%) met the inclusion criteria. Urologic intervention was performed in 23% (25 of 108 patients) including endoscopic procedure (24 of 108 patients) and nephrectomy (1 of 108 patients). Repeat imaging was performed within 48 to 72 hours after initial imaging in 65% (70 to 108 patients). Patients who underwent routine reimaging had a higher rate of undergoing subsequent urologic procedure (31.4% vs. 7.1%, p = 0.008). For patients with reimaging who underwent a procedure, 18% (4 of 22 patients) were symptomatic, while all nonroutinely reimaged patients who underwent a procedure were symptomatic (3 of 3 patients). Patients who received routine repeat imaging had a higher mean number of abdominal computed tomography scans during their admission (2.5 vs. 1.7, p < 0.001), while the complication rate was similar between groups. CONCLUSIONS Patients with grade IV renal lacerations with UE from blunt trauma who received routine repeat imaging were more likely to undergo an operation in the absence of symptoms and received more radiation during their hospital stay. Forgoing repeat imaging was not associated with an increase in urological complications. These data suggest that, in the absence of signs/symptoms, repeat imaging may be avoidable. LEVEL OF EVIDENCE Therapeutic/care management, level IV.

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692.

Renal vein injuries: a 10-year, single institution experience with a rare injury following blunt abdominal trauma.
Hart K., Johnson G., Steenburg S.D.
Embase
Emergency Radiology. 28(3) (pp 533-539), 2021. Date of Publication: June 2021.
[Article]
AN: 2010142848
Purpose: To determine the incidence, injury type, injury associations, and management of patients with renal vein injuries following trauma.
Method(s): This is a 10-year single-center retrospective observational study of patients with renal vein injuries identified on admission abdominopelvic CT following trauma. Our institutional trauma registry and radiology information system (RIS) was used to identify patients with renal vein injuries. The medical records and imaging exams were reviewed to determine venous injury type, associated injuries, management, and outcomes.
Result(s): Fifteen (15) patients with renal vein injuries (N = 9 right side) were identified out of 36,077 trauma evaluations, for an overall incidence of 0.042%. Eight (53.3%) were male with a mean age of 36.3 years (range 9-67 years) and a mean Injury Severity Score (ISS) of 32 (range 13-57). The most common imaging findings were pseudoaneurysm formation with or without intimal injury and intraluminal thrombus seen in 86.7% of the cohort. Twelve patients (80.0%) had other acute traumatic renal findings, most commonly an ipsilateral grade 4 or higher renal injury. Angiography was performed in 6 patients (40.0%), however no patients received renal vein specific endovascular evaluation, endovascular treatment, or surgical treatment of their renal vein injuries. Three patients were treated with long-term anticoagulation, of which one received an IVC filter. There were no known renal vein injury specific mortalities.
Conclusion(s): Renal vein injuries are an extremely rare entity but can be detected on admission CT. The most common injury patterns include an intimal injury with intraluminal thrombus and pseudoaneurysm in combination with an intimal injury and intraluminal thrombus. Conservative, nonoperative management was successfully employed in all cases with no renal vein specific mortalities.

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33417111 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33417111]
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693.

Acute Kidney Injury in Pediatric Acute Respiratory Distress Syndrome.
Kaushik S., Villacres S., Eisenberg R., Medar S.S.
Embase
Journal of Intensive Care Medicine. 36(9) (pp 1084-1090), 2021. Date of Publication: September 2021.
[Article]
AN: 2005691478

Objectives: To describe the incidence of and risk factors for acute kidney injury (AKI) in children with acute respiratory distress syndrome (ARDS) and study the effect of AKI on patient outcomes.
Design(s): A single-center retrospective study.
Setting(s): A tertiary care children's hospital.
Patient(s): All patients less than 18 years of age who received invasive mechanical ventilation (MV) and developed ARDS between July 2010 and July 2013 were included. Acute kidney injury was defined using p-RIFLE (risk, injury, failure, loss, and end-stage renal disease) criteria.
Intervention(s): None.
Measurements and Main Results: One hundred fifteen children met the criteria and were included in the study. Seventy-four children (74/115, 64%) developed AKI. The severity of AKI was risk in 34 (46%) of 74, injury in 19 (26%) of 74, and failure in 21 (28%) of 74. The presence of AKI was associated with lower Pao2 to Fio2 (P/F) ratio (P =.007), need for inotropes (P =.003), need for diuretics (P =.004), higher oxygenation index (P =.03), higher positive end-expiratory pressure (PEEP; P =.01), higher mean airway pressure (P =.008), and higher Fio2 requirement (P =.03). Only PEEP and P/F ratios were significantly associated with AKI in the unadjusted logistic regression model. Patients with AKI had a significantly longer duration of hospital stay, although there was no significant difference in the intensive care unit stay, duration of MV, and mortality. Recovery of AKI occurred in 68% of the patients. A multivariable model including PEEP, P/F ratio, weight, need for inotropes, and need for diuretics had a better receiver operating characteristic (ROC) curve with an AUC of 0.75 compared to the ROC curves for PEEP only and P/F ratio only for the prediction of AKI.
Conclusion(s): Patients with ARDS have high rates of AKI, and its presence is associated with increased morbidity and mortality.

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694.

Impact of and risk factors for pediatric acute kidney injury defined by the pROCK criteria in a Chinese PICU population.
Wei C., Hongxia G., Hui F., Xianhui Q., Danqun J., Haipeng L.
Embase
Pediatric Research. 89(6) (pp 1485-1491), 2021. Date of Publication: May 2021.
[Article]
AN: 2005852244

Background: The definition of pediatric AKI continues to evolve. We aimed to find a better AKI definition to predict outcomes and identify risk factors for AKI in a Chinese PICU.
Method(s): This study consisted of 3338 patients hospitalized in a Chinese PICU between 2016 and 2018. AKI was defined and staged using pROCK criteria, which were compared with KDIGO criteria. AKI outcomes, including mortality, daily cost and length of stay (LOS), were assessed. Risk factors for AKI were also estimated.
Result(s): The incidence of AKI in the PICU was 7.7% according to pROCK criteria. The characteristics of patients with KDIGO-defined AKI who did not meet the pROCK were similar to those without AKI. pROCK outperformed KDIGO in predicting mortality with a higher c index in the Cox models (0.81 versus 0.79, P = 0.013). AKI, as well as AKI stages, were associated with higher mortality (HR: 10.5, 95%CI: 6.66-19.5), daily cost (beta = 2064, P < 0.01) and LOS (beta = 2.30, P < 0.01). Age, comorbidities, mechanical ventilation (MV), pediatric critical illness score (PCIS) and exposure to drugs had significant influence on AKI occurrence.
Conclusion(s): The mortality predictability of pROCK was slightly greater than that of KDIGO. Older age, underlying comorbidities, MV, decreased PCIS and exposure to drugs were potential risk factors for AKI. Impact: Two AKI criteria, pROCK and KDIGO, were significantly associated with an increased risk of mortality and pROCK was slightly greater than that of KDIGO.Older age, comorbidities, mechanical ventilation, decreased PCIS and exposure to drugs were potential risk factors for AKI.This study first used the pROCK criteria to provide an epidemiologic description of pediatric AKI in Chinese PICU.This study compared the AKI outcomes across the pROCK and KDIGO AKI criteria, indicating the prior utility for AKI classification in Chinese children.This study indicated that the potential risk factors for AKI were older age, comorbidities, mechanical ventilation, decreased PCIS and exposure to drugs.

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Publisher
Springer Nature
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695.

Risk factors for chronic kidney disease following acute kidney injury in pediatric allogeneic hematopoietic cell transplantation.
Prasad M., Jain N.G., Radhakrishnan J., Jin Z., Satwani P.
Embase
Bone Marrow Transplantation. 56(7) (pp 1665-1673), 2021. Date of Publication: July 2021.

[Article]
AN: 2010572166
Risk factors associated with the progression of acute kidney injury to chronic kidney disease in pediatric allogeneic hematopoietic cell transplantation (AlloHCT) recipients are not well described. We retrospectively investigated the risk factors for the progression to CKD in 275 AlloHCT recipients. AKI and CKD grading was defined according to the Kidney Disease Improving Global Outcomes classification. PRI90 was defined as persistent renal insufficiency (estimated GFR < 90 ml/min/1.73 m2) 90 days after the first episode of AKI. The median age was 9.1 years. Incidence of stages 1, 2, and 3 AKI were 43%, 41%, and 15%, respectively. 86.1% met our study criteria for PRI90. Of the 236 PRI90 patients, 213 and 152 patients were evaluable for CKD at 1 and 3 years, respectively. The incidence of CKD at 1 and 3 years was 63.1% and 62.9%, respectively. On multivariable analysis, estimated GFR at initial episode of AKI (<80 ml/min/1.73 m2) and estimated GFR (<70 ml/min/1.73 m2) at PRI90 was a risk factor associated with CKD development and both risk factors were associated with significantly lower overall survival. To conclude, eGFR at the time of AKI and PRI90 may be considered for screening pediatric AlloHCT recipients at risk for the progression to CKD.

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Publisher
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696.

Contrast media exposure in the perioperative period confers no additional risk of acute kidney injury in infants and young children undergoing cardiac surgery with cardiopulmonary bypass.
Guo S., Bai L., Tong Y., Yu J., Zhang P., Duan X., Liu J.
Embase
Pediatric Nephrology. 36(8) (pp 2485-2491), 2021. Date of Publication: August 2021.
[Article]
AN: 2010400419
Background: Recently, there has been an interest in the temporal relationship between contrast exposure (CM) and cardiac surgery suggesting that a "double hit" on the kidney function in close succession increases the risk of acute kidney injury (AKI) after cardiac surgery. However, data from young children is limited. The purpose of this study was to retrospectively evaluate the

effects of preoperative CM exposure on postoperative AKI in infant and young children patients and to further analyze the influence of exposure time interval.
Method(s): Patients (age <= 3 years) who underwent diagnostic imaging within 14 days before on-pump cardiac surgery between 1 May 2017 and 31 May 2018 in Fuwai Hospital, Beijing, were analyzed. Kidney outcome was assessed according to Kidney Disease: Improving Global Outcomes creatinine-based criteria.
Result(s): One thousand four hundred pediatric patients (192 CM and 1,248 non-CM) were identified. Postoperative AKI occurred in 57 (29.7%) of the 192 patients who were exposed to CM. Following propensity score adjustment, no difference in risk for AKI was observed between the CM and non-CM groups (RR 1.142, 95% CI 0.916-1.424; P = 0.264). Multivariable logistic regression of the CM group indicated that independent predictors of postoperative AKI were lower weight, lower preoperative creatinine level, and longer CPB duration. Time interval between CM exposure and on-pump cardiac surgery was not significantly associated with increased risk of AKI (OR 0.853, 95% CI 0.265~2.747; P = 0.790).
Conclusion(s): For pediatric patients who are soon to undergo on-pump cardiac procedures, there appears to be no need to hesitate in performing the diagnostic imaging investigations requiring CM, or delay CPB after CM exposure. These patients may benefit from increased diagnostic utility without increasing their risk of postoperative AKI.

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697.

Acute Kidney Injury in Pediatric Diabetic Ketoacidosis.
Yang E.M., Lee H.G., Oh K.Y., Kim C.J.
Embase
Indian Journal of Pediatrics. 88(6) (pp 568-573), 2021. Date of Publication: June 2021.
[Article]
AN: 2007324751
Objective: To assess the incidence and clinical characteristics of acute kidney injury (AKI) and identify the associated risk factors for AKI in children with type 1 diabetes mellitus (T1DM) and diabetic ketoacidosis (DKA).
Method(s): This was a retrospective study performed over 15 y in a single Korean center. Children aged <=18-y-old with T1DM and DKA were enrolled and divided into 2 groups according to the presence of AKI.
Result(s): This study included 90 episodes of DKA in 58 children with T1DM. AKI occurred in a total of 70 hospitalizations (77.8%) of 44 children: 18 (20.0%) with stage 1 AKI, 39 (43.3%) with stage 2 AKI, and 13 (14.4%) with stage 3 AKI. The number of AKI decreased to 28 (47.4%) and

13 (28.3%) after 12 h and 24 h of admission, respectively. The white blood cell count (P = 0.001) and anion gap levels (P = 0.025) were significantly higher and serum bicarbonate level (P = 0.004) was lower in the AKI group. Logistic regression analysis revealed that a longer duration of TIDM and high anion gap were independent predictors of developing severe AKI in pediatric DKA with T1DM (odds ratio, 1.225, P = 0.013; odds ratio, 1.130, P = 0.038).
Conclusion(s): AKI frequently occurred in TIDM children with DKA. Longer duration of TIDM and elevated anion gap are associated with occurrence of severe AKI.

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698.

Malaria-associated acute kidney injury in African children: Prevalence, pathophysiology, impact, and management challenges.
Batte A., Berrens Z., Murphy K., Mufumba I., Sarangam M.L., Hawkes M.T., Conroy A.L.
Embase
International Journal of Nephrology and Renovascular Disease. 14 (pp 235-253), 2021. Date of Publication: 2021.
[Article]
AN: 2007874509
Acute kidney injury (AKI) is emerging as a complication of increasing clinical importance associated with substantial morbidity and mortality in African children with severe malaria. Using the Kidney Disease: Improving Global Outcomes (KDIGO) criteria to define AKI, an estimated 24-59% of African children with severe malaria have AKI with most AKI community-acquired. AKI is a risk factor for mortality in pediatric severe malaria with a stepwise increase in mortality across AKI stages. AKI is also a risk factor for postdischarge mortality and is associated with increased long-term risk of neurocognitive impairment and behavioral problems in survivors. Following injury, the kidney undergoes a process of recovery and repair. AKI is an established risk factor for chronic kidney disease and hypertension in survivors and is associated with an increased risk of chronic kidney disease in severe malaria survivors. The magnitude of the risk and contribution of malaria-associated AKI to chronic kidney disease in malaria-endemic areas remains undetermined. Pathways associated with AKI pathogenesis in the context of pediatric severe malaria are not well understood, but there is emerging evidence that immune activation, endothelial dysfunction, and hemolysis-mediated oxidative stress all directly contribute to kidney injury. In this review, we outline the KDIGO bundle of care and highlight how this could be applied in the context of severe malaria to improve kidney perfusion, reduce AKI progression, and improve survival. With

increased recognition that AKI in severe malaria is associated with substantial post-discharge morbidity and long-term risk of chronic kidney disease, there is a need to increase AKI recognition through enhanced access to creatinine-based and next-generation biomarker diagnostics. Long-term studies to assess severe malaria-associated AKI's impact on long-term health in malaria-endemic areas are urgently needed.

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699.

Acute Kidney Injury in Hospitalized Children with COVID19.
Chopra S., Saha A., Kumar V., Thakur A., Pemde H., Kapoor D., Ray S., Das A., Pandit K., Gulati A., Sharma A.G., Singh P., Sodani R.
Embase
Journal of Tropical Pediatrics. 67(2) (no pagination), 2021. Article Number: fmab037. Date of Publication: 01 Apr 2021.
[Article]
AN: 2013608273
Acute kidney injury (AKI) has been recognized as a significant risk factor for mortality among adults with severe acute respiratory syndrome coronavirus infection.
Aim(s): The aim of this study is to assess the prevalence and risk factors for AKI and mortality in children with coronavirus disease 2019 (COVID19) from a resource-limited setting.
Method(s): Cross-sectional analysis of laboratory confirmed COVID19 children admitted from 1 March to 30 November 2020 in a tertiary care hospital in New Delhi, India was done. Clinical features and associated comorbidities of COVID19 were noted. Baseline serum creatinine (height-independent Hoste's equation) and peak serum creatinine were used for staging of AKI by the 2012 Kidney Disease Improving Global Outcomes serum creatinine criteria. Univariate analysis and Kaplan-Meier survival analysis were used to compare the overall outcome in the AKI vs. the non-AKI group.
Result(s): A total of 64 810 children between 1 month and 18 years visited the hospital; 3412 were tested for suspected COVID19, 295 tested positive and 105 (54% boys) were hospitalized. Twenty-four hospitalized children (22.8%) developed AKI; 8 in Stage 1 (33.3%), 7 in Stage 2 (29.2%) and 9 in Stage 3 (37.5%) respectively. Overall, three patients received KRT. Highest reported mortality was (66.6%) in AKI Stage 3. Risk factors for AKI included associated sepsis (OR 95% CI, 1.22-9.43, p < 0.01), nephrotic syndrome (OR 95% CI, 1.13-115.5, p < 0.01), vasopressor support (OR 3.59, 95% CI, 1.37-9.40, p value< 0.007), shock at presentation (OR 2.98, 95% CI, 1.16-7.60, p value 0.01) and mechanical ventilation (OR 2.64, 95% CI, 1.04-6.71, p value< 0.03). Mortality (25.71%) was higher in the AKI group (OR 95% CI, 1.14-8.35, p < 0.023)

with shock (OR 45.92; 95% CI, 3.44-612.0, p value <0.004) and ventilation (OR 46.24; 95% CI, 1.6-1333.0 p value< 0.02) as significant risk factors for mortality.
Conclusion(s): AKI is an important modifiable risk factor for mortality in children with COVID19 in a resource-limited setting. Our study supports the strengthening of kidney replacement therapy and its timely initiation to reduce the progression of AKI and thus mortality in children.

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34080011 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34080011]
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Publisher
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700.

Complement activation is a crucial driver of acute kidney injury in rhabdomyolysis.
Boudhabhay I., Poillerat V., Grunenwald A., Torset C., Leon J., Daugan M.V., Lucibello F., El Karoui K., Ydee A., Chauvet S., Girardie P., Sacks S., Farrar C.A., Garred P., Berthaud R., Le Quintrec M., Rabant M., de Lonlay P., Rambaud C., Gnemmi V., Fremeaux-Bacchi V., Frimat M., Roumenina L.T.
Embase
Kidney International. 99(3) (pp 581-597), 2021. Date of Publication: March 2021.
[Article]
AN: 2010850264
Rhabdomyolysis is a life-threatening condition caused by skeletal muscle damage with acute kidney injury being the main complication dramatically worsening the prognosis. Specific treatment for rhabdomyolysis-induced acute kidney injury is lacking and the mechanisms of the injury are unclear. To clarify this, we studied intra-kidney complement activation (C3d and C5b-9 deposits) in tubules and vessels of patients and mice with rhabdomyolysis-induced acute kidney injury. The lectin complement pathway was found to be activated in the kidney, likely via an abnormal pattern of Fut2-dependent cell fucosylation, recognized by the pattern recognition molecule collectin-11 and this proceeded in a C4-independent, bypass manner. Concomitantly, myoglobin-derived heme activated the alternative pathway. Complement deposition and acute kidney injury were attenuated by pre-treatment with the heme scavenger hemopexin. This indicates that complement was activated in a unique double-trigger mechanism, via the alternative and lectin pathways. The direct pathological role of complement was demonstrated by the preservation of kidney function in C3 knockout mice after the induction of rhabdomyolysis. The transcriptomic signature for rhabdomyolysis-induced acute kidney injury included a strong inflammatory and apoptotic component, which were C3/complement-dependent, as they were normalized in C3 knockout mice. The intra-kidney macrophage population expressed a complement-sensitive phenotype, overexpressing CD11b and C5aR1. Thus, our results demonstrate a direct pathological role of heme and complement in rhabdomyolysis-induced acute kidney injury. Hence, heme scavenging and complement inhibition represent promising therapeutic strategies.

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Publisher
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701.

Evaluation of aminophylline for the treatment of acute kidney injury in pediatric hematology/oncology patients.
Sauer H.E., Crews K.R., Pauley J.L., Bourque M.S., Bragg A.W., Triplett B., Morrison R.R., Hall E.A.

Embase
Journal of Pediatric Pharmacology and Therapeutics. 26(5) (pp 484-490), 2021. Date of Publication: 2021.
[Article]
AN: 2007851631
OBJECTIVE The purpose of this study was to compare acute kidney injury (AKI)-related outcomes of patients who received aminophylline in addition to standard of care with matched historical controls who received standard of care alone. METHODS This was a single center, retrospective, historical control cohort study that included patients treated for AKI. Patients who received aminophylline from January 2017 to June 2018 were matched for age, sex, primary diagnosis, and hematopoietic cell transplant history in a 1:2 ratio to historical controls treated for AKI from July 2015 to September 2016. The primary outcome was improvement in AKI stage at 5 and 10 days from treatment initiation. RESULTS Twenty-seven patients who received aminophylline were matched to 54 historical controls. Fifty-eight patients (72%) had recently undergone hematopoietic cell transplant. At day 5, improvement in AKI stage was observed in 56% of patients in each group (p = 1.0); at day 10, improvement in AKI stage was observed in 75% of patients in the aminophylline group vs 70% of historical controls (p = 0.76). By day 10, serum creatinine levels had returned to baseline in 21% of patients in the aminophylline group and 34% of patients in the control group (p = 0.37). CONCLUSIONS Findings of this study demonstrated no difference in the rate of AKI resolution or in the proportion of patients with resolved AKI when aminophylline was added to standard of care for the treatment of AKI in this pediatric hematology/oncology population. ABBREVIATIONS AKI, acute kidney injury; GFR, glomerular filtration rate.

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702.

Acetazolamide-associated acute kidney injury in critically ill pediatric patients.
Moffett B.S., Kulik K., Khichi M., Arikan A.
Embase
Journal of Pediatric Pharmacology and Therapeutics. 26(5) (pp 467-471), 2021. Date of Publication: 2021.

[Article]
AN: 2007851577
OBJECTIVE Our objective was to determine the incidence and risk factors for intravenous acetazolamide-associated acute kidney injury (AKI). METHODS We utilized a retrospective cohort study including patients <19 years of age initiated on intravenous acetazolamide while admitted to an ICU. Data collection included patient demographics, clinical variables, acetazolamide dosing, and serum creatinine (SCr) values. Incidence of AKI was assessed per Kidney Disease Improving Global Outcomes criteria. Descriptive statistical analysis and ordinal logistic regression analysis were performed to determine the incidence of AKI and variables associated with AKI. RESULTS A total of 868 patients met study criteria (male 55.8%, median age 0.66 years [IQR 0.19, 3.0 years]). Intravenous acetazolamide was administered at 5.1 +/- 2.8 mg/kg/dose for a median of 4 doses (IQR 2, 6). Median baseline SCr was 0.28 mg/dL (IQR 0.22, 0.37), corresponding to a creatinine clearance of 115 +/- 55 mL/min/1.73 m2. Acute kidney injury occurred in 26.8% (n = 233) of patients (stage I = 20.1%, stage II = 3.7%, stage III 3.1%), and no patients received renal replacement therapy. An ordinal logistic regression model identified an increased odds of AKI with cyclosporine, ethacrynic acid, and piperacillin-tazobactam administration. CONCLUSIONS Acute kidney injury occurs frequently in critically ill pediatric patients receiving intravenous acetazolamide. ABBREVIATIONS AKI, acute kidney injury; KDIGO, Kidney Disease Improving Global Outcomes; NICU, neonatal intensive care unit; PICU, pediatric intensive care unit; SCr, serum creatinine.

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703.

CDH12 as a Candidate Gene for Kidney Injury in Posterior Urethral Valve Cases: A Genome-wide Association Study Among Patients with Obstructive Uropathies.
van der Zanden L.F.M., van Rooij I.A.L.M., Quaedackers J.S.L.T., Nijman R.J.M., Steffens M., de Wall L.L.L., Bongers E.M.H.F., Schaefer F., Kirchner M., Behnisch R., Bayazit A.K., Caliskan S., Obrycki L., Montini G., Duzova A., Wuttke M., Jennings R., Hanley N.A., Milmoe N.J., Winyard P.J.D., Renkema K.Y., Schreuder M.F., Roeleveld N., Feitz W.F.J.
Embase
European Urology Open Science. 28 (pp 26-35), 2021. Date of Publication: June 2021.
[Article]
AN: 2011812406
Background: Posterior urethral valves (PUVs) and ureteropelvic junction obstruction (UPJO) are congenital obstructive uropathies that may impair kidney development.
Objective(s): To identify genetic variants associated with kidney injury in patients with obstructive uropathy. Design, setting, and participants: We included 487 patients born in 1981 or later who underwent pyeloplasty or valve resection before 18 yr of age in the discovery phase, 102 PUV patients in a first replication phase, and 102 in a second replication phase. Outcome measurements and statistical analysis: Signs of kidney injury were defined as dialysis, nephrectomy, kidney transplantation, estimated glomerular filtration rate (eGFR) <60 ml/min/1.73 m2, high blood pressure, antihypertensive medication use, proteinuria, and/or one kidney

functioning at <45%. We used chi2 tests to calculate p values and odds ratios for >600 000 single-nucleotide polymorphisms (SNPs) in the discovery sample comparing patients with and without signs of kidney injury within 5 yr after surgery. We performed stratified analyses for PUV and UPJO and Kaplan-Meier and Cox regression analyses in the discovery and two replication samples for the associated SNPs, and RNA and protein expression analyses for the associated gene in fetal tissues. Results and limitations: Despite the small and nonhomogeneous sample, we observed suggestive associations for six SNPs in three loci, of which rs6874819 in the CDH12 gene was the most clear (p = 7.5 x 10-7). This SNP also seemed to be associated with time to kidney injury in the PUV discovery and replication samples. RNA expression analyses showed clear CDH12 expression in fetal kidneys, which was confirmed by protein immunolocalization. Conclusion(s): This study identified CDH12 as a candidate gene for kidney injury in PUV. Patient Summary: We found that variants of the CDH12 gene increase the risk of kidney injury in patients with extra flaps of tissue in the urethra (posterior urethral valves). This is the first report on this gene in this context. Our study provides interesting new information about the pathways involved and important leads for further research for this condition.

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704.

Evaluation of the prevalence and factors associated with acute kidney injury in a pediatric intensive care unit.
Louzada C.F., Ferreira A.R.
Embase
Jornal de Pediatria. 97(4) (pp 426-432), 2021. Date of Publication: 01 Jul 2021.
[Article]
AN: 2007884534
Objective: To assess the prevalence of acute kidney injury in pediatric intensive care unit according to diagnostic criteria - pediatric risk, injury, failure, loss, end-stage renal disease, Acute Kidney Injury Network and Acute Kidney Injury Work Group, or Kidney Disease: Improving Global Outcomes -, and determining factors associated with acute kidney injury as well as its outcome.
Methodology: This was a cross-sectional monocentric observational study, including patients aged between 29 days and 17 years who were admitted to the pediatric intensive care unit between January 1, 2012 and December 31, 2016. To evaluate the association between the study variables and acute kidney injury, the log-binomial generalized univariate and multivariate linear models were adjusted.
Result(s): The study included 1131 patients, with prevalence of acute kidney injury according to the Acute Kidney Injury Network and Kidney Disease: Improving Global Outcomes criteria of 12.6% and of 12.9% according to the pediatric risk, injury, failure, loss, end-stage renal disease. In the multivariate analysis of older children (PR 1.007, 95% CI: 1.005-1.009), sepsis (PR 1.641, 95% CI: 1.128-2.387), demand for ventilatory support (PR 1.547, 95% CI: 1.095-2.186), and use of vasoactive amines (PR 2.298, 95% CI: 1.681-3.142) constituted factors associated with statistical significance to the development of acute kidney injury. The mortality rate among those with acute kidney injury was 28.7%.
Conclusion(s): Older children, diagnosis of sepsis, demand for ventilatory support, and use of vasoactive amines were correlated with a higher risk of developing acute kidney injury. The mortality associated with acute kidney injury was elevated; it is crucial that all measures that ensure adequate renal perfusion are taken for patients with risk factors, to avoid the installation of the disease.

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705.

Clinical characteristics and prognosis of postpartum acute kidney injury.
Shu H., Nie F.
Embase
Journal of International Medical Research. 49(2) (no pagination), 2021. Date of Publication: 2021.
[Article]
AN: 2010517361
Objective: To investigate the clinical characteristics and prognoses of patients with postpartum acute kidney injury (PPAKI).
Method(s): We retrospectively reviewed the clinical presentations, laboratory examinations, treatments, and outcomes of patients with PPAKI admitted to our hospital from January 2013 to December 2017. We then analyzed the clinical characteristics and prognoses of the mothers and their infants.
Result(s): Of 37 patients diagnosed with PPAKI, 26 (70.3%) received treatment in the intensive care unit, mainly for hemolysis, elevated liver enzymes, low platelet count (HELLP) syndrome (28/37, 75.7%), pre-eclampsia (26/37, 70.3%), and postpartum hemorrhage (22/37, 59.5%). Twenty patients required renal replacement treatment (RRT), but renal recovery times were similar in the RRT and non-RRT groups. Renal function recovered completely in 30 patients (81.1%) and partially in one patient (2.7%), and was not re-examined in two patients (5.4%). Three patients (8.1%) were lost to follow-up. Only one patient (2.7%) remained dialysis-dependent, and no maternal deaths occurred. The preterm birth, low birth weight, and infant survival rates were 70.7% (29/41), 68.3% (28/41), and 78.0% (32/41), respectively.
Conclusion(s): RRT does not reduce renal recovery time compared with non-RRT. Overall, the prognoses of both mothers and their fetuses are good following treatment for PPAKI.

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SAGE Publications Ltd
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706.

Impact of integrated clinical decision support systems in the management of pediatric acute kidney injury: a pilot study.
Menon S., Tarrago R., Carlin K., Wu H., Yonekawa K.
Embase
Pediatric Research. 89(5) (pp 1164-1170), 2021. Date of Publication: April 2021.
[Article]

AN: 2005457233
Background: Acute kidney injury (AKI) is common but not often recognized. Early recognition and management may improve patient outcomes.
Method(s): This is a prospective, nonrandomized study of clinical decision support (CDS) system [combining electronic alert and standardized care pathway (SCP)] to evaluate AKI detection and progression in hospitalized children. The study was done in three phases: pre-, intervention (CDS) and post. During CDS, text-page with AKI stage and link to SCP was sent to patient's contact provider at diagnosis of AKI using creatinine. The SCP provided guidelines on AKI management [AEIOU: Assess cause of AKI, Evaluate drug doses, Intake-Output charting, Optimize volume status, Urine dipstick].
Result(s): In all, 239 episodes of AKI in 225 patients (97 females, 43.1%) were analyzed. Proportion of patients with decrease in the stage of AKI after onset was 71.4% for CDS vs. 64.4% for pre- and 55% for post-CDS phases (p = 0.3). Documentation of AKI was higher during CDS (74.3% CDS vs. 47.5% pre- and 57.5% post-, p < 0.001). Significantly greater proportion of patients had nephrotoxic medications adjusted, or fluid plan changed during CDS. Patients from CDS phase had higher eGFR at discharge and at follow-up.
Conclusion(s): AKI remains under-recognized. CDS (electronic alerts and SCP) improve recognition and allow early intervention. This may improve long-term outcomes, but larger studies are needed. Impact: Acute kidney injury can cause significant morbidity and mortality. It is under-recognized in children.Clinical decision support can be used to leverage existing data in the electronic health record to improve AKI recognition.This study demonstrates the use of a novel, electronic health record-linked, clinical decision support tool to improve the recognition of AKI and guideline-adherent clinical care.

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Publisher
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707.

Renal insufficiency in children born preterm: examining the role of neonatal acute kidney injury.
Pulju M., Pruitt C., Reid-Adam J., Spear E., Stroustrup A., Green R.S., Weintraub A.S.
Embase
Journal of Perinatology. 41(6) (pp 1432-1440), 2021. Date of Publication: June 2021.
[Article]
AN: 2011602154
Objective: To identify the prevalence of renal insufficiency (RI) in children with a history of prematurity and acute kidney injury (AKI). Study design: This prospective cohort study evaluated

renal function in children born preterm at 5-9 years of age. Univariable analyses compared perinatal and follow-up data from subjects with and without AKI history, and with and without current RI. Regression analyses were attempted to model RI as a function of AKI and other clinical risk factors.
Result(s): Fifteen of 43 (35%) participants had previously undiagnosed RI. Only children with no AKI history or neonatal stage 1 AKI presented for follow-up. Children born preterm with a history of stage 1 AKI had higher serum creatinine (sCr) at follow-up, but were not more likely to have RI compared to children without stage 1 AKI history (RI prevalence 30% and 36% in AKI and non-AKI group, respectively).
Conclusion(s): The high prevalence of RI in this preterm cohort at middle childhood follow-up highlights the need for routine kidney health assessments in this population. Large multicenter studies are needed to further characterize the impact of premature birth and mild AKI on renal function throughout childhood.

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708.

Netrin-1 and clusterin: Innovative potential diagnostic biomarkers for early renal damage in beta-thalassemia major children.
Abd El-Khalik S.R., Sharaby R.M., Nasif E., Hamza M.B., Ibrahim R.R.
Embase
IUBMB Life. 73(5) (pp 800-810), 2021. Date of Publication: May 2021.
[Article]
AN: 2010878929
Background: Children with beta-thalassemia major (beta-TM) suffer from tubular dysfunction even before the onset of any renal impairment symptoms and/or clinical signs. Therefore, identifying innovative biomarkers allowing early renal damage detection has focused attention.
Aim(s): This study aims to preliminary assess Netrin-1(NTN-1) and clusterin (CLU) in beta-TM children and explore their possible roles as surrogate noninvasive biomarkers of renal tubular dysfunction. Subjects and methods: In this study, 40 beta-TM children and 30 healthy children

were enrolled. Routine serum and urinary biochemical variables were determined. Urinary NTN-1 and CLU levels were measured using ELISA and their mRNA expression in PBMCs were assayed using real-time PCR. Serum TNF-alpha, MDA levels and GST activity were measured. Result(s): Urinary NTN-1 and CLU concentrations and mRNA relative expression levels in PBMCs were significantly increased in beta-TM children relative to controls. Oxidative stress and inflammatory markers revealed significant elevation in beta-TM children compared to controls. The change in these parameters correlated significantly with other renal parameters. ROC curves analysis showed that urinary NTN-1 and CLU levels are of promising diagnostic performance. Conclusion(s): Our results suggest that NTN-1 and CLU are qualified as new noninvasive biomarker panels for early detection of renal injury in beta-TM children. Moreover, urinary NTN-1 is recommended as a precise one during the clinical practices.

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709.

Pediatric acute kidney injury: New advances in the last decade.
Sethi S.K., Bunchman T., Chakraborty R., Raina R.
Embase
Kidney Research and Clinical Practice. 41(1) (pp 40-51), 2021. Date of Publication: 2021.
[Article]
AN: 2007025501
Pediatric acute kidney injury (AKI) is a frequently missed complication. AKI has a significant impact on both short-and long-term outcomes in children. Within the last decade, there have been major landmark developments in this field of critical care pediatric nephrology. The topic was searched by two independent researchers using Google Scholar and PubMed and related studies published in the last 10 years. The terms used for the search were 'pediatric acute kidney injury,' 'pediatric acute renal failure,' 'pediatric dialysis,' 'biomarkers,' 'nephrotoxins,' 'nephrotoxicity in children,' and 'pediatric critical care nephrology.' We found that AKI is common in critically ill neonates and children. Among the various definitions, the Kidney Disease: Improving Global Outcomes (KDIGO) definition is most commonly used. In addition, it is imperative to risk stratify sick children at admission in the hospital to predict AKI and worse outcomes as this aids in early management. There are now major landmark trials that describe the epidemiology, prevention, and management guidelines in this field and health care professionals need to be aware they should diagnose AKI early. Overall, this review highlights the landmark studies in the last decade

and shows that early diagnosis and management of AKI in 'at risk' children can improve outcomes.

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Publisher
The Korean Society of Nephrology
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710.

Acute Kidney Injury in Critically Ill Children Is Not all Acute: Lessons Over the Last 5 Years.
Hessey E., Melhem N., Alobaidi R., Ulrich E., Morgan C., Bagshaw S.M., Sinha M.D.
Embase
Frontiers in Pediatrics. 9 (no pagination), 2021. Article Number: 648587. Date of Publication: 15 Mar 2021.
[Review]
AN: 634598212
Acute kidney injury (AKI) in the pediatric intensive care unit (PICU) is an important risk factor for increased morbidity and mortality during hospitalization. Over the past decade, accumulated data on children and young people indicates that acute episodes of kidney dysfunction can have lasting consequences on multiple organ systems and health outcomes. To date, there are no guidelines for follow-up of surviving children that may be at risk of long-term sequelae following AKI in the PICU. This narrative review aims to describe literature from the last 5 years on the risk of medium and long-term kidney and non-kidney outcomes after AKI in the PICU. More specifically, we will focus on outcomes in children and young people following AKI in the general PICU population and children undergoing cardiac surgery. These outcomes include mortality, hypertension, proteinuria, chronic kidney disease, and healthcare utilization. We also aim to highlight current gaps in knowledge in medium and long-term outcomes in this pediatric population. We suggest a framework for future research to develop evidence-based guidelines for follow-up of children surviving an episode of critical illness and AKI.

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Publisher
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711.

Clinical features of acute kidney injury in patients with nephritic syndrome and minimal change disease: A retrospective, cross-sectional study.
Lin S.-P., Zhu F.-G., Meng J.-L., Sun X.-W., Cui J., Liang S., Yin Z., Sun X.-F., Cai G.-Y.
Embase
Chinese Medical Journal. 134(2) (pp 206-211), 2021. Date of Publication: 20 Jan 2021.
[Article]
AN: 635395125
Background: Minimal change nephropathy (MCD) is a common pathological type of nephrotic syndrome and is often associated with acute kidney injury (AKI). This study aimed to investigate the clinical characteristics and related factors of AKI in patients with MCD and nephrotic syndrome.
Method(s): Patients from Chinese People's Liberation Army General Hospital who were diagnosed with pathological renalMCDwith clinical manifestations of nephrotic syndrome were included from January 1, 2013 to December 31, 2017. Patients diagnosed with membranous nephropathy (MN) by renal biopsy from January 1, 2013 to December 31, 2017 are included as a control population. We retrospectively analyzed the clinical and pathological characteristics of patients as well as the percentages and clinical characteristics of AKI in different age groups. We assessed the correlation of pathological characteristics with serum creatinine using multivariate linear regression analysis.
Result(s): A total of 367 patients withMCDwere included in the analysis, with a sex ratio of 1.46: 1 (male: Female) and an age range of 6 to 77 years. Among all the patients, 109 developed AKI (29.7%), and of these patients, 85 were male (78.0%). In the 586 patients with MN, 27 (4.6%) patients developed AKI. The percentage of AKI in MCD patients was significantly higher than that in MN patients (x2 = 41.063, P < 0.001). The percentage of AKI increased with age in theMCDpatients. The percentage of AKI in patients aged 50 years or older was 52.9% (46/87), which was significantly higher than that [22.5% (63/280)] in patients under 50 years (x2 = 6.347, P = 0.013). We observed statistically significant differences in age (43 [27, 59] years vs. 28 [20, 44] years, Z = 5.487, P < 0.001), male (78.0% vs. 51.4%, x2 = 22.470, P < 0.001), serum albumin (19.9 +/- 6.1 g/L vs. 21.5 +/- 5.7 g/L, t = 2.376, P = 0.018), serum creatinine (129.5 [105.7, 171.1] mmol/L vs. 69.7 [57.7, 81.9] mmol/L, Z = 14.190, P < 0.001), serum urea (10.1 [6.2, 15.8] mmol/L vs. 4.7 [3.6, 6.4] mmol/L, Z = 10.545, P < 0.001), IgE (266.0 [86.7, 963.0] IU/ml vs. 142.0 [35.3, 516.5] IU/ml, Z = 2.742, P = 0.007), history of diabetes (6.4% vs. 1.2%, P = 0.009), and history of hypertension (23.9% vs. 5.1%, x2 = 28.238, P < 0.001) between the AKI group and the non-AKI group. According to multivariate linear regression analysis, among the renal pathological features analyzed, renal tubular epithelial cell damage (b = 178.010, 95% CI: 147.888_208.132, P <

0.001) and renal interstitial edema (b = 28.833, 95% CI: 11.966_45.700, P = 0.001) correlated with serum creatinine values.
Conclusion(s): The percentage of AKI in MCD patients is significantly higher than that inMNpatients. Patients over 50 years old are more likely to develop AKI. Renal tubular epithelial cell injury and renal interstitial edema may be the main pathological lesions that are associated with elevated serum creatinine in patients with MCD.

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Publisher
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712.

Improving the quality of neonatal acute kidney injury care: neonatal-specific response to the 22nd Acute Disease Quality Initiative (ADQI) conference.
Harer M.W., Selewski D.T., Kashani K., Basu R.K., Gist K.M., Jetton J.G., Sutherland S.M., Zappitelli M., Goldstein S.L., Mottes T.A., Askenazi D.J.
Embase
Journal of Perinatology. 41(2) (pp 185-195), 2021. Date of Publication: February 2021.
[Review]
AN: 2006078824
With the adoption of standardized neonatal acute kidney injury (AKI) definitions over the past decade and the concomitant surge in research studies, the epidemiology of and risk factors for neonatal AKI have become much better understood. Thus, there is now a need to focus on strategies designed to improve AKI care processes with the goal of reducing the morbidity and mortality associated with neonatal AKI. The 22nd Acute Dialysis/Disease Quality Improvement (ADQI) report provides a framework for such quality improvement in adults at risk for AKI and its sequelae. While many of the concepts can be translated to neonates, there are a number of specific nuances which differ in neonatal AKI care. A group of experts in pediatric nephrology and neonatology came together to provide neonatal-specific responses to each of the 22nd ADQI consensus statements.

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Publisher
Springer Nature
Year of Publication
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713.

Is endothelial glycocalyx damage a cause of renal scarring in vesicoureteral reflux with febrile urinary tract infection?.
Akarken I., Tarhan H., Arslan F.D., Saritas S., Yavascan O., Sahin H., Tekgul S.
Embase
Nephrologie et Therapeutique. 17(3) (pp 175-179), 2021. Date of Publication: June 2021.
[Article]
AN: 2011901800
Introduction: Endothelial glycocalyx is a luminal layer which can be damaged by inflammatory agents or pathogens. The endothelial glycocalyx damage is thought to have a role in the formation of renal scars in children who have febrile urinary tract infection and vesicoureteral reflux. This study aimed to compare the blood levels of endothelial glycocalyx components heparan sulfate and Syndecan-1 in children with and without renal scarring due to vesicoureteral reflux-associated febrile urinary tract infection.
Material(s) and Method(s): Data of the patients diagnosed with vesicoureteral reflux without renal scarring (Group 1), patients with vesicoureteral reflux and renal scarring (Group 2), and completely healthy children (Group 3) were retrospectively reviewed. Blood levels of heparan sulfate and Syndecan-1 were measured and the results were compared.
Result(s): The entire cohort consisted of 90 patients; there were 30 patients in each group. Mean patient age was 49.7 +/- 18.0 months. Mean serum heparan sulfate (42.90 +/- 18.90 ng/mL) and Syndecan-1 (37.59 +/- 13.77 ng/mL) levels of Group 2 were significantly higher than those of other groups. The cut-off value for heparan sulfate was 35.17 ng/mL, with a 63% sensitivity and 86% specificity. The cut-off value for Syndecan-1 was 29.99 ng/mL with a 70% sensitivity and 80% specificity.
Conclusion(s): Our findings indicate that blood levels of heparan sulfate and Syndecan-1 could be related with renal scarring in patients with vesicoureteral reflux, especially in the setting of febrile urinary tract infection. However, due to their low sensitivity, these biomarkers should be used along with clinical data.

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Publisher
Elsevier Masson s.r.l.
Year of Publication
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714.

Child-to-adult body mass index trajectories and the risk of subclinical renal damage in middle age.
Yan Y., Zheng W., Ma Q., Chu C., Hu J., Wang K., Liao Y., Chen C., Yuan Y., Lv Y., Xu X., Wang Y., Mu J.
Embase
International Journal of Obesity. 45(5) (pp 1095-1104), 2021. Date of Publication: May 2021.
[Article]
AN: 2010536235
Background: Although it is well established that obesity is a risk factor for chronic kidney disease, the impact of distinct long-term body mass index (BMI) developmental patterns on renal function in later life is poorly understood.
Method(s): This study utilized data derived from the Hanzhong Adolescent Hypertension Cohort, a prospective cohort followed over 30 years. We used latent class growth mixture modeling method to identify the BMI trajectories of participants who had received BMI measurements at least three times from childhood (age: 6-15 years) to adulthood (age: 36-45 years). The modified Poisson regression model was used to identify potential associations between BMI trajectories and subclinical renal damage (SRD) in midlife.
Result(s): Within a total of 2162 individuals, we identified four distinct long-term BMI trajectories: stable normal (54.72%), moderately increasing overweight (32.42%), resolving (10.27%), and progressively increasing obese (2.59%). By the latest follow-up in 2017, a total of 257 (13.1%) individuals were diagnosed with SRD. Compared with the stable normal group, the moderately increasing overweight group and the progressively increasing obese group exhibited significantly a higher urinary albumin-to-creatinine ratio and a higher odd of existing SRD in 2017 (risk ratio [RR], 1.70 [95% confidence interval (CI), 1.33-2.19] and 4.35 [95% CI, 3.00-6.30], respectively). However, individuals who resolved their elevated BMI in early life had a similar risk for SRD as those who had never been obese or overweight (RR, 1.17 [95% CI, 0.77-1.79]).
Conclusion(s): Child-to-adult BMI trajectories that worsen or persist at high levels were associated with an increased risk for SRD in midlife. Maintaining a normal BMI or reversing an elevated BMI in early life may be beneficial to renal function over the long term.

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Publisher
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715.

Incidence and outcome of acute kidney injury in hospitalised children.
Paudel R., Shah G.S., Chaudhary S., Dharel D., Timilsina A.
Embase
Journal of Nepal Paediatric Society. 41(1) (pp 80-86), 2021. Date of Publication: 2021.
[Article]
AN: 2007166030
Introduction: Acute kidney injury (AKI) is common in hospitalised children with adverse short and long term outcomes. Detection of the incidence, etiological profile and outcome of AKI is important for starting preventive and therapeutic modalities. This study aimed to determine the incidence, etiology and short term outcome of AKI at a tertiary centre in Eastern Nepal.
Method(s): A prospective observational study was conducted in children from two months to 14 years of age admitted in paediatric wards and paediatric intensive care unit (PICU) of a tertiary centre of Eastern Nepal. AKI was defined according to pRIFLE criteria.
Result(s): From May 2015 to March 2016, 942 patients enrolled in Paediatric wards and PICU were evaluated. The overall incidence of AKI was found to be 5.9% and 18.23% in patients admitted in PICU. AKI was commonest among cases having infectious etiology compromising 73.2% (n = 41), 17.85% (n = 10) due to primary renal disease, 5.35% (n = 3) secondary to congenital heart disease, and 3.57% due to other causes. Among AKI patients, 55.4% (n = 31) required inotropic support, 33.9% (n = 19) required mechanical ventilation while 5.36% (n = 3) underwent dialysis. Out of 56 AKI patients 71.4% (n = 40) had improved clinical outcome and 28.6% (n = 16) expired. Patient with AKI had significant longer duration of hospital stay as compared to non AKI (Seven days vs. three days, $p < 0.001$). Mortality was high among AKI patients on injury and failure stage ($p = 0.003$) and those requiring mechanical ventilation and inotropic support ($p < 0.001$).
Conclusion(s): The incidence of AKI was found to be high in paediatric patients. Presence of AKI increased the duration of hospital stay and mortality in hospitalised children often requiring mechanical ventilation and inotropic support.

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716.

Comparison of efficacy of first haemodialysis session for correction of metabolic disturbances in acute kidney injury and chronic kidney disease in children.
Verma S., Abhinay A., Mishra O.P., Singh A., Prasad R.
Embase
Journal of Nepal Paediatric Society. 41(1) (pp 35-41), 2021. Date of Publication: 03 May 2021.
[Article]
AN: 2007166023
Introduction: Acute kidney injury and chronic kidney disease present with various complications like electrolyte disturbances, metabolic acidosis and fluid overload in children. The objective of the study was to compare the efficacy of the first session of haemodialysis in children with acute kidney injury stage 3 and chronic kidney disease G5 treated by dialysis for immediate recovery of renal functions in terms of reduction in the level of azotemia, correction of fluid and electrolyte imbalances, metabolic acidosis, and improvement in clinical status.
Method(s): This was a cross-sectional comparative observational study conducted on 13 patients of acute kidney injury stage 3 and 46 patients with chronic kidney disease G5, who required haemodialysis. Their clinical assessment, fluid status, renal function tests, electrolyte, bicarbonate were done at admission and completion of the first session of heamodialysis.
Result(s): The age group of children was six to 16 years (median 11.4 years). There were six males (46%) and seven females (54%) in the acute kidney injury group and 29 (63%) males and 17 (37%) females in chronic kidney disease G5 groups. Sepsis (31%) and glomerulonephritis (31%) were common etiologies detected for acute kidney injury while in chronic kidney disease G5, congenital anomalies of the kidney and the urinary tract were the commonest (50%). There were significant reductions in the levels of serum urea and creatinine and a rise in blood pH, bicarbonate level, and base excess following the first session of haemodialysis in comparison to pre-dialysis values in both AKI and CKD.
Conclusion(s): The study demonstrated improvement in the clinical parameters and biochemical parameters equally after the first dialysis sessions in both groups. This is one of the effective renal replacement therapy and should be instituted wherever indicated to improve the immediate outcome of the patients.

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717.

Comparing predictive values of carbohydrate antigen 19-9, neutrophil gelatinase-associated lipocalin, and kidney injury molecule-1 in 161 patients with ureteropelvic junction obstruction.
Fendereski K., Nabighadim A., Seyedtabib M., Daryabari S.S., Haghi-Ashtiani M.T., Kajbafzadeh A.-M.
Embase
Pediatric Nephrology. 36(3) (pp 631-638), 2021. Date of Publication: March 2021.
[Article]
AN: 2006171060
Background: To evaluate and compare the efficacy of urinary carbohydrate antigen 19-9 (CA19-9), neutrophil gelatinase-associated lipocalin (NGAL), and kidney injury molecule-1 (KIM-1) biomarkers as predictive factors to determine the surgery requirement in patients with ureteropelvic junction obstruction.
Method(s): We obtained urine samples from 161 patients at diagnosis and evaluated their levels of the three biomarkers. The patients were under observation for 2 years; subsequently, they were divided into two groups based on their requirement of pyeloplasty. We determined the correlation between the urinary concentration of the biomarkers and surgical interventions, as well as the kidney function deterioration and sonography outcomes.
Result(s): The non-surgery group included 60 male and 22 female patients with mean age of 21 months. The surgery group comprised 58 boys and 21 girls with mean age of 26.9 months with no significant difference of age and gender between the two groups. The outcomes were indicative of higher efficacy of CA19-9 level with a sensitivity and specificity of 84.2% and 73.2% at the cutoff point of 59.09 U/ml. Also, a significant negative correlation was detected between the kidney function and the concentrations of CA19-9 and NGAL.
Conclusion(s): Our evaluations demonstrate the higher efficacy of CA19-9 to predict the requirement of surgical intervention in comparison with the other biomarkers, as well as a significant correlation between kidney function deterioration and urinary CA19-9 and NGAL. The outcomes of this investigation could pave the way for more extensive clinical application of these urinary biomarkers, besides future research determining the association between markers and kidney fibrosis.

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718.

Are we ignoring coexisting rhabdomyolysis as an important aggravating factor for acute kidney injury among childhood diabetic ketoacidosis?.
Giri P.P., Akhtar S., Laha S., Sinha R.
Embase
Journal of Pediatric Endocrinology and Metabolism. 34(2) (pp 251-254), 2021. Date of Publication: 01 Feb 2021.
[Article]
AN: 2008386004
Although Acute Kidney Injury (AKI) has been described among childhood diabetes ketocidosis (cDKA) there is scarcity of literature on the role of concomitant rhabdomyolysis. A retrospective chart review was undertaken (2014-2018) to identify cDKA who developed AKI and had evidence of rhabdomyolysis defined by serum creatine phosphokinase (CPK) > 5 times upper limit of normal. 46 cDKA were identified. Ten (22%) developed AKI with 6/10 reaching peak AKI Stage 3 and 8/10 had co-current rhabdomyolysis. In comparison to non rhabdomyolysis group, cDKA with rhabdomyolysis were at presentation significantly more likely to be hypotensive and have higher corrected sodium and calculated osmolality. Subsequently they were more likely to develop lower trough potassium levels during treatment. Five patients, all with rhabdomyolysis, needed dialysis: Median duration 9 days (range 4-35). Three children in our cohort died, all from infection complications during treatment, one in AKI only group who did not receive dialysis and two in AKI with rhabdomyolysis on dialysis. Rhabdomyolysis was common among our cohort of cDKA with AKI and was associated with high morbidity and mortality. Rapid flux in electrolytes and osmolality may be important precipitating factors. We recommend larger prospective studies exploring the importance of rhabdomyolysis among cDKA with AKI.

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Publisher
De Gruyter Open Ltd
Year of Publication
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719.

Acute kidney injury in patients with Visceral Leishmaniasis in Northwest Ethiopia.
Hailu W., Mohamed R., Fikre H., Atnafu S., Tadesse A., Diro E., Van Grienvsen J.
Embase
PLoS ONE. 16(6 June) (no pagination), 2021. Article Number: e0252419. Date of Publication: June 2021.
[Article]
AN: 2012928798

Background: Visceral Leishmaniasis (VL) is a neglected tropical disease endemic to several countries including Ethiopia. Outside of Africa, kidney involvement in VL is frequent and associated with increased mortality. There is however limited data on acute kidney injury (AKI) in VL patients in East-Africa, particularly in areas with high rates of HIV co-infection. This study aims to determine the prevalence, characteristics and associated factors of AKI in VL patients in Northwest Ethiopia.
Method(s): A hospital based retrospective patient record analysis was conducted including patients treated for VL from January 2019 to December 2019 at the Leishmaniasis Research and Treatment Center (LRTC), Gondar, Ethiopia. Patients that were enrolled in ongoing clinical trials at the study site and those with significant incomplete data were excluded. Data was analyzed using SPSS version 20. P values were considered significant if < 0.05. Results Among 352 VL patients treated at LRTC during the study period, 298 were included in the study. All were male patients except two; the median age was 23 years (IQR: 20-27). The overall prevalence of AKI among VL patients was 17.4% (confidence interval (CI): 13.6%- 22.2%). Pre-renal azotemia (57%) and drug-induced AKI (50%) were the main etiologies of AKI at admission and post-admission respectively. Proteinuria and hematuria occurred in 85% and 42% of AKI patients respectively. Multivariate logistic regression revealed HIV coinfection (adjusted odds ratio (AOR): 6.01 95% CI: 1.99-18.27, p = 0.001) and other concomitant infections (AOR: 3.44 95% CI: 1.37-8.65, p = 0.009) to be independently associated with AKI.
Conclusion(s): AKI is a frequent complication in Ethiopian VL patients. Other renal manifestations included proteinuria, hematuria, and pyuria. HIV co-infection and other concomitant infections were significantly associated with AKI. Further studies are needed to quantify proteinuria and evaluate the influence of AKI on the treatment course, morbidity and mortality in VL patients.

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Publisher
Public Library of Science
Year of Publication
2021

720.

Acute kidney injury in pediatric patients hospitalized with acute COVID-19 and multisystem inflammatory syndrome in children associated with COVID-19.
Basalely A., Gurusinghe S., Schneider J., Shah S.S., Siegel L.B., Pollack G., Singer P., Castellanos-Reyes L.J., Fishbane S., Jhaveri K.D., Mitchell E., Merchant K., Capone C., Gefen A.M., Steinberg J., Sethna C.B.
Embase
Kidney International. 100(1) (pp 138-145), 2021. Date of Publication: July 2021.
[Article]

AN: 2011652163
This study describes the incidence, associated clinical characteristics and outcomes of acute kidney injury in a pediatric cohort with COVID-19 and Multisystem Inflammatory Syndrome in Children (MIS-C). We performed a retrospective study of patients 18 years of age and under admitted to four New York hospitals in the Northwell Health System interned during the height of the COVID-19 pandemic, between March 9 and August 13, 2020. Acute kidney injury was defined and staged according to Kidney Disease: Improving Global Outcomes criteria. The cohort included 152 patients; 97 acute-COVID-19 and 55 with MIS-C associated with COVID-19. Acute kidney injury occurred in 8 with acute-COVID-19 and in 10 with MIS-C. Acute kidney injury, in unadjusted models, was associated with a lower serum albumin level (odds ratio 0.17; 95% confidence interval 0.07, 0.39) and higher white blood cell counts (odds ratio 1.11; 95% confidence interval 1.04, 1.2). Patients with MIS-C and acute kidney injury had significantly greater rates of systolic dysfunction, compared to those without (80% vs 49%). In unadjusted models, patients with acute kidney injury had 8.4 days longer hospitalizations compared to patients without acute kidney injury (95% confidence interval, 4.4-6.7). Acute kidney injury in acute-COVID-19 and MIS-C may be related to inflammation and/or dehydration. Further research in larger pediatric cohorts is needed to better characterize risk factors for acute kidney injury in acute-COVID-19 and with MIS-C consequent to COVID-19.

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33675848 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33675848]
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Publisher
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Year of Publication
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721.

Incidence and impact of acute kidney injury in patients with hypoplastic left heart syndrome following the hybrid stage 1 palliation.
Cunningham T.W., Tan Y., Krawczeski C.D., Spencer J.D., Bai S., Phelps C., Yates A.R.
Embase
Cardiology in the Young. 31(3) (pp 414-420), 2021. Date of Publication: March 2021.
[Article]
AN: 633610904

Objective: Acute kidney injury leads to worse outcomes following paediatric cardiac surgery. There is a lack of literature focusing on acute kidney injury after the Hybrid stage 1 palliation for single ventricle physiology. Patients undergoing the Hybrid Stage 1, as a primary option, may have a lower incidence of kidney injury than previously reported. When present, kidney injury may increase the risk of post-operative morbidity and mortality.
Method(s): A retrospective, single centre review was conducted in patients with hypoplastic left heart syndrome who underwent Hybrid Stage 1 from 2008 to 2018. Acute kidney injury was defined as a dichotomous yes (meeting any injury criteria) or no (no injury) utilising two different criteria utilised in paediatrics. The impact of kidney injury on perioperative characteristics and 30-day mortality was analysed.
Result(s): The incidence of acute kidney injury is 13.4-20.7%, with a severe injury rate of 2.4%. Patients without a prenatal diagnosis of hypoplastic left heart syndrome have a higher incidence of kidney injury than those prenatally diagnosed, (40% versus 14.5%, p = 0.024). Patients with acute kidney injury have a significantly higher incidence of 30-day mortality, 27.3%, compared to without, 5.6% (p = 0.047).
Discussion(s): The incidence of severe acute kidney injury after the Hybrid Stage 1 palliation is low. A prenatal diagnosis may be associated with a lower incidence of kidney injury following the Hybrid Stage 1. Though uncommon, severe acute kidney injury following Hybrid Stage 1 may be associated with higher 30-day mortality.

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Publisher
Cambridge University Press
Year of Publication
2021

722.

Pregnancy-related acute kidney injury at high altitude: a retrospective observational study in a single center.
Li X., Wu X., Zhang M., Xu L., Li G., Wen Y., Wang W.
Embase
BMC Nephrology. 22(1) (no pagination), 2021. Article Number: 215. Date of Publication: December 2021.
[Article]
AN: 2012327638
Background: Pregnancy-related acute kidney injury (Pr-AKI) is associated with maternal and fetal morbidity and mortality. There are few studies focusing on Pr-AKI at high altitude in the literature.
Objective(s): to investigate the incidence, etiology, clinical features and maternal-fetal outcomes of Pr-AKI in women living at high altitude.
Method(s): 6,512 pregnant women attending the Department of Obstetrics & Gynecology at local hospital from January 2015 to December 2018 were screened for Pr-AKI. Patients with serum creatinine above normal range(> 70umol/L) then underwent assessment to confirm the diagnosis of Pr-AKI. AKI was diagnosed and staged based on Kidney Disease Improving Global

Outcomes(KDIGO) guideline. Individuals meeting the Pr-AKI criteria were recruited. Their clinical data were recorded and retrospectively analyzed.
Result(s): Pr-AKI was identified in 136/6512(2.09 %) patients. Hypertensive disorders of pregnancy(HDP) was the leading cause of Pr-AKI(35.3 %). 4(2.9 %) women died and the majority(86.1 %) had recovered renal function before discharge. Fetal outcomes were confirmed in 109 deliveries with gestational age >= 20 weeks. Pre-term delivery occurred in 30(27.3 %) cases and perinatal deaths in 17(15.5 %). The rate of low birth weight infant(LBWI) and intrauterine growth restriction(IUGR) was 22.0 and 10.9 % respectively. 16(14.5 %) infants were admitted to NICU after birth. Patients with HDP had a higher cesarean rate(56.3 %). More IUGR(25.0 %) and LBWI(37.8 %) were observed in their infants with a higher risk of admission to NICU(22.0 %). High altitude might have an adverse impact on HDP-related Pr-AKI patients with earlier terminated pregnancy and more stillbirth/neonatal death. Logistic regression models indicated that uncontrolled blood pressure, high altitude and advanced AKI were associated with adverse fetal outcomes in HDP-related Pr-AKI patients.
Conclusion(s): Pr-AKI was not rare in high-altitude regions and caused severe fetal morbidities and mortalities. Uncontrolled blood pressure, high altitude and advanced AKI were all risk factors for adverse fetal outcomes in Pr-AKI patients, especially for those with hypertensive disorders of pregnancy.

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Publisher
BioMed Central Ltd
Year of Publication
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723.

The incidence of acute kidney injury in children undergoing allogenic hematopoietic stem cell transplantation: A pilot study.
Augustynowicz M., Kalwak K., Zwolinska D., Musial K.
Embase
Advances in Clinical and Experimental Medicine. 30(1) (pp 87-92), 2021. Date of Publication: 2021.
[Article]
AN: 2011244705
Background. Acute kidney injury (AKI) is a common feature in adults undergoing allogeneic hematopoietic stem cell transplantation (alloHSCT). However, accurate assessment of AKI incidence in the pediatric population still seems a challenge. Objectives. To evaluate the incidence of AKI according to the pRIFLE criteria in children undergoing alloHSCT, with special focus on differences between patients transplanted due to oncological and non-oncological indications. Material and methods. A retrospective analysis of data, concerning 135 children undergoing alloHSCT due to oncological (89 patients) or other (46 patients) reasons, was performed. The values of estimated glomerular filtration rate (eGFR) were measured before

alloHSCT, 24 h after, 1, 2, 3, 4, 8 weeks, 3 and 6 months after alloHSCT, and the AKI incidence was analyzed. Results. Acute kidney injury was diagnosed in 54% of all patients. The Risk stage (R) was noticed at least once in 46% of oncological and 37% of non-oncological children. The Injury stage (I) concerned 12% of oncological and 6% of non-oncological patients undergoing alloHSCT. The incidence of AKI in both groups was comparable. The mean eGFR values in oncological children were higher than those in the non-oncological patients even before transplantation and until the 4th week after alloHSCT. The eGFR increased significantly in all patients 24 h after alloHSCT and returned to pre-transplantation records after 2-3 weeks. Then, oncological patients demonstrated a gradual decrement of eGFR. Six months after transplantation, eGFR values in oncological children were significantly lower compared to pre-transplantation records, whereas in non-oncological children, these values were comparable. Conclusions. Although the type of indication for alloHSCT has no impact on the AKI incidence, children undergoing alloHSCT due to oncological reasons are at greater risk of renal impairment 6 months after transplantation than non-oncological patients.

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Publisher
Wroclaw University of Medicine
Year of Publication
2021

724.

Early prediction of pediatric acute kidney injury from the emergency department: A pilot study.
Hanson H.R., Carlisle M.A., Bensman R.S., Byczkowski T., Depinet H., Terrell T.C., Pitner H., Knox R., Goldstein S.L., Basu R.K.
Embase
American Journal of Emergency Medicine. 40 (pp 138-144), 2021. Date of Publication: February 2021.
[Article]
AN: 2004809553
Background: Identifying acute kidney injury (AKI) early can inform medical decisions key to mitigation of injury. An AKI risk stratification tool, the renal angina index (RAI), has proven better than creatinine changes alone at predicting AKI in critically ill children.
Objective(s): To derive and test performance of an "acute" RAI (aRAI) in the Emergency Department (ED) for prediction of inpatient AKI and to evaluate the added yield of urinary AKI biomarkers.
Method(s): Study of pediatric ED patients with sepsis admitted and followed for 72 h. The primary outcome was inpatient AKI defined by a creatinine >1.5x baseline, 24-72 h after admission. Patients were denoted renal angina positive (RA+) for an aRAI score above a population derived cut-off. Test characteristics evaluated predictive performance of the aRAI compared to changes in creatinine and incorporation of 4 urinary biomarkers in the context of renal angina were assessed.
Result(s): 118 eligible subjects were enrolled. Mean age was 7.8 +/- 6.4 years, 16% required intensive care admission. In the ED, 27% had a +RAI (22% had a >50% creatinine increase). The

aRAI had an AUC of 0.92 (0.86-0.98) for prediction of inpatient AKI. For AKI prediction, RA+ demonstrated a sensitivity of 94% (69-99) and a negative predictive value of 99% (92-100) (versus sensitivity 59% (33-82) and NPV 93% (89-96) for creatinine >=2x baseline). Biomarker analysis revealed a higher AUC for aRAI alone than any individual biomarker.
Conclusion(s): This pilot study finds the aRAI to be a sensitive ED-based tool for ruling out the development of in-hospital AKI.

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Publisher
W.B. Saunders
Year of Publication
2021

725.

Acute kidney injury in children with COVID-19: a retrospective study.
Kari J.A., Shalaby M.A., Albanna A.S., Alahmadi T.S., Alherbish A., Alhasan K.A.
Embase
BMC Nephrology. 22(1) (no pagination), 2021. Article Number: 202. Date of Publication: December 2021.
[Article]
AN: 2012305504
Background: Acute kidney injury (AKI) is a complication of coronavirus disease 2019 (COVID-19). The reported incidence of AKI, however, varies among studies. We aimed to evaluate the incidence of AKI and its association with mortality and morbidity in children infected with severe acute respiratory distress syndrome coronavirus 2 (SARS-CoV-2) who required hospital admission.
Method(s): This was a multicenter retrospective cohort study from three tertiary centers, which included children with confirmed COVID-19. All children were evaluated for AKI using the Kidney Disease Improving Global Outcomes (KDIGO) definition and staging.
Result(s): Of 89 children included, 19 (21 %) developed AKI (52.6 % stage I). A high renal angina index score was correlated with severity of AKI. Also, multisystem inflammatory syndrome in children (MIS-C) was increased in children with AKI compared to those with normal kidney function (15 % vs. 1.5 %). Patients with AKI had significantly more pediatric intensive care admissions (PICU) (32 % vs. 2.8 %, $p < 0.001$) and mortality (42 % vs. 0 %, $p < 0.001$). However, AKI was not associated with prolonged hospitalization (58 % vs. 40 %, $p = 0.163$) or development of MIS-C (10.5 % vs. 1.4 %, $p = 0.051$). No patient in the AKI group required renal replacement therapy. Residual renal impairment at discharge occurred in 9 % of patients. This was significantly influenced by the presence of comorbidities, hypotension, hypoxia, heart failure, acute respiratory distress, hypernatremia, abnormal liver profile, high C-reactive protein, and positive blood culture.

Conclusion(s): AKI occurred in one-fifth of children with SARS-CoV-2 infection requiring hospital admission, with one-third of those requiring PICU. AKI was associated with increased morbidity and mortality, and residual renal impairment at time of discharge.

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34059010 [https://www.ncbi.nlm.nih.gov/pubmed/?term=34059010]
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Publisher
BioMed Central Ltd
Year of Publication
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726.

Lower albumin level and longer disease duration are risk factors of acute kidney injury in hospitalized children with nephrotic syndrome.
Yang E.M., Yoo K.H., Ahn Y.H., Kim S.H., Lee J.W., Chung W.Y., Kim K.H., Cho H., Lee M.J., Suh J.-S., Hyun H.S., Lee J.M., Cho M.H., Kim J.H., Ha I.-S., Cheong H.I., Kang H.G.
Embase
Pediatric Nephrology. 36(3) (pp 701-709), 2021. Date of Publication: March 2021.
[Article]
AN: 2006073165
Background: Children with nephrotic syndrome (NS) are at an increased risk of acute kidney injury (AKI) and the incidence of AKI in this population is reportedly increasing. This study aimed to investigate the incidence, clinical profiles, and risk factors of AKI in hospitalized children with NS through a nationwide study.
Method(s): This retrospective multicenter study included 14 pediatric nephrology centers in Korea. From 2013 to 2017, a total of 814 patients with idiopathic NS were cared for at participating centers. Among them, 363 patients were hospitalized for NS and investigated in this study.
Result(s): A total of 363 children with NS were hospitalized 574 times. AKI occurred in 93 admissions (16.2%) of 89 patients: 30 (32.3%) stage 1; 24 (25.8%) stage 2; and 39 (41.9%) stage 3. Multivariate logistic regression analysis showed that longer disease duration, lower albumin level, and methylprednisolone pulse treatment were significantly associated with AKI development in hospitalized children with NS. AKI was associated with a longer hospital stay than non-AKI (median 10 vs. 7 days, P = 0.001). Among 93 admissions, 85 (91.4%) episodes recovered from AKI without complication, whereas 6 (6.5%) progressed to advanced chronic kidney disease (CKD).
Conclusion(s): AKI is not uncommon in hospitalized children with NS, and its incidence in this nationwide study was 16.2%. Risk factors for AKI in hospitalized children with NS include longer disease duration, lower albumin level, and methylprednisolone pulse therapy. Pediatric NS

patients with these characteristics should be under more strict scrutiny for the occurrence of AKI. [Figure not available: see fulltext.]

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Status
Embase
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Publisher
Springer Science and Business Media Deutschland GmbH
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727.

Developing and validating a risk score model for prediction of acute kidney injury in non-ICU hospitalized patients.
Elrewihby W., Kasem H., Raghib A., Salah Y., Kora M.
Embase
Clinical Nephrology. 95(4) (pp 182-188), 2021. Date of Publication: April 2021.
[Article]
AN: 2011681707
Background: Acute kidney injury (AKI) is a common complication in hospitalized patients. Several risk score models have been designed for intensive care unit (ICU) patients. We aim to establish a new risk prediction score for AKI patients in general wards.
Material(s) and Method(s): All hospitalized ward patients who developed AKI were included in our study. To develop a new prediction score model we used the data collected from 107 patients who developed AKI. We used our prospective validation cohort (122 patients) to develop and validate this prediction score model of AKI.

Result(s): Of 10,243 patients, 107 (1%) patients developed AKI 24 hours after admission to the general wards. Mortality rate was 26.2%. A score model of 15 points, based on clinical and laboratory data, was developed for prediction of AKI. We demonstrated a cutoff value . 4 out of 15 as a predictor of AKI in non-ICU patients. The area under the receiver operating characteristic (AUC ROC) value of the score model was 0.950, 95% CI (confidence interval) and the p-value < 0.001 with sensitivity of 94.39 and specificity of 81.43. On applying this score model on a prospective group of patients (validation group n = 122), the AUC ROC value was 0.826.
Conclusion(s): We developed and validated a new risk score model with a cutoff value >= 4 out of 15 for prediction of AKI in non-ICU patients. It will help in the early prediction of AKI in non-ICU patients.

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33433321 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33433321]
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Publisher
Dustri-Verlag Dr. Karl Feistle
Year of Publication
2021

728.

BMI Trajectories from Childhood to Midlife are Associated with Subclinical Kidney Damage in Midlife.
Liu C., Tian J., Jose M.D., Dwyer T., Venn A.J.
Embase
Obesity. 29(6) (pp 1058-1066), 2021. Date of Publication: June 2021.
[Article]
AN: 2011181932
Objective: This study aimed to investigate the relationship of BMI trajectories from childhood with subclinical kidney damage (SKD) in midlife, a surrogate measure for chronic kidney disease.
Method(s): The study followed up 1,442 participants from the 1985 Australian Schools Health and Fitness Survey who were between 7 and 15 years old at the time the survey was conducted and who had BMI measurements in childhood and at least two follow-ups in adulthood. Measures of kidney function for participants 36 to 50 years old were also included. Latent class growth mixture modeling was used to identify the BMI trajectories. Log-binomial regression determined the associations of BMI trajectories with SKD defined as either 1) an estimated glomerular filtration rate (eGFR) of 30 to 60 mL/min/1.73 m2 or 2) an eGFR > 60 mL/min/1.73 m2 with a urine albumin-creatinine ratio >= 2.5 mg/mmol (males) or 3.5 mg/mmol (females), adjusting for childhood age, sex, and duration of follow-up.
Result(s): Relative to the persistently low trajectory (n = 534, 37.0%), being in higher BMI trajectories was associated with greater risk of SKD in midlife (relative risk [RR] = 1.89, 95% CI = 1.10-3.25 for progressing to moderate [n = 633, 43.9%]; RR = 1.91, 95% CI = 0.95-3.81 for progressing to moderate/high [n = 194, 13.5%]; RR = 2.86, 95% CI = 1.03-7.99 for progressing to high/very high [n = 39, 2.7%]; and RR = 2.47, 95% CI = 0.77-7.94 for adult-onset high [n = 35, 2.4%]).
Conclusion(s): Participants with increasing BMI trajectories from childhood had an increased risk of SKD in midlife.

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33864358 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33864358]
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Publisher
Blackwell Publishing Inc.
Year of Publication
2021

729.

Can serum Neutrophil Gelatinase Associated Lipocalin and Kidney Injury Molecule-1 help in decision making for surgery in antenatally dedected hydronephrosis.
Yigit D., Taskinlar H., Avlan D.
Embase
Journal of Pediatric Urology. 17(1) (pp 71.e1-71.e7), 2021. Date of Publication: February 2021.
[Article]
AN: 2008449643
Introduction: Congenital obstructive uropathies are among leading reasons for renal failure in children. Answers to questions such as what the critical threshold of obstruction is or which degree of obstruction disrupts the development of the kidney still remain unclear. Several biomarkers such as Kidney Injury Molecule 1 (KIM-1) and Neutrophil Gelatinase Associated Lipocalin (NGAL) may help clinicians in the clinical evaluation and appropriate planning of the disease.
Objective(s): This study aimed to investigate whether serum and urinary KIM-1 and NGAL levels contribute to conventional methods in decision-making for surgery in the postnatal period of infants with antenatal hydronephrosis. Study design: 34 patients with the diagnosis of antenatal hydronephrosis were evaluated prospectively. Renal pelvis diameters of all patients were above 10 mm in the ultrasonography (USG). Patients underwent diuretic renal scintigraphy after neonatal period. Patients were divided into two groups as surgery or follow-up based on USG and scintigraphy findings. Blood and urine samples were collected at first visits in both groups and again at the 3. Postoperative month in the surgery group. Serum and urinary NGAL and KIM-1 levels were measured by ELISA method. Study data were compared through the Mann-Whitney U and Wilcoxon Signed-Ranks test.
Result(s): There were 10 patients in the surgery group and 24 patients in the follow-up group. The age and gender did not differ between the groups. The surgery group had significantly higher median serum NGAL values (259.2 ng/mL) than that in the follow-up group (46.8 ng/mL, p = 0.028). The postoperative reduction of the median serum NGAL to 68.1 ng/mL compared to preoperative level was also found to be significant (p = 0.037) in the surgery group. Between the groups and within the surgery group no statistically significant difference was detected in terms of median urinary NGAL, and serum and urine KIM-1 levels.
Discussion(s): USG and renal scintigraphy are frequently used in determining whether patients with antenatal hydronephrosis need surgical intervention in the postnatal period. Several new biomarkers might help clinicians in decision making for surgery. KIM-1 and NGAL levels can be

measured both in urine and serum. To our knowledge, this is the only study where serum NGAL and KIM-1 levels were measured in patients with antenatal diagnosis. Small sample size, lack of long term findings and control group are limitations of our study.
Conclusion(s): Serum NGAL levels of patients with antenatal hydronephrosis may help in decision making on the surgical intervention. [Table presented]

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Publisher
Elsevier Ltd
Year of Publication
2021

730.

Endothelin-1/endothelin receptor type a-angiopoietins/tie-2 pathway in regulating the cross talk between glomerular endothelial cells and podocytes in trichloroethylene-induced renal immune injury.
Xie H., Wang H., Wu Q., Peng J., Huang H., Wang Y., Huang M., Jiang W., Yang Y., Zhang X., Zhang J., Zhu Q.
Embase
Journal of Inflammation Research. 14 (pp 761-776), 2021. Date of Publication: 2021.
[Article]
AN: 2006787930
Introduction: This study aimed to investigate the mechanism in regulating the cross talk between glomerular endothelial cells and podocytes in "occupational medicamentosa-like dermatitis induced by trichloroethylene (OMLDT)" patients.
Method(s): Totally 6 OMLDT patients, 18 controls, and 102 BALB/c female mice were involved in this study. Patient's serum endothelin-1 (ET-1), angiopoietin-1 (Ang-1) and angiopoietin-2 (Ang-2), blood urea nitrogen (BUN), and podocalyxin (PCX) were detected. All the mice were used to establish the trichloroethylene (TCE) sensitized mouse model. Transmission electron microscope results were used to reflect renal glomerulus injury. Protein levels were detected by Western blot. Ang-1/Ang-2 gene level was reflected by RT-PCR. Cell apoptosis level was detected by using TUNEL assay kit.
Result(s): We found that in OMLDT patients, ET-1, Ang-2, BUN, and PCX were highly expressed but Ang-1 was inhibited. In TCE sensitized positive mouse, the downregulation of Ang-1, pTie-2 and the upregulation of Ang-2 were mediated by ET-1/ETAR but not ET-1/ETB R. The promotor of apoptosis proteins was downregulated and the inhibitor of apoptosis proteins was upregulated by treating with BQ123.
Discussion(s): ET-1/ETAR-Angs/Tie-2 pathway mediated the cross talk between glomerular endothelial cells and podocytes. BQ123 can alleviate glomerulus immune injury.

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Embase
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Publisher
Dove Medical Press Ltd
Year of Publication
2021

731.

Vertical transmission and kidney damage in newborns whose mothers had coronavirus disease 2019 during pregnancy.
He Z., Fang Y., Zuo Q., Huang X., Lei Y., Ren X., Liu D.
Embase
International Journal of Antimicrobial Agents. 57(2) (no pagination), 2021. Article Number: 106260. Date of Publication: February 2021.
[Article]
AN: 2010511435
Objectives: Coronavirus disease 2019 (COVID-19) has become a worldwide pandemic. However, the hazard to newborns in pregnancy remains controversial. The aim of this study was to investigate the vertical transmission of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from mother to child and developmental toxicity in the fetus.
Method(s): All clinical information was recorded on 22 neonates born to mothers with confirmed COVID-19 pneumonia in Tongji Hospital.
Result(s): The average birth weight of the 22 newborns (16 males and 6 females) was 2980 g, and the mean gestational week was 37W+3. The birth weight of three babies was <2500 g, and the gestational week of all three low-birth-weight neonates was less than 36W. Three newborns had minor lesions of infection in the lungs as shown by computed tomography (CT) scans. Furthermore, three newborns had elevated SARS-CoV-2-related immunoglobin M (IgM) antibodies, and 11 newborns (52.4%) had positive immunoglobin G (IgG) antibodies. Notably, both cystatin C and beta2-microglobulin were increased in all newborns. Five of the 21 tested newborns had leukocytosis, and 11 had increased neutrophil levels. In addition, the aspartate aminotransferase of 18 newborns and the gamma-glutamyl transpeptidase of 19 newborns were increased. Total bilirubin was elevated in all newborns and serum albumin was reduced in 20 of 22 newborns.
Conclusion(s): This study was the first to discover that COVID-19 infection in the third trimester of pregnancy could cause fetal kidney developmental injury, as indicated by increased cystatin C and beta2-microglobulin in all neonates. Furthermore, there is the possibility of maternal-fetal transmission of SARS-CoV-2.

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Publisher
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Year of Publication
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732.

Relationship between acute kidney injury, seasonal influenza, and environmental factors: A 14-year retrospective analysis.
Mohammad K.N., Chan E.Y.Y., Lau S.Y.-F., Lam H.C.Y., Goggins W.B., Chong K.C.
Embase
Environment International. 153 (no pagination), 2021. Article Number: 106521. Date of Publication: August 2021.
[Article]
AN: 2011576513
Despite high incidence of acute kidney injury (AKI) among patients hospitalised for influenza, no previous work has attempted to analyse and quantify the association between the two. Herein, we made use of Hong Kong's surveillance data to evaluate the time-varying relationship between seasonal influenza and risk of AKI with adjustment for potential environmental covariates. Generalized additive model was used in conjunction with distributed-lag non-linear model to estimate the association of interest with daily AKI admissions as outcome and daily influenza admissions as predictor, while controlling for environmental variables (i.e. temperature, relative humidity, total rainfall, nitrogen dioxide, and ozone). Results suggested a positive association between risk of AKI admission and number of influenza hospitalisation cases, with relative risk reaching 1.12 (95% confidence interval, 1.10-1.15) at the 95th percentile. Using median as reference, an almost U-shaped association between risk of AKI admission and temperature was observed; the risk increased significantly when the temperature was low. While ozone was not shown to be a risk factor for AKI, moderate-to-high levels of nitrogen dioxide (50-95th percentile) were significantly associated with increased risk of AKI admission. This study mentioned the possibility that AKI hospitalisations are subject to environmental influences and offered support for a positive association between seasonal influenza and AKI occurrence in Hong Kong. Authorities are urged to extend the influenza vaccination program to individuals with pre-existing renal conditions to safeguard the health of the vulnerable. Given that adverse health effects are evident at current ambient levels of nitrogen dioxide, the government is recommended to adopt clean-air policies at the earliest opportunity to protect the health of the community.

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Year of Publication
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733.

The clinicopathological features of drug-induced acute kidney injury-a single-center retrospective analysis.
Cui Y., Yang Y., Lei W., Lang X., Chen J.
Embase
Annals of Translational Medicine. 9(5) (no pagination), 2021. Article Number: 63805. Date of Publication: March 2021.
[Article]
AN: 2011466635
Background: This study aimed to analyze changes to the drug spectrum and clinicopathological features of drug-induced acute kidney injury (AKI) with recent medication habits changes.
Method(s): A retrospective analysis of the characteristics of patients diagnosed with drug-induced AKI from January 2012 to October 2016 period at the First Affiliated Hospital of the Medical College of Zhejiang University was conducted.
Result(s): Between January 2012 and October 2016, 909 patients were diagnosed with AKI. Of these, 228 were diagnosed with drug-related AKI were engaged in this study, including 51 who underwent renal biopsies, 74 treated with antibacterial and antiviral drugs, and 63 who received nonsteroidal anti-inflammatory drugs (NSAIDs), and 17 who were treated with Chinese herbal medicine. AKI was most frequently associated with antibiotics and antiviral drugs, including cephalosporins, acyclovir, azithromycin, clindamycin, and levofloxacin. In those who underwent renal biopsy, 12 patients were diagnosed with allergic interstitial nephritis, 19 with interstitial nephritis, 8 with renal tubular epithelial cell injury, 2 with minimal change nephropathy, 2 with IgA nephropathy, and 2 with mild mesangial hyperplasia with glomerulosclerosis. The mean follow-up time was 437 days, ranging from 3 to 2,756 days. Among 228 patients, 165 recovered completely, 4 recovered partially, 8 did not recover, and 51 were lost to follow-up after discharge.
Conclusion(s): The three main contributors to drug-induced AKI were antimicrobial agents, NSAIDs, and Chinese herbal medicines. The age distribution of the three different drug-induced AKI groups was significantly different. Allergic interstitial nephritis, interstitial nephritis, and tubular epithelial cell injury were the main pathological manifestations of drug-induced AKI. The novel predictive nomogram achieved a good performance of prediction recovery within 2 weeks in drug-induced AKI patients.

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Embase
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734.

Acute kidney injury in neonates with birth asphyxia at a tertiary care hospital.
Memon I.A., Qudus H.A., Waraich I.S., Channa S., Marwat A., Lahrasab W.
Embase
Pakistan Journal of Medical and Health Sciences. 15(3) (pp 573-575), 2021. Date of Publication: March 2021.
[Article]
AN: 2011891157
Objective: To determine acute kidney injury in perinatal asphyxia.
Setting(s): The Neonatal Intensive Care Unit, Paediatrics Department, Combined Military Hospital, Hyderabad from 1st July 2020 to 31st December 2020. Methodology: One hundred and twenty neonates were included in the study. Lactate was sent within 30 min of birth in suspected birth asphyxia. Blood samples were collected from the neonates at 24 hours of life and sent for serum creatinine analysis to ascertain acute kidney injury in these children with perinatal asphyxia.
Result(s): There were 56.7% male and 43.3% female neonates. Mean gestational age was 38.05+/-1.22 weeks. Mean APGAR score was 4.64+/-1.32. Mean serum lactate and serum creatinine was 5.15+/-0.63 mmol/L and 128.03+/-6.17 micromol/L respectively. Fetal distress on cardiotocography was found in 47.5% cases while delayed cry was observed in 56.7% neonates. Most common grade of hypoxic ischemic encephalopathy was grade II in 57.55% neonates. 13.3% neonates were found to develop acute kidney injury.
Conclusion(s): Significant frequency of acute kidney injury was also noted in our study in neonates having birth asphyxia. Gender of neonate and mode of delivery was found to be having significant association with acute kidney injury.

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735.

Effect of levocarnitine supplementation on myocardial strain in children with acute kidney injury receiving continuous kidney replacement therapy: a pilot study.
Sgambat K., Clauss S., Moudgil A.
Embase
Pediatric Nephrology. 36(6) (pp 1607-1616), 2021. Date of Publication: June 2021.
[Article]

AN: 2007730538
Background: Carnitine plays a key role in energy production in the myocardium and is efficiently removed by continuous kidney replacement therapy (CKRT). Effects of levocarnitine supplementation on myocardial function in children receiving CKRT have not been investigated.
Method(s): This controlled pilot cohort study of 48 children investigated effects of levocarnitine supplementation on myocardial strain in children receiving CKRT for acute kidney injury (AKI). Children (n = 9) with AKI had total (TC) and free plasma carnitine (FC) measurements and echocardiogram for longitudinal and circumferential strain at baseline (prior to CKRT) and follow-up (on CKRT for > 1 week with intravenous levocarnitine supplementation, 20 mg/kg/day). Intervention group was compared with three controls: (1) CKRT controls (n = 10) received CKRT > 1 week (+AKI, no levocarnitine), (2) ICU controls (n = 9) were parenteral nutrition-dependent for > 1 week (no AKI, no levocarnitine), and (3) healthy controls (n = 20).
Result(s): In the Intervention group, TC and FC increased from 36.0 and 18 mumol/L to 93.5 and 74.5 mumol/L after supplementation. TC and FC of unsupplemented CKRT controls declined from 27.2 and 18.6 mumol/L to 12.4 and 6.6 mumol/L, which was lower vs. ICU controls (TC 32.0, FC 26.0 mumol/L), $p < 0.05$. Longitudinal and circumferential strain of the Intervention group improved from - 18.5% and - 18.3% to - 21.1% and - 27.6% after levocarnitine supplementation; strain of CKRT controls (-14.4%, -20%) remained impaired and was lower vs. Intervention and Healthy Control groups at follow-up, $p < 0.05$.
Conclusion(s): Levocarnitine supplementation is associated with repletion of plasma carnitine and improvement in myocardial strain and may benefit pediatric patients undergoing prolonged CKRT.

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736.

Non-invasive continuous renal tissue oxygenation monitoring to identify preterm neonates at risk for acute kidney injury.
Harer M.W., Adegboro C.O., Richard L.J., McAdams R.M.
Embase
Pediatric Nephrology. 36(6) (pp 1617-1625), 2021. Date of Publication: June 2021.
[Article]
AN: 2007730539
Background: Near-infrared spectroscopy (NIRS) is an emerging tool to identify signs of inadequate tissue oxygenation in preterm neonates with acute kidney injury (AKI). Previous studies have shown a correlation between low renal tissue oxygenation (RrSO2) in the first 24 hours of age and the later development of AKI. In this prospective clinical trial, NIRS monitoring

was used to identify changes in RrSO2 in comparison to traditional AKI markers, serum creatinine (SCr), and urine output (UOP).
Method(s): We enrolled 35 preterm neonates born less than 32 weeks' gestation and applied neonatal NIRS sensors at less than 48 hours of age. Neonates underwent 7 days of continuous monitoring. Renal and demographic information were collected for the first 7 days of age. AKI was determined by the modified neonatal Kidney Disease: Improving Global Outcomes (KDIGO) definition including UOP.
Result(s): Three patients experienced AKI, all based on both SCr and UOP criteria. Each neonate with AKI had decreases in RrSO2 over 48 hours prior to changes in SCr and UOP. Patients with AKI had lower median RrSO2 values compared to patients without AKI over the first week of age, (32.4% vs. 60%, $p < 0.001$).
Conclusion(s): RrSO2 monitoring identified preterm neonates at risk for AKI. NIRS detected a decline in RrSO2 prior to changes in SCr and UOP and was significantly lower in patients with AKI compared to those without AKI. Further studies are needed to evaluate the ability of RrSO2 monitoring to detect signs of kidney stress prior to the diagnosis of AKI. [Figure not available: see fulltext.]

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Publisher
Springer Science and Business Media Deutschland GmbH
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2021

737.

Acute kidney injury in children hospitalized for acute gastroenteritis: prevalence and risk factors.
Marzuillo P., Baldascino M., Guarino S., Perrotta S., Miraglia del Giudice E., Nunziata F.
Embase
Pediatric Nephrology. 36(6) (pp 1627-1635), 2021. Date of Publication: June 2021.
[Article]
AN: 2010129217
Background: We aimed to evaluate prevalence of acute kidney injury (AKI) and its risk factors in children hospitalized for acute gastroenteritis (AGE) to identify early predictors of AKI.
Method(s): We retrospectively collected clinical and biochemical data of 114 children (57.9% male; mean age 2.9 +/- 2.8 years) hospitalized for AGE. AKI was defined according to Kidney Disease/Improving Global Outcomes creatinine criteria. We considered basal serum creatinine as value of creatinine estimated with Hoste (age) equation assuming basal eGFRs were median age-based eGFR normative values for children <= 2 years of age, and eGFR 120 mL/min/1.73m2 for children > 2 years. Univariate and multivariate logistic regression models were used to explore associations with AKI. We included in multivariate analyses only variables with significant p after Bonferroni correction.

Result(s): AKI was found in 28/114 (24.6%) patients. No patients required hemodialysis, 2 (1.8%) reached AKI stage 3, 2 (1.8%) AKI stage 2, and 24 (21.0%) AKI stage 1. Mean length of stay was 3.6 +/- 1.2, 5.0 +/- 1.8, and 10.5 +/- 5.8 days, for patients with no, mild, and severe AKI (p < 0.001), respectively. Duration of symptoms before hospitalization (OR = 2.5; 95% CI = 1.3-5.0; p = 0.006), dehydration > 5% (OR = 43.1; 95% CI = 5.4-344.1; p = < 0.001), and serum bicarbonate levels (OR = 1.6; 95% CI = 1.2-2.1; p = 0.001) were independent predictors of AKI.
Conclusion(s): About one quarter of patients hospitalized for AGE may suffer from AKI with a longer stay for patients with more severe AKI. Particular attention, however, should be paid to volemia and kidney health of patients with AGE especially in the presence of increased duration of symptoms before hospitalization, dehydration, and lower serum bicarbonate levels. Graphical abstract: [Figure not available: see fulltext.]

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Publisher
Springer Science and Business Media Deutschland GmbH
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738.

Evaluation of Urinary Biomarkers of Proximal Tubular Injury, Inflammation, and Fibrosis in Patients With Albuminuric and Nonalbuminuric Diabetic Kidney Disease.
Phanish M.K., Chapman A.N., Yates S., Price R., Hendry B.M., Roderick P.J., Dockrell M.E.C.
Embase
Kidney International Reports. 6(5) (pp 1355-1367), 2021. Date of Publication: May 2021.
[Article]
AN: 2011176364
Introduction: Albuminuric and nonalbuminuric pathways contribute to diabetic kidney disease. Proximal tubule and inflammation play important roles in these processes. Urinary biomarker(s) to detect early kidney damage and predict progression are needed.
Method(s): Nine urinary biomarkers were measured at baseline in 400 patients with diabetes. Correlation and multivariate logistic and linear regression analyses were performed to assess the association of biomarkers with chronic kidney disease and progression.
Result(s): In the albumin/creatinine ratio (ACR) <3 cohort, the only biomarker significantly associated with estimated glomerular filtration rate < 60 ml/min was N-acetyl-beta-D-glucosaminidase. A combination of ACR and monocyte chemoattractant protein 1 (MCP1) were significantly associated with stage 2 chronic kidney disease in this cohort. Logistic models showed that in patients with all levels of albuminuria, ACR, retinol binding protein (RBP), and MCP1 were associated with progression. A model including MCP1, interleukin 6, and neutrophil gelatinase-associated lipocalin showed significant association with progression to chronic kidney disease 3/4 in the ACR <3 cohort. Linear mixed-model regression analyses demonstrated MCP1, RBP, and ACR as significant proteins associated with progression to stage 3 or worse, whereas

MCP1 was the only significant biomarker in the ACR <3 cohort. Time-to-event and Cox proportional hazard models confirmed significant hazard ratios for progression for ACR, RBP, and MCP1, with significant differences noted between quantiles of biomarkers for ACR, RBP, and MCP1.
Conclusion(s): In this study of diabetic patients with single baseline measurements of urinary biomarkers, albumin, RBP, and MCP1 were significantly associated with chronic kidney disease progression at all levels of albuminuria. Inflammatory cytokines, neutrophil gelatinase-associated lipocalin, and MCP1 were associated with progression in patients without albuminuria. N-acetyl-beta-D-glucosaminidase demonstrated a significant association with an estimated glomerular filtration rate < 60 ml/min in the ACR <3 cohort.

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Publisher
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Year of Publication
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739.

Ranolazine alleviates contrast-associated acute kidney injury through modulation of calcium independent oxidative stress and apoptosis.
Ma C., Chen T., Ti Y., Yang Y., Qi Y., Zhang C., Liu L., Bu P.
Embase
Life Sciences. 267 (no pagination), 2021. Article Number: 118920. Date of Publication: 15 Feb 2021.
[Article]
AN: 2010556366
This study investigates the role of ranolazine in contrast-associated acute kidney injury (CA-AKI) and potential mechanisms. For in vivo studies, mouse models of CA-AKI and control mice were treated with ranolazine or vehicle. Blood urea nitrogen (BUN) and serum creatinine were detected by spectrophotometry. Anti-T-cell immunoglobulin and mucin domain 1 (TIM 1) and anti-lipocalin 2 antibody (LCN2) were detected by immunofluorescence. Hemodynamic parameters were detected via invasive blood pressure measurement and renal artery color doppler ultrasound, capillary density was measured by CD31 immunofluorescence, vascular permeability assay was performed by Evans blue dye. The expressions of oxidative stress and apoptotic markers were measured and analyzed by immunofluorescence and western blotting. For in vitro studies, intracellular calcium concentration of HUVECs was measured with Fluo 3-AM under confocal microscopy. Results show that compared with control mice, serum BUN, creatinine, TIM 1 and

LCN2 levels were elevated in CA-AKI mice, but this effect was alleviated by ranolazine-pretreatment. Safe doses of ranolazine (less than 64 mg/kg) had no significant effect on overall blood pressure, but substantially improved renal perfusion, reduced contrast-induced microcirculation disturbance, improved renal capillary density and attenuated renal vascular permeability in ranolazine-pretreated CA-AKI mice. Mechanistically, ranolazine markedly down-regulated oxidative stress and apoptosis markers compared to CA-AKI mice. Intracellularly, ranolazine attenuated calcium overload in HUVECs. These results indicate that ranolazine alleviates CA-AKI through modulation of calcium independent oxidative stress and apoptosis.

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Publisher
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Year of Publication
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740.

Association between Nephrotoxic Drug Combinations and Acute Kidney Injury in the Neonatal Intensive Care Unit.
Salerno S.N., Liao Y., Jackson W., Greenberg R.G., McKinzie C.J., McCallister A., Benjamin D.K., Laughon M.M., Sanderson K., Clark R.H., Gonzalez D.
Embase
Journal of Pediatrics. 228 (pp 213-219), 2021. Date of Publication: January 2021.
[Article]
AN: 2008004133
Objective: To determine the incidence of acute kidney injury (AKI) in infants exposed to nephrotoxic drug combinations admitted to 268 neonatal intensive care units managed by the Pediatrix Medical Group. Study design: We included infants born at 22-36 weeks gestational age, <=120 days postnatal age, exposed to nephrotoxic drug combinations, with serum creatinine measurements available, and discharged between 2007 and 2016. To identify risk factors associated with a serum creatinine definition of AKI based on the Kidney Disease: Improving Global Outcomes criteria, we performed multivariable logistic and Cox regression adjusting for gestational age, sex, birth weight, postnatal age, race/ethnicity, sepsis, respiratory distress syndrome, baseline serum creatinine, and duration of combination drug exposure. The adjusted odds of AKI were determined relative to gentamicin + indomethacin for the following nephrotoxic drug combinations: chlorothiazide + ibuprofen; chlorothiazide + indomethacin; furosemide + gentamicin; furosemide + ibuprofen; furosemide + tobramycin; ibuprofen + spironolactone; and vancomycin + piperacillin-tazobactam.
Result(s): Among 8286 included infants, 1384 (17%) experienced AKI. On multivariable analysis, sepsis, lower baseline creatinine, and duration of combination therapy were associated with increased odds of AKI. Furosemide + tobramycin and vancomycin + piperacillin-tazobactam were associated with a decreased risk of AKI relative to gentamicin + indomethacin in both the multivariable and Cox regression models.

Conclusion(s): In this cohort, infants receiving longer durations of nephrotoxic combination therapy had an increased odds of developing AKI.

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Publisher
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741.

Systematic Review of Risk factors and Incidence of Acute Kidney Injury Among Patients Treated with CAR-T Cell Therapies.
Kanduri S.R., Cheungpasitporn W., Thongprayoon C., Petnak T., Lin Y., Kovvuru K., Manohar S., Kashani K., Herrmann S.M.
Embase
Kidney International Reports. 6(5) (pp 1416-1422), 2021. Date of Publication: May 2021.
[Article]
AN: 2011499969
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Publisher
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742.

Consensus acute kidney injury criteria integration identifies children at risk for long-term kidney dysfunction after multiple organ dysfunction syndrome.
Gorga S.M., Carlton E.F., Kohne J.G., Barbaro R.P., Basu R.K.
Embase
Pediatric Nephrology. 36(6) (pp 1637-1646), 2021. Date of Publication: June 2021.
[Article]
AN: 2010155299
Background: The consensus definition of acute kidney injury (AKI) has evolved since developing the original multiple organ dysfunction syndrome (MODS) definitions. Whether or not risk for adverse short- and long-term outcomes can be identified using the refined AKI criteria in the setting of MODS has not been studied. We hypothesize that incorporation of Kidney Disease: Improving Global Outcome (KDIGO) AKI criteria into existing MODS definitions will have a higher association with major adverse kidney events at 30 days (MAKE30) and will increase the number of patients with MODS.
Method(s): Post hoc analysis of 410 children admitted to a tertiary care pediatric intensive care unit (PICU) was conducted. MODS was defined using two existing criteria (Goldstein and Proulx) during the first 7 days following ICU admission and then modified by replacement of the kidney injury criteria using the KDIGO AKI definitions (G' and P').
Result(s): MAKE30 occurred in 65 of 410 (16%) children. After substituting KDIGO kidney injury criteria, identification of MAKE30 increased from 46 children (71%) to 53 (82%) and 29 children (45%) to 43 (66%) for the Goldstein and Proulx criteria, respectively. Additionally, identification of MODS increased from 194 (47%) by Goldstein to 224 (55%) by G' and 95 children (23%) by Proulx to 132 (32%) by P'.
Conclusion(s): Substituting KDIGO AKI criteria into existing MODS criteria increases the sensitivity for major adverse kidney events as well as the identification of MODS, improving the detection of children at risk for long-term adverse renal outcomes.

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Publisher
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743.

Comparison of two delayed strategies for renal replacement therapy initiation for severe acute kidney injury (AKIKI 2): a multicentre, open-label, randomised, controlled trial.
Gaudry S., Hajage D., Martin-Lefevre L., Lebbah S., Louis G., Moschietto S., Titeca-Beauport D., Combe B.L., Pons B., de Prost N., Besset S., Combes A., Robine A., Beuzelin M., Badie J., Chevrel G., Bohe J., Coupez E., Chudeau N., Barbar S., Vinsonneau C., Forel J.-M., Thevenin D., Boulet E., Lakhal K., Aissaoui N., Grange S., Leone M., Lacave G., Nseir S., Poirson F., Mayaux J., Asehnoune K., Geri G., Klouche K., Thiery G., Argaud L., Rozec B., Cadoz C., Andreu P., Reignier J., Ricard J.-D., Quenot J.-P., Dreyfuss D.
Embase
The Lancet. 397(10281) (pp 1293-1300), 2021. Date of Publication: 03 Apr 2021.
[Article]
AN: 2011551197
Background: Delaying renal replacement therapy (RRT) for some time in critically ill patients with severe acute kidney injury and no severe complication is safe and allows optimisation of the use of medical devices. Major uncertainty remains concerning the duration for which RRT can be postponed without risk. Our aim was to test the hypothesis that a more-delayed initiation strategy would result in more RRT-free days, compared with a delayed strategy.
Method(s): This was an unmasked, multicentre, prospective, open-label, randomised, controlled trial done in 39 intensive care units in France. We monitored critically ill patients with severe acute kidney injury (defined as Kidney Disease: Improving Global Outcomes stage 3) until they had oliguria for more than 72 h or a blood urea nitrogen concentration higher than 112 mg/dL. Patients were then randomly assigned (1:1) to either a strategy (delayed strategy) in which RRT was started just after randomisation or to a more-delayed strategy. With the more-delayed strategy, RRT initiation was postponed until mandatory indication (noticeable hyperkalaemia or metabolic acidosis or pulmonary oedema) or until blood urea nitrogen concentration reached 140 mg/dL. The primary outcome was the number of days alive and free of RRT between randomisation and day 28 and was done in the intention-to-treat population. The study is registered with ClinicalTrial.gov, NCT03396757 and is completed.
Finding(s): Between May 7, 2018, and Oct 11, 2019, of 5336 patients assessed, 278 patients underwent randomisation; 137 were assigned to the delayed strategy and 141 to the more-delayed strategy. The number of complications potentially related to acute kidney injury or to RRT were similar between groups. The median number of RRT-free days was 12 days (IQR 0-25) in the delayed strategy and 10 days (IQR 0-24) in the more-delayed strategy (p=0.93). In a multivariable analysis, the hazard ratio for death at 60 days was 1.65 (95% CI 1.09-2.50, p=0.018) with the more-delayed versus the delayed strategy. The number of complications potentially related to acute kidney injury or renal replacement therapy did not differ between groups.
Interpretation(s): In severe acute kidney injury patients with oliguria for more than 72 h or blood urea nitrogen concentration higher than 112 mg/dL and no severe complication that would mandate immediate RRT, longer postponing of RRT initiation did not confer additional benefit and was associated with potential harm.
Funding(s): Programme Hospitalier de Recherche Clinique.

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744.

DIAGNOSTIC EFFICACY of SERUM LOW GLYCOSYLATION IGA1 and URINARY ANGIOTENSINOGEN DETECTION in EARLY RENAL INJURY of CHILDREN with HENOCH-SCHONLEIN PURPURA.

Cui H., Liu J., Cai W., Yao Y., Cao Y., Xu J.

Embase
Acta Medica Mediterranea. 37(1) (pp 189-194), 2021. Date of Publication: 2021.
[Article]
AN: 2011216520

Objective: The aim of this study was to analyze the diagnostic efficacy of serum low glycosylation IgA1 and urinary angiotensinogen detection for early renal injury in children with Henoch-Schonlein purpura (HSP).
Method(s): Sixty-one children with HSP treated in the pediatric ward of our hospital between January 2016 and December 2017 were selected, including 31 children with HSP comprising the HSP group, 30 children with HSP nephritis (HSPN) comprising the HSPN group, and 25 healthy children comprising the control group. The levels of blood urea nitrogen (BUN), creatinine (Cr), low glycosylation (Gd-IgA1), angiotensin (AGT), complement C3, and urine angiotensin (AGT) were measured. The correlations between Gd-IgA1, AGT, and renal function were analyzed using a Pearson correlation analysis. The relationship between Gd-IgA1/C3, uAGT/ uCr, and early renal injury in children with HSP were analyzed using a multiple logistic regression model. An ROC curve was used to evaluate the sensitivity and specificity of Gd-IgA1/C3 and uAGT/uCr in the diagnosis of early renal injury in children with HSP.
Result(s): The ratio of serum Gd-IgA1 to Gd-IgA1/C3 in the HSPN group was significantly higher than that in the HSP group and normal control group ($p<0.05$). The serum Gd-IgA1 level in the HSP group was significantly higher than that of the normal control group ($p<0.05$). There was no significant difference in the ratio of Gd-IgA1/C3 between the HSP group and the normal control group ($p>0.05$). The uAGT/uCr level of HSPN group was markedly higher than that of HSP group and control group, and the difference was statistically significant ($p<0.05$). Moreover, the uAGT/uCr level in the HSP group was significantly higher than that of the control group ($p<0.05$). There was no significant difference in AGT level among the three groups ($p>0.05$). The Gd-IgA1/C3 ratio and uAGT/ uCr level in the HSPN group was positively correlated with the serum Cr. The elevated levels of Gd-IgA1/C3 and uAGT/uCr were independent risk factors for HSPN occurrence (OR (95% CI) = 1.637 (1.068-2.435), OR (95% CI) = 1.952 (1.157-3.062)). The area under the ROC curve (AUC) of the serum Gd-IgA1/C3 and uAGT/uCr in the diagnosis of HSPN was 0.696 (95% CI: 0.531-0.816, $p = 0.018$) and 0.715 (95% CI: 0.543-0.832, $p = 0.007$), respectively. The selected cut-off points were 3.65 and 8.67, the corresponding sensitivities were 66.8% and 63.5%, and the specificities were 75.3% and 82.6%, respectively.
Conclusion(s): The serum Gd-IgA1 and uAGT/uCr levels of children with HSPN were significantly increased, indicating that GdIgA1 and uAGT may be closely related to the progression of HSP and renal injury in children, and can be used as an early diagnosis of HSPN to predict the progression and prognosis of HSP renal injury.

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745.

Can urinary biomarkers predict acute kidney injury in newborns with critical congenital heart disease?.
Uygur O., Altun Koroglu O., Levent E., Sozmen E., Ergin F., Atay Y., Yalaz M., Akisu M., Kultursay N.
Embase
Turkish Journal of Medical Sciences. 51(1) (pp 175-180), 2021. Date of Publication: 2021.
[Article]
AN: 2006706687
Background/aim: Congenital heart disease (CHD) is the most common congenital malformation group and is the leading cause of newborn mortality in developed countries. Most of the infants with CHD develop preoperative or postoperative acute kidney injury (AKI). Acute kidney injury may develop before the serum creatinine rise and oliguria. Urinary biomarkers such as kidney injury molecule-1 (KIM-1), neutrophil gelatinase-associated lipocalin (NGAL), interleukin (IL)-18, and cystatin C may predict AKI in patients with critical CHD (CCHD) before the serum creatinine rise. In this study, we aimed to determine the AKI incidence among newborn patients with CCHD and investigate the predictivity of urinary biomarkers for AKI.
Material(s) and Method(s): Newborns with a gestational age >34 weeks and birth weight >1500 g with a diagnosis of CCHD were enrolled in the study. Blood and urine samples were collected at birth, during the first 24-48 h, and in the preoperative and postoperative periods.
Result(s): A total of 53 CCHD patients requiring surgery during the neonatal period were enrolled in the study. The 24-48 h KIM-1 levels of the cases with exitus were higher (P = 0.007). The 24-48 h cystatin C and preoperative NGAL levels were higher in patients with postoperative AKI (P = 0.02).
Conclusion(s): In newborns with CCHD, high KIM-1 levels may predict mortality, whereas high cystatin C and preoperative NGAL levels may be indicative of AKI. These biomarkers deserve further investigation in larger study populations.

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746.

Biomarkers of acute kidney injury in patients with nephrotic syndrome. Biomarcadores de lesao renal aguda em pacientes com sindrome nefrotica <Biomarcadores de lesao renal aguda em pacientes com sindrome nefrotica.>
Tavares M.B., De Melo C.V.B., Fernandes P.N., da Conceicao Chagas de Almeida M., dos Santos Melo Carneiro M.F., de Souza Santos R.F., Bahiense-Oliveira M., Martinelli R., Dos-Santos W.L.C.
Embase
Jornal Brasileiro de Nefrologia. 43(1) (pp 20-27), 2021. Date of Publication: 2021.
[Article]
AN: 2011718504
Introduction: Emergence of acute kidney injury (AKI) in patients with nephrotic syndrome (NS) requires prompt diagnosis and differentiation between acute tubular necrosis (ATN) and proliferative glomerulonephritis. We studied the potential use of commercial urinary biomarkers' tests in the diagnosis of AKI in patients with NS.
Method(s): A cross sectional estimate of urinary concentrations of KIM-1 and NGAL was performed in 40 patients with NS: 9 with proliferative glomerulopathy, being 4 with AKI and 31 without proliferative glomerulopathy, being 15 with AKI. AKI was defined using the KDIGO criteria.
Result(s): The mean age was 35 +/- 16 years. The main diagnoses were focal and segmental glomerulosclerosis (10, 25%), membranous glomerulopathy (10, 25%), minimal change disease (7, 18%), lupus nephritis (6, 15%), and proliferative glomerulonephritis (3, 8%). Patients with ATN had higher levels of urinary KIM-1 (P = 0.0157) and NGAL (P = 0.023) than patients without ATN. The urinary concentrations of KIM-1 (P= 0.009) and NGAL (P= 0.002) were higher in patients with AKI than in patients without AKI. Urinary NGAL and KIM-1 levels were significantly higher in patients with ATN without proliferative glomerulonephritis than in patients with proliferative glomerulonephritis (P = 0.003 and P=0.024, respectively).
Conclusion(s): Neutrophil gelatinase associated lipocalin (NGAL) and kidney injury molecule 1 (KIM-1) estimates correlated with histological signs of ATN and were able to discriminate patients with AKI even in conditions of NS. Furthermore, urinary levels of NGAL and KIM-1 may be useful in the differential diagnosis of acute tubular necrosis and exudative glomerulonephritis in patients with nephrotic syndrome.

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Year of Publication
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747.

Association of Ibuprofen Prescription with Acute Kidney Injury among Hospitalized Children in China.
Su L., Li Y., Xu R., Luo F., Gao Q., Chen R., Cao Y., Nie S., Xu X.
Embase
JAMA Network Open. 4(3) (no pagination), 2021. Article Number: e210775. Date of Publication: 03 Mar 2021.
[Article]
AN: 634467644
Importance: Ibuprofen is widely used in children worldwide, especially in those with cancer, fever, or trauma. However, large and high-quality studies of the association between ibuprofen and acute kidney injury (AKI) in children have been lacking.
Objective(s): To examine the association between the use of ibuprofen and the risk of hospital-acquired AKI in hospitalized children in China.
Design, Setting, and Participant(s): This cohort study analyzed the cohort of the Epidemiology of AKI in Chinese Hospitalized Patients (EACH) study, a large, multicenter retrospective study of 3044023 patients who were admitted to 1 of 25 academic medical centers in China between January 1, 2013, andDecember 31, 2015. Patient-level data were obtained from the electronic health record system of theparticipating centers. Hospitalized children aged 1 month to 18 years who had prescriptions and a certain number of serum creatinine (SCr) tests were included. Children with end-stage renal disease,community-acquired AKI, low baseline SCr level (<10 micromol/L), high standardized baseline SCr level (>4 times the sex- and age-specific reference value), or missing diagnosis code were excluded. Data analysis was conducted from January 1, 2020, to August 30, 2020. Exposures: Exposure toibuprofen was coded as a time-dependent dichotomous variable.
Main Outcomes and Measures: Baseline SCrlevel was calculated for each patient as the mean of all available SCr values between the 30 days prior to admission and the first SCr testing within the first 3 days of hospitalization. Acute kidney injury was defined as an increase in SCr level of 26.5 micromol/L or higher within 48 hours orby 50% or more over the baseline value, according to the Kidney Disease: Improving Global Outcomes guidelines.
Result(s): Among the 50420 children (mean [SD] age, 5.0 [5.2] years; 30640 boys [60.8%]) included in this study, 5526 (11.0%) used ibuprofen and 3476 (6.9%) developed hospital-acquired AKIduring hospitalization. Ibuprofen use was associated with a statistically significantly increased risk of hospital-acquired AKI (hazard ratio [HR], 1.23; 95% CI, 1.14-1.34) after adjusting for confounders. Ibuprofen use was associated with a greater hazard in children who had chronic kidney disease vs those without (HR, 2.31 [95% CI, 1.73-3.10] vs 1.19 [95% CI, 1.09-1.29]), required intensive carevs those without this need (HR, 1.47 [95% CI, 1.24-1.75] vs 1.18 [95% CI, 1.07-1.29]), or were older vs younger (>10 years and >1 year to 10 years vs 1 month to 1 year) (HR, 1.64 [95% CI, 1.32-2.05]; 1.36 [95% CI, 1.23-1.52] vs 0.99 [95% CI, 0.86-1.13]). Dose-response analysis suggested that the association of ibuprofen with the risk of hospital-acquired AKI was dose-dependent.
Conclusions and Relevance: This study found that ibuprofen was widely used and associated with an increased risk of hospital-acquired AKI in hospitalized children in China. The judicious use of ibuprofen andclose monitoring of kidney function in children are needed.

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Publisher
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748.

Acute Kidney Injury and Special Considerations during Renal Replacement Therapy in Children with Coronavirus Disease-19: Perspective from the Critical Care Nephrology Section of the European Society of Paediatric and Neonatal Intensive Care.
Deep A., Bansal M., Ricci Z.
Embase
Blood Purification. 50(2) (pp 150-160), 2021. Date of Publication: February 2021.
[Article]
AN: 632409380
Children seem to be less severely affected by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) as compared to adults. Little is known about the prevalence and pathogenesis of acute kidney injury (AKI) in children affected by SARS-CoV-2. Dehydration seems to be the most common trigger factor, and meticulous attention to fluid status is imperative. The principles of initiation, prescription, and complications related to renal replacement therapy are the same for coronavirus disease (COVID) patients as for non-COVID patients. Continuous renal replacement therapy (CRRT) remains the most common modality of treatment. When to initiate and what modality to use are dependent on the available resources. Though children are less often and less severely affected, diversion of all hospital resources to manage the adult surge might lead to limited CRRT resources. We describe how these shortages might be mitigated. Where machines are limited, one CRRT machine can be used for multiple patients, providing a limited number of hours of CRRT per day. In this case, increased exchange rates can be used to compensate for the decreased duration of CRRT. If consumables are limited, lower doses of CRRT (15-20 mL/kg/h) for 24 h may be feasible. Hypercoagulability leading to frequent filter clotting is an important issue in these children. Increased doses of unfractionated heparin, combination of heparin and regional citrate anticoagulation, or combination of prostacyclin and heparin might be used. If infusion pumps to deliver anticoagulants are limited, the administration of low-molecular-weight heparin might be considered. Alternatively in children, acute peritoneal dialysis can successfully control both fluid and metabolic disturbances. Intermittent hemodialysis can also be used in patients who are hemodynamically stable. The keys to successfully managing pediatric AKI in a pandemic are flexible use of resources, good understanding of dialysis techniques, and teamwork.

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Publisher
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749.

Baseline kidney function is associated with vancomycin-induced acute kidney injury in children: a prospective nested case-control study.
Zhang H., Gao P., Wang Y., Chen J., Jia G., Zhang F., Tao F., Yuan S.
Embase
Pediatric Nephrology. 36(5) (pp 1299-1306), 2021. Date of Publication: May 2021.
[Article]
AN: 2007172000
Background: Children with kidney insufficiency are susceptible to vancomycin-induced acute kidney injury (VIAKI), but there is a lack of compelling clinical data. We conducted a nested case-control study to evaluate the relationship between kidney insufficiency and incidence of VIAKI in children.
Method(s): Patients were considered to have VIAKI if they met the criteria for eGFR change according to pRIFLE-I or p-RIFLE-F. Case group comprised patients who developed VIAKI. Case-control ratio was 1:3; patients were matched for age, severity, and nature of illness and initial vancomycin dose. Primary endpoint was incidence of VIAKI at three levels of kidney function, calculated using Kaplan-Meier curve and log-rank test. Secondary endpoint was treatment-related in-hospital mortality amongst case and control groups.
Result(s): Amongst 386 children who fit study criteria, 31 developed VIAKI (8.03%). Thirty-one cases and 93 controls were selected from the observed cohort. Three risk factors were identified for VIAKI: moderate kidney insufficiency (OR 8.8, 2.4-32.8), vancomycin trough concentration >= 15 mug/mL (OR 7.7, 1.7-34.4), and furosemide use (OR 24.8, 6.4-98.2). A significant difference in time to VIAKI was noted between patients with moderate kidney insufficiency and patients with mild kidney insufficiency or normal kidney function ($p < 0.001$). In-hospital mortality rate in case group was 45.2%, compared to 18.3% in control group ($p < 0.01$).
Conclusion(s): Children with moderate kidney insufficiency are more likely to develop VIAKI than those with normal and mild kidney insufficiency. Patients who develop VIAKI have higher in-hospital mortality than those who do not develop VIAKI.

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Publisher
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750.

The application of omic technologies to research in sepsis-associated acute kidney injury.
Hasson D., Goldstein S.L., Standage S.W.
Embase
Pediatric Nephrology. 36(5) (pp 1075-1086), 2021. Date of Publication: May 2021.
[Review]
AN: 2004812048
Acute kidney injury (AKI) is common in critically ill children and adults, and sepsis-associated AKI (SA-AKI) is the most frequent cause of AKI in the ICU. To date, no mechanistically targeted therapeutic interventions have been identified. High-throughput "omic" technologies (e.g., genomics, proteomics, metabolomics, etc.) offer a new angle of approach to achieve this end. In this review, we provide an update on the current understanding of SA-AKI pathophysiology. Omic technologies themselves are briefly discussed to facilitate interpretation of studies using them. We next summarize the body of SA-AKI research to date that has employed omic technologies. Importantly, omic studies are helping to elucidate a pathophysiology of SA-AKI centered around cellular stress responses, metabolic changes, and dysregulation of energy production that underlie its clinical features. Finally, we propose opportunities for future research using clinically relevant animal models, integrating multiple omic technologies and ultimately progressing to translational human studies focusing therapeutic strategies on targeted disease mechanisms.

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751.

Baseline creatinine determination method impacts association between acute kidney injury and clinical outcomes.
Russell W.A., Scheinker D., Sutherland S.M.
Embase
Pediatric Nephrology. 36(5) (pp 1289-1297), 2021. Date of Publication: May 2021.
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AN: 2007048516
Background: Current consensus definition for acute kidney injury (AKI) does not specify how baseline serum creatinine should be determined. We assessed how baseline determination impacted AKI incidence and association between AKI and clinical outcomes.
Method(s): We retrospectively applied empirical (measured serum creatinine) and imputed (age/height) baseline estimation methods to pediatric patients discharged between 2014 and

2019 from an academic hospital. Using each method, we estimated AKI incidence and assessed area under ROC curve (AUROC) for AKI as a predictor of three clinical outcomes: application of AKI billing code (proxy for more clinically overt disease), inpatient mortality, and post-hospitalization chronic kidney disease.
Result(s): Incidence was highly variable across baseline methods (12.2-26.7%). Incidence was highest when lowest pre-admission creatinine was used if available and Schwartz bedside equation was used to impute one otherwise. AKI was more predictive of application of an AKI billing code when baseline was imputed universally, regardless of pre-admission values (AUROC 80.7-84.9%) than with any empirical approach (AUROC 64.5-76.6%). AKI was predictive of post-hospitalization CKD when using universal imputation baseline methods (AUROC 67.0-74.6%); AKI was not strongly predictive of post-hospitalization CKD when using empirical baseline methods (AUROC 46.4-58.5%). Baseline determination method did not affect the association between AKI and inpatient mortality.
Conclusion(s): Method of baseline determination influences AKI incidence and association between AKI and clinical outcomes, illustrating the need for standard criteria. Imputing baseline for all patients, even when preadmission creatinine is available, may identify a more clinically relevant subset of the disease.

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752.

Factors associated with kidney graft survival in pure antibody-mediated rejection at the time of indication biopsy: Importance of parenchymal injury but not disease activity.
Einecke G., Reeve J., Gupta G., Bohmig G.A., Eskandary F., Bromberg J.S., Budde K., Halloran P.F., Picton M., Heinbokel T., Yang H., Narins S., Lefaucheur C., Loupy A., Myslak M., Kasiske B., Matas A., Djamali A.
Embase
American Journal of Transplantation. 21(4) (pp 1391-1401), 2021. Date of Publication: April 2021.
[Article]
AN: 2005725642
We studied the relative association of clinical, histologic, and molecular variables with risk of kidney transplant failure after an indication biopsy, both in all kidneys and in kidneys with pure antibody-mediated rejection (ABMR). From a prospective study of 1679 biopsies with histologic

and molecular testing, we selected one random biopsy per patient (N = 1120), including 321 with pure molecular ABMR. Diagnoses were associated with actuarial survival differences but not good predictions. Therefore we concentrated on clinical (estimated GFR [eGFR], proteinuria, time posttransplant, donor-specific antibody [DSA]) and molecular and histologic features reflecting injury (acute kidney injury [AKI] and atrophy-fibrosis [chronic kidney disease (CKD)] and rejection. For all biopsies, univariate analysis found that failure was strongly associated with low eGFR, AKI, CKD, and glomerular deterioration, but not with rejection activity. In molecular ABMR, the findings were similar: Molecular and histologic activity and DSA were not important compared with injury. Survival in DSA-negative and DSA-positive molecular ABMR was similar. Multivariate survival analysis confirmed the dominance of molecular AKI, CKD, and eGFR. Thus, at indication biopsy, the dominant predictors of failure, both in all kidneys and in ABMR, were related to molecular AKI and CKD and to eGFR, not rejection activity, presumably because rejection confers risk via injury.

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753.

No increased acute kidney injury rate through giving an intravenous colistin loading dose in pediatric patients.
Wacharachaisurapol N., Kawichai S., Chanakul A., Puthanakit T.
Embase
International Journal of Infectious Diseases. 106 (pp 91-97), 2021. Date of Publication: May 2021.
[Article]
AN: 2011632741

Objectives: A colistin loading dose is required to achieve adequate drug exposure for the treatment of multidrug-resistant Gram-negative bacteria. However, data on acute kidney injury (AKI) rates associated with this approach in children have been unavailable. The aim of this study was to examine AKI rates in children who were prescribed a colistin loading dose.
Method(s): A retrospective study was conducted in patients aged 1 month to 18 years who had received intravenous colistin for >=48 h. Loading dose (LD) was defined as colistin methanesulfonate at 4-5 mg of colistin base activity/kg/dose. AKI was defined according to KDIGO serum creatinine (SCr) criteria - SCr >= 1.5 times the baseline, measured 3-7 days after colistin initiation. Augmented renal clearance (ARC) was defined as an estimated glomerular filtration rate (eGFR) >150 mL/min/1.73 m2. The rates of AKI were compared between children receiving or not receiving an LD, and between different eGFR groups.
Result(s): In total, 181 children were enrolled. The mean age was 4.3 years (95% confidence interval [CI], 3.6-4.9 years). Ninety-five of the subjects (52.5%) were male. There were 157 children with a baseline eGFR of >= 80 mL/min/1.73 m2. The overall AKI rate within the first week in this group was 20.4% (95% CI, 14.4-27.6%): LD, 16.1% vs no LD, 23.2% (p = 0.29). Subgroup analysis, excluding patients with ARC, showed a lower AKI rate of 12.8% (95% CI, 6.8-21.3%): LD, 9.7% vs no LD, 14.3% (p = 0.53).
Conclusion(s): AKI rate was not different among children who received an intravenous colistin loading dose. This approach should be implemented to ensure the necessary drug exposure required for good treatment outcomes.

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754.

Acute kidney injury in children with chronic kidney disease is associated with faster decline in kidney function.
Melhem N., Rasmussen P., Joyce T., Clothier J., Reid C.J.D., Booth C., Sinha M.D.
Embase
Pediatric Nephrology. 36(5) (pp 1279-1288), 2021. Date of Publication: May 2021.
[Article]
AN: 2007087415

Background: This study aimed to investigate the association of acute kidney injury (AKI) with change in estimated glomerular filtration rate (eGFR) in children with advanced chronic kidney disease (CKD).
Method(s): Single centre, retrospective longitudinal study including all prevalent children aged 1-18 years with nondialysis CKD stages 3-5. Variables associated with CKD were analysed for their potential effect on annualised eGFR change (DELTAGFR/year) following multiple regression analysis. Composite end-point including 25% reduction in eGFR or progression to kidney replacement therapy was evaluated.
Result(s): Of 147 children, 116 had at least 1-year follow-up in a dedicated CKD clinic with mean age 7.3 +/- 4.9 years with 91 (78.4%) and 77 (66.4%) with 2- and 3-year follow-up respectively. Mean eGFR at baseline was 29.8 +/- 11.9 ml/min/1.73 m2 with 79 (68%) boys and 82 (71%) with congenital abnormalities of kidneys and urinary tract (CAKUT). Thirty-nine (33.6%) had at least one episode of AKI. Mean DELTAGFR/year for all patients was - 1.08 +/- 5.64 ml/min/1.73 m2 but reduced significantly from 2.03 +/- 5.82 to - 3.99 +/- 5.78 ml/min/1.73 m2 from youngest to oldest age tertiles (P < 0.001). There was a significant difference in primary kidney disease (PKD) (77% versus 59%, with CAKUT, P = 0.048) but no difference in AKI incidence (37% versus 31%, P = 0.85) between age tertiles. Multiple regression analysis identified age (beta = - 0.53, P < 0.001) and AKI (beta = - 3.2, P = 0.001) as independent predictors of DELTAGFR/year. 48.7% versus 22.1% with and without AKI reached composite end-point (P = 0.01).
Conclusion(s): We report AKI in established CKD as a predictor of accelerated kidney disease progression and highlight this as an additional modifiable risk factor to reduce progression of kidney dysfunction. Graphical abstract[Figure not available: see fulltext.].

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Publisher
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755.

Rhabdomyolysis leading to acute kidney injury.
Ahmad S., Anees M., Elahi I., Mateen F.-E.
Embase
Journal of the College of Physicians and Surgeons Pakistan. 31(2) (pp 235-237), 2021. Date of Publication: February 2021.
[Article]
AN: 2011466486
Rhabdomyolysis constitutes an uncommon cause of acute kidney injury (AKI). A large variety of causes with different pathogenic mechanisms may involve skeletal muscles resulting in rhabdomyolysis with or without acute kidney injury. Crush syndrome and unaccustomed physical exertion are the most common causes of rhabdomyolysis. This study reports local cases of AKI

secondary to rhabdomyolysis that presented to a tertiary care centre over a period of four years. Most of them were males and belonged to younger age group. Muscle enzyme creatine phosphokinase level was raised in all patients, while myoglobinuria was detected only in one patient. Most of the patients (10/16) were managed conservatively with fluid replacement; and some of them (6/16) needed dialysis. AKI was resolved in all the patients after a variable period of time.

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756.

Plasma cystatin C is a marker of renal glomerular injury in children treated with cisplatin or ifosfamide.
Lambert M., White-Koning M., Alonso M., Garnier A., Alphonsa G., Puiseux C., Munzer C., Berthier J., Malard L., Pasquet M., Chatelut E.
Embase
Pediatric Blood and Cancer. 68(1) (no pagination), 2021. Article Number: e28747. Date of Publication: January 2021.
[Article]
AN: 2006960750
Background: Plasma cystatin C is a potential marker of the glomerular filtration rate (GFR), and urinary cystatin C has been proposed as a marker of tubular dysfunction. Procedure: A prospective study (NCT02822404) was conducted to assess the benefit of considering cystatin C plasma and urinary levels to better evaluate cisplatin and/or ifosfamide renal toxicity in children with cancer. Plasma 51Cr-EDTA clearance as a marker of GFR and urinary markers of tubular toxicity were monitored in 40 children treated by cisplatin and/or ifosfamide. Several equations previously proposed to estimate GFR, with or without inclusion of plasma cystatin C level, were compared. A population pharmacokinetic approach was also used to analyze plasma 51Cr-EDTA data, and evaluate the relationship between patient covariates (including plasma cystatin C level) and GFR during the course of chemotherapy treatment.
Result(s): Equations including plasma cystatin C described GFR changes during chemotherapy better than those without this variable. An equation based on plasma cystatin C, serum creatinine, and body weight enabled us to accurately describe the evolution of GFR during chemotherapy. The urinary cystatin C/creatinine ratio was compared between children with or without tubular toxicity, according to a standard assessment of tubular dysfunction. However, although the urinary cystatin C/creatinine ratio was increased in children with tubular toxicity, this marker does not provide additional information to the well-known markers of tubulopathy.
Conclusion(s): Monitoring of plasma cystatin C may be substituted to radionucleide glomerular exploration in children treated by cisplatin and/or ifosfamide.

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Publisher
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Year of Publication
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757.

ISPD guidelines for peritoneal dialysis in acute kidney injury: 2020 Update (paediatrics).
Nourse P., Cullis B., Finkelstein F., Numanoglu A., Warady B., Antwi S., McCulloch M.
Embase
Peritoneal Dialysis International. 41(2) (pp 139-157), 2021. Date of Publication: March 2021.
[Article]
AN: 2010397189
Peritoneal dialysis (PD) for acute kidney injury (AKI) in children has a long track record and shows similar outcomes when compared to extracorporeal therapies. It is still used extensively in low resource settings as well as in some high resource regions especially in Europe. In these regions, there is particular interest in the use of PD for AKI in post cardiac surgery neonates and low birthweight neonates. Here, we present the update of the International Society for Peritoneal Dialysis guidelines for PD in AKI in paediatrics. These guidelines extensively review the available literature and present updated recommendations regarding peritoneal access, dialysis solutions and prescription of dialysis. 1.1 Peritoneal dialysis is a suitable renal replacement therapy modality for treatment of acute kidney injury in children. (1C) 2. Access and fluid delivery for acute PD in children. 2.1 We recommend a Tenckhoff catheter inserted by a surgeon in the operating theatre as the optimal choice for PD access. (1B) (optimal) 2.2 Insertion of a PD catheter with an insertion kit and using Seldinger technique is an acceptable alternative. (1C) (optimal) 2.3 Interventional radiological placement of PD catheters combining ultrasound and fluoroscopy is an acceptable alternative. (1D) (optimal) 2.4 Rigid catheters placed using a stylet should only be used when soft Seldinger catheters are not available, with the duration of use limited to <3 days to minimize the risk of complications. (1C) (minimum standard) 2.5 Improvised PD catheters should only be used when no standard PD access is available. (practice point) (minimum standard) 2.6 We recommend the use of prophylactic antibiotics prior to PD catheter insertion. (1B) (optimal) 2.7 A closed delivery system with a Y connection should be used. (1A) (optimal) A system utilizing buretrols to measure fill and drainage volumes should be used when performing manual PD in small children. (practice point) (optimal) 2.8 In resource limited settings,

an open system with spiking of bags may be used; however, this should be designed to limit the number of potential sites for contamination and ensure precise measurement of fill and drainage volumes. (practice point) (minimum standard) 2.9 Automated peritoneal dialysis is suitable for the management of paediatric AKI, except in neonates for whom fill volumes are too small for currently available machines. (1D) 3. Peritoneal dialysis solutions for acute PD in children 3.1 The composition of the acute peritoneal dialysis solution should include dextrose in a concentration designed to achieve the target ultrafiltration. (practice point) 3.2 Once potassium levels in the serum fall below 4 mmol/l, potassium should be added to dialysate using sterile technique. (practice point) (optimal) If no facilities exist to measure the serum potassium, consideration should be given for the empiric addition of potassium to the dialysis solution after 12 h of continuous PD to achieve a dialysate concentration of 3-4 mmol/l. (practice point) (minimum standard) 3.3 Serum concentrations of electrolytes should be measured 12 hourly for the first 24 h and daily once stable. (practice point) (optimal) In resource poor settings, sodium and potassium should be measured daily, if practical. (practice point) (minimum standard) 3.4 In the setting of hepatic dysfunction, hemodynamic instability and persistent/worsening metabolic acidosis, it is preferable to use bicarbonate containing solutions. (1D) (optimal) Where these solutions are not available, the use of lactate containing solutions is an alternative. (2D) (minimum standard) 3.5 Commercially prepared dialysis solutions should be used. (1C) (optimal) However, where resources do not permit this, locally prepared fluids may be used with careful observation of sterile preparation procedures and patient outcomes (e.g. rate of peritonitis). (1C) (minimum standard) 4. Prescription of acute PD in paediatric patients 4.1 The initial fill volume should be limited to 10-20 ml/kg to minimize the risk of dialysate leakage; a gradual increase in the volume to approximately 30-40 ml/kg (800-1100 ml/m2) may occur as tolerated by the patient. (practice point) 4.2 The initial exchange duration, including inflow, dwell and drain times, should generally be every 60-90 min; gradual prolongation of the dwell time can occur as fluid and solute removal targets are achieved. In neonates and small infants, the cycle duration may need to be reduced to achieve adequate ultrafiltration. (practice point) 4.3 Close monitoring of total fluid intake and output is mandatory with a goal to achieve and maintain normotension and euvolemia. (1B) 4.4 Acute PD should be continuous throughout the full 24-h period for the initial 1-3 days of therapy. (1C) 4.5 Close monitoring of drug dosages and levels, where available, should be conducted when providing acute PD. (practice point) 5. Continuous flow peritoneal dialysis (CFPD) 5.1 Continuous flow peritoneal dialysis can be considered as a PD treatment option when an increase in solute clearance and ultrafiltration is desired but cannot be achieved with standard acute PD. Therapy with this technique should be considered experimental since experience with the therapy is limited. (practice point) 5.2 Continuous flow peritoneal dialysis can be considered for dialysis therapy in children with AKI when the use of only very small fill volumes is preferred (e.g. children with high ventilator pressures). (practice point)

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758.

Impact of Different Cardiopulmonary Bypass Strategies on Renal Injury After Pediatric Heart Surgery.
Tadphale S.D., Ramakrishnan K., Spentzas T., Kumar T.K.S., Allen J., Staffa S.J., Zurakowski D., Bigelow W.A., Gopal S.H., Boston U.S., Jonas R.A., Knott-Craig C.J.
Embase
Annals of Thoracic Surgery. 111(4) (pp 1374-1379), 2021. Date of Publication: April 2021. [Conference Paper]
AN: 2010760241
Background: The purpose of this study is to compare the incidence and severity of acute kidney injury (AKI) after open heart surgery in neonates and infants for two different cardiopulmonary bypass (CPB) strategies.
Method(s): In all, 151 infants undergoing cardiac surgery were prospectively enrolled between June 2017 and June 2018 at two centers, one using conventional CPB (2.4 L . min-1 . m-2, 150 mL . kg-1 . min-1) with reduction of flow rates with moderate hypothermia and with a targeted hematocrit greater than 25% (center 1, n = 91), and the other using higher bypass flow rates (175 to 200 mL . kg-1 . min-1) and higher minimum hematocrit (greater than 32%) CPB (center 2, n = 60). The primary endpoint was the incidence of postoperative AKI as defined by Acute Kidney Injury Network criteria and risk factors associated with AKI.
Result(s): Preoperative characteristics and complexity of surgery were comparable between centers. The overall incidence of early postoperative AKI was 10.6% (16 of 151), with 15.4% (14 of 91) in center 1 and 3.3% (2 of 60) in center 2 (P =.02). Mean lowest flow rates on CPB were 78 mL . kg-1 . min-1 vs 118 mL . kg-1 . min-1 and mean highest hematocrit on separation from CPB were 33% vs 43% at center 1 and 2, respectively (P <.001). Center 1 used less packed red blood cells but more fresh frozen plasma than center 2 (P =.001). By multivariate analysis, only lower flows on CPB (78 vs 96 mL . kg-1 . min-1, P =.043) and lower hematocrit at the end of CPB (33% vs 37%, P =.007) were associated with AKI.
Conclusion(s): In this contemporary comparative study, higher flow rates and higher hematocrit during cardiopulmonary bypass were associated with better preservation of renal function.

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759.

Acute Kidney Injury Associated with Late-Onset Neonatal Sepsis: A Matched Cohort Study.
Coggins S.A., Laskin B., Harris M.C., Grundmeier R.W., Passarella M., McKenna K.J., Srinivasan L.
Embase
Journal of Pediatrics. 231 (pp 185-192.e4), 2021. Date of Publication: April 2021.
[Article]
AN: 2010619736
Objectives: To determine incidence and severity of acute kidney injury (AKI) within 7 days of sepsis evaluation and to assess AKI duration and the association between AKI and 30-day mortality. Study design: Retrospective, matched cohort study in a single-center level IV neonatal intensive care unit. Eligible infants underwent sepsis evaluations at >=72 hours of age during calendar years 2013-2018. Exposed infants (cases) were those with culture-proven sepsis and antimicrobial duration >=5 days. Nonexposed infants (controls) were matched 1:1 to exposed infants based on gestational and corrected gestational age, and had negative sepsis evaluations with antibiotic durations <48 hours. AKI was defined by modified neonatal Kidney Disease Improving Global Outcomes criteria. Statistical analysis included Mann-Whitney and chi2 tests, multivariable logistic regression, and Kaplan-Meier time-to-event analysis.
Result(s): Among 203 episodes of late-onset sepsis, 40 (20%) developed AKI within 7 days after evaluation, and among 193 episodes with negative cultures, 16 (8%) resulted in AKI (P = .001). Episodes of sepsis also led to greater AKI severity, compared with nonseptic episodes (P = .007). The timing of AKI onset and AKI duration did not differ between groups. Sepsis was associated with increased odds of developing AKI (aOR, 3.0; 95% CI, 1.5-6.2; P = .002). AKI was associated with increased 30-day mortality (aOR, 4.5; 95% CI, 1.3-15.6; P = .017).
Conclusion(s): Infants with late-onset sepsis had increased odds of AKI and greater AKI severity within 7 days of sepsis evaluation, compared with age-matched infants without sepsis. AKI was independently associated with increased 30-day mortality. Strategies to mitigate AKI in critically ill neonates with sepsis may improve outcomes.

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760.

Inhaled nitric oxide and acute kidney injury risk: a meta-analysis of randomized controlled trials.
Wang J., Cong X., Miao M., Yang Y., Zhang J.
Embase
Renal Failure. 43(1) (pp 281-290), 2021. Date of Publication: 2021.
[Article]
AN: 2010260480
Purpose: There are conflicting results as to the effect of inhaled nitric oxide (iNO) therapy on the risk of acute kidney injury (AKI). The aim of this study was to perform a meta-analysis to assess the updated data.
Method(s): We systematically searched Web of Science, the Cochrane Library, Wanfang, and PubMed for relevant randomized control trials between database inception and 9/07/2020. Relative risks (RRs) with 95% confidence intervals (CIs) predicting the risk of AKI were extracted to obtain summary estimates using fixed-effects models. The Trim and Fill method was used to evaluate the sensitivity of the results and adjust for publication bias in meta-analysis.
Result(s): 15 randomized controlled studies from 14 articles involving 1853 patients were included in the study. Analyzing the eligible studies we found: (1) iNO therapy significantly increased the risk of AKI in acute respiratory distress syndrome patients (RR 1.55, 95% CI 1.15-2.10, p = 0.004; I 2 for heterogeneity 0%; P het = 0.649). (2) The use of iNO was associated with reduced AKI risk in patients undergoing cardiac surgery (RR 0.80, 95% CI 0.64-0.99, p = 0.037; I 2 for heterogeneity 0%; P het = 0.528). (3) For organ transplantation recipients, there was no effect of iNO administration on the risk of AKI (RR 0.50, 95% CI 0.16-1.56, p = 0.233; I 2 for heterogeneity 0%; P het = 0.842). The Trim and Fill analysis showed that the overall effect of this meta-analysis was stable.
Conclusion(s): The effect of iNO on AKI risk might be disease-specific. Future RCTs with larger patient populations should aim to validate our findings.

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761.

Clinical and histopathological features of acute kidney injury in adult-onset minimal change nephrotic syndrome.
Nishide K., Nakatani S., Mori K., Morioka F., Machiba Y., Uedono H., Tsuda A., Inaba M., Ishimura E., Emoto M.
Embase
Clinical and Experimental Nephrology. 25(3) (pp 261-269), 2021. Date of Publication: March 2021.
[Article]
AN: 2007463005
Background: Acute kidney injury (AKI) is a common complication of minimal change nephrotic syndrome (MCNS), particularly in adults. To predict development of AKI, as defined by the Kidney Disease Improving Global Outcomes classification, we investigated clinical and histopathological features of adult-onset MCNS patients.
Method(s): A retrospective study was conducted with biopsy-proven adult-onset MCNS patients treated with corticosteroids.
Result(s): A total of 58 MCNS patients [49 (24-71) years old, 38 males] were diagnosed using kidney biopsy findings from 2005 to 2018 at Osaka City University Hospital, of whom 24 (41.4%) were found to be complicated with AKI. Age, urinary protein, increased body weight (difference from admission to discharge), and histopathological scores were significantly greater in patients with as compared to without AKI, while urinary protein, increased body weight, and interstitial edema score were significantly associated with AKI development [OR 1.55 (95% CI 1.04-2.31), 1.37 (95% CI 1.03-1.81), 20.7 (95% CI 1.76-243), respectively]. Of the 24 MCNS patients with AKI, 10 underwent transient hemodialysis treatment. Although histopathological features were not different, the time interval between disease onset and kidney biopsy was significantly longer for MCNS patients complicated with AKI requiring hemodialysis as compared to those for whom that was not required [32 (24-46) vs. 13 (10-23) days, p = 0.034].
Conclusion(s): These results indicate that urinary protein, increased body weight, and interstitial edema score are important information for predicting development of AKI in adult-onset MCNS patients.

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762.

Performance of simultaneous multi-slice accelerated diffusion-weighted imaging for assessing focal renal lesions in pediatric patients with tuberous sclerosis complex.
Tabari A., Machado-Rivas F., Kirsch J.E., Nimkin K., Gee M.S.
Embase
Pediatric Radiology. 51(1) (pp 77-85), 2021. Date of Publication: January 2021.
[Article]
AN: 2005973356
Background: Diffusion-weighted imaging (DWI) is a useful MRI technique to characterize abdominal lesions in children, but long acquisition times can lead to image degradation. Simultaneous multi-slice accelerated DWI is a promising technique to shorten DWI scan times.
Objective(s): To test the feasibility of simultaneous multi-slice DWI of the kidneys in pediatric patients with tuberous sclerosis complex (TSC) and to evaluate the accelerated protocol regarding image quality and quantitative apparent diffusion coefficient (ADC) values compared to standard echoplanar DWI sequence.
Material(s) and Method(s): We included 33 children and adolescents (12 female, 21 male; mean age 10+/-5 years) with TSC and renal cyst or angiomyolipoma on 3-tesla (T) MRI from 2017 to 2019. All studies included both free-breathing standard echoplanar DWI and simultaneous multi-slice DWI sequences. Subjective and quantitative image quality was evaluated using a predefined 5-point scale. ADC values were obtained for all renal cysts and angiomyolipomas >=5 mm. All statistical analysis was performed using Stata/SE v15.1.
Result(s): Simultaneous multi-slice DWI ADC values were slightly lower compared to standard echoplanar DWI for both renal cysts and angiomyolipomas (mean difference 0.05x10-3 mm2/s, 95% confidence interval [CI] 0.40-0.50 and 0.024x10-3 mm2/s, 95% CI 0.17-0.21, respectively, with P>0.1). Our results showed that renal lesions with ADC values >1.69x10-3 mm2/s were all cysts, whereas lesions with values <1.16x10-3 mm2/s were all angiomyolipomas. However, ADC values could not discriminate between lipid-rich and lipid-poor angiomyolipomas (P>0.1, for both sequences).
Conclusion(s): A 55% reduction in scan time was achieved using simultaneous multi-slice DWI for abdominal imaging in children with TSC, with near identical image quality as standard DWI. These results suggest that multi-slice techniques should be considered more broadly as an MRI acceleration technique in children.

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Publisher
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763.

Canadian Association of Paediatric Nephrologists COVID-19 Rapid Response: Guidelines for Management of Acute Kidney Injury in Children.
Alabbas A., Kirpalani A., Morgan C., Mammen C., Licht C., Phan V., Wade A., Harvey E., Zappitelli M., Clark E.G., Hiremath S., Soroka S.D., Wald R., Weir M.A., Chanchlani R., Lemaire M.
Embase
Canadian Journal of Kidney Health and Disease. 8 (no pagination), 2021. Date of Publication: 2021.
[Article]
AN: 2010385015
Purpose: This article provides guidance on managing acute kidney injury (AKI) and kidney replacement therapy (KRT) in pediatrics during the COVID-19 pandemic in the Canadian context. It is adapted from recently published rapid guidelines on the management of AKI and KRT in adults, from the Canadian Society of Nephrology (CSN). The goal is to provide the best possible care for pediatric patients with kidney disease during the pandemic and ensure the health care team's safety. Information sources: The Canadian Association of Paediatric Nephrologists (CAPN) COVID-19 Rapid Response team derived these rapid guidelines from the CSN consensus recommendations for adult patients with AKI. We have also consulted specific documents from other national and international agencies focused on pediatric kidney health. We identified additional information by reviewing the published academic literature relevant to pediatric AKI and KRT, including recent journal articles and preprints related to COVID-19 in children. Finally, our group also sought expert opinions from pediatric nephrologists across Canada.
Method(s): The leadership of the CAPN, which is affiliated with the CSN, solicited a team of clinicians and researchers with expertise in pediatric AKI and acute KRT. The goal was to adapt the guidelines recently adopted for Canadian adult patients for pediatric-specific settings. These included specific COVID-19-related themes relevant to AKI and KRT in a Canadian setting, as determined by a group of kidney disease experts and leaders. An expert group of clinicians in pediatric AKI and acute KRT reviewed the revised pediatric guidelines.
Key Findings: (1) Current Canadian data do not suggest an imminent threat of an increase in acute KRT needs in children because of COVID-19; however, close coordination between nephrology programs and critical care programs is crucial as the pandemic continues to evolve. (2) Pediatric centers should prepare to reallocate resources to adult centers as needed based on broader health care needs during the COVID-19 pandemic. (3) Specific suggestions pertinent to the optimal management of AKI and KRT in COVID-19 patients are provided. These suggestions include but are not limited to aspects of fluid management, KRT vascular access, and KRT modality choice. (4) Considerations to ensure adequate provision of KRT if resources become scarce during the COVID-19 pandemic.
Limitation(s): We did not conduct a formal systematic review or meta-analysis. We did not evaluate our specific suggestions in the clinical environment. The local context, including how the provision of care for AKI and acute KRT is organized, may impede the implementation of many suggestions. As knowledge is advancing rapidly in the area of COVID-19, suggestions may become outdated quickly. Finally, most of the literature for AKI and KRT in COVID-19 comes from adult data, and there are few pediatric-specific studies. Implications: Given that most acute KRT related to COVID-19 is likely to be required in the pediatric intensive care unit initial setting, close collaboration and planning between critical care and pediatric nephrology programs are needed. Our group will update these suggestions with a supplement if necessary as newer evidence becomes available that may change or add to the recommendations provided.

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764.

Value of Preoperative Creatine Kinase-MB for Prediction of Acute Kidney Injury in Congenital Cardiac Surgery Using Cardiopulmonary Bypass: a prospective study.
Gomaa M., Shaarawy S., Almetainy S., Abo Elwafa R.
Embase
Egyptian Journal of Anaesthesia. 37(1) (pp 57-61), 2021. Date of Publication: 2021.
[Article]
AN: 2010442348
Background: Acute kidney injury (AKI) is a common complication associated with cardiac surgery with cardiopulmonary bypass (CPB) with a deleterious effect on morbidity and mortality. The current study aimed to determine the efficacy of preoperative creatine kinase-MB (CK-MB) level for the prediction of occurrence and severity of AKI. Settings and Design: This study was a prospective cross-sectional observational study.
Method(s): The study was carried out on 74 pediatric patients aged less than 18 years scheduled for elective congenital cardiac surgery using CPB. The prevalence of AKI within 72 hours was defined according to the three-stage Acute Kidney Injury Network (AKIN) criteria. Logistic

regression analysis was done and adjusted odds ratio (OR) and confidence intervals at 95% (95% CI) were calculated.
Result(s): AKI had developed in 25 patients (33.78%) by the second postoperative day. Patients who developed AKI had higher mean levels of preoperative CK-MB compared with patients without AKI (P = 0.002). Lower mean age, longer duration of surgery, bypass time, and cross-clamp time were independently associated with AKI (p < 0.015, 0.001, 0.001and 0.001, respectively). Patients who developed AKI had a longer duration of mechanical ventilation (MV) (OR 1.3, 95% CI 1.147-1.691) so; they required longer intensive care unit (ICU) stay.
Conclusion(s): CK-MB can be a useful biomarker for detecting early AKI after congenital cardiac surgery and predicting adverse clinical outcomes.

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765.

Cystatin C compared to serum creatinine as a marker of acute kidney injury in critically ill neonates.
Hidayati E.L., Utami M.D., Rohsiswatmo R., Tridjaja B.
Embase
Pediatric Nephrology. 36(1) (pp 181-186), 2021. Date of Publication: January 2021.
[Article]
AN: 2005407981
Background: Acute kidney injury (AKI) is one of the most common causes of neonatal morbidity and mortality. Diagnosing AKI in neonates is challenging as it lacks specific signs, symptoms, and biomarkers. However, detecting AKI in critically ill neonates is crucial to determine appropriate management and prevent complications. Cystatin C (CysC) has been recognized as a superior kidney biomarker reflecting kidney function in neonates. The objective of this study is to evaluate the diagnostic value of CysC as an AKI biomarker in critically ill neonates.
Method(s): We performed a diagnostic test between cystatin C-based estimated glomerular filtration rate (eGFR-CysC) and serum creatinine-based estimated glomerular filtration rate (eGFR-SCr) as the gold standard to diagnose AKI in 135 critically ill neonates treated in Cipto Mangunkusumo National Hospital from July 2017 to January 2018.
Result(s): Prevalence of AKI was 23.7% predominantly in neonates with a very preterm gestational age, low birthweight, probable sepsis, and those receiving invasive oxygen therapy or nephrotoxic drugs. The proportion of AKI based on neonate RIFLE criteria was 72.7% risk, 18.9% injury, and 9% failure. eGFR-CysC had the following parameters: sensitivity, 84.8%; specificity, 61.8%; PPV, 41.8%; NPV, 89.7%; LR(+), 2.2; LR(-), 0.24; and accuracy, 67.4%. The AUROC for CysC was 84.9%. The optimal cut-off value for CysC was 1.605 mg/l.
Conclusion(s): CysC may be used as a screening biomarker of AKI in critically ill neonates; yet, it was not superior to serum creatinine. [Figure not available: see fulltext.].

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766.

Safety of Remdesivir in Patients With Acute Kidney Injury or CKD.
Thakare S., Gandhi C., Modi T., Bose S., Deb S., Saxena N., Katyal A., Patil A., Patil S., Pajai A., Bajpai D., Jamale T.
Embase
Kidney International Reports. 6(1) (pp 206-210), 2021. Date of Publication: January 2021.
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767.

Indicator of early kidney injury in adolescents with polycystic ovary syndrome: Can urine NGAL level be?.
Karaman S., Sabanciogullari E., Karaman E., Basaranoglu M., Cetin M., Karaman K.
Embase
Gynecological Endocrinology. 37(2) (pp 117-120), 2021. Date of Publication: 2021.
[Article]
AN: 2005500439
Introduction and Purpose: The Urinary Neutrophil-gelatinase associated lipocalin (NGAL) levels which are a biomarker for early diagnosis of kidney damage that may develop in patients with Polycystic Ovary Syndrome (PCOS) were investigated in the study.
Material(s) and Method(s): The 30 patients diagnosed with Polycystic Ovarian Syndrome between the ages of 13 and 18 who applied to the Yuzuncu Yil University General Children's

Outpatient Clinic were included in the PCOS group and 30 healthy adolescents without any known acute or chronic illness and drug use were included in the control group.
Finding(s): Urine NGAL value was 842.204 +/- 21.561 in PCOS group and 775.379 +/- 23.98 in control group. NGAL level in PCOS group was statistically significantly higher than control group (p:.045). When we examine the relationship between dyslipidemia and PCOS; While dyslipidemia was positive in 10 (33.7%) patients in the PCOS group, it was negative in 20 (66.7%) patients. While 1 patient had dyslipidemia, 29 patients did not have dyslipidemia in the control group. A significant relationship was found between dyslipidemia and PCOS (p:.005).
Conclusion(s): We found that subclinical kidney dysfunction started in early stage patients in PCOS in our study. The urine NGAL level was thought to increase in response to increased oxidative stress in PCOS. We found no relationship between, insulin resistance and urea, BUN, creatinine and NGAL levels. However, we found a negative correlation between NGAL level and LDL. In addition, dyslipidemia, insulin resistance and ALT elevation were detected in the PCOS group.

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768.

Acute kidney injury among hospitalized children with cancer.
Xiong M., Wang L., Su L., Luo W., Li Y., Li L., Nie S., Hou F.F.
Embase
Pediatric Nephrology. 36(1) (pp 171-179), 2021. Date of Publication: January 2021.
[Article]
AN: 2005674120
Background: Few studies to date have analyzed the epidemiology of acute kidney injury (AKI) in children with cancer in developing countries. The aim of this study was to assess the incidence, risk profile and outcomes of AKI in Chinese children hospitalized with cancer.
Method(s): This multi-center study analyzed Chinese children hospitalized with cancer in 2013-2015. Electronic hospital and laboratory databases were screened to select pediatric patients with malignancy who had at least two Scr results within any 7-day window during their first 30 days of hospitalization. AKI events were identified and staged according to Kidney Disease Improving Global Outcomes (KDIGO) criteria. The incidence of and risk factors for AKI were analyzed, as were mortality rate, incidence of kidney recovery, and length of hospital stay.
Result(s): Of the 9828 children with cancer, 1657 (16.9%) experienced AKI events, including 549 (5.6%) community-acquired (CA-AKI) and 1108 (11.3%) hospital-acquired AKI (HA-AKI) events. The three types of cancer with the highest incidence of AKI were urinary system cancer (25.8%), hepatic cancer (19.4%), and retroperitoneal malignancies (19.1%). The risk factor profiles of CA-

AKI and HA-AKI events differed, with many HA-AKI events due to treatment with nephrotoxic agents. In-hospital death rates were 5.4% (90 of 1657) in children with and 0.9% (74 of 8171) in children without AKI events. AKI events were also associated with longer hospitalization and higher daily costs.
Conclusion(s): AKI events are common among Chinese children hospitalized for cancer and are associated with adverse in-hospital outcomes.

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769.

Be aware of acute kidney injury in critically ill children with COVID-19.
Wang X., Chen X., Tang F., Luo W., Fang J., Qi C., Sun H., Xiao H., Peng X., Shao J.
Embase
Pediatric Nephrology. 36(1) (pp 163-169), 2021. Date of Publication: January 2021.
[Article]
AN: 2005965130
Background: Acute kidney injury (AKI) is a common complication of critically ill adult patients with COVID-19. However, currently, no studies investigate kidney impairment in children with COVID-19. We investigated incidence and treatment of AKI in pediatric patients with COVID-19 in Wuhan Children's Hospital during the early stages of the COVID-19 pandemic and discuss possible mechanisms of AKI related to SARS-CoV-2 infection.
Method(s): By extracting data from electronic medical records, we conducted a retrospective observational study of kidney involvement in confirmed pediatric COVID-19 cases in Wuhan Children's Hospital during the coronavirus outbreak, from January 24 to March 20, 2020. Clinical presentations, clinical courses, laboratory findings, and medical interventions are described below.
Result(s): Among 238 confirmed COVID-19 cases, only three were critically ill and needed intensive care unit (ICU) admission. All three developed AKI, but AKI was not detected in any non-critically ill patients outside the ICU. Two of the three patients with AKI had prodromal gastrointestinal symptoms. Significantly elevated interleukin-6 (IL-6) levels and complement activation were observed in these patients with AKI. The three patients with AKI were treated with plasma exchange (PE) and continuous kidney replacement therapy (CKRT), resulting in one complete recovery, one partial recovery, and one mortality due to critical illness.
Conclusion(s): Critically ill children with COVID-19 may develop AKI, especially following prodromal gastrointestinal symptoms. An inflammatory storm and complement-mediated injury may underlie AKI development in children with COVID-19. Our study supports implantation of PE and CKRT in management of critically ill patients with AKI.

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770.

Acute kidney injury in hospitalized cirrhotic patients: Risk factors, type of kidney injury, and survival.
Khatua C.R., Sahu S.K., Meher D., Nath G., Singh S.P.
Embase
JGH Open. 5(2) (pp 199-206), 2021. Date of Publication: February 2021.
[Article]
AN: 2007595368
Background and Aim: Acute kidney injury (AKI) is a common complication of chronic liver disease (CLD). We performed a prospective study to evaluate the risk factors and spectrum of AKI among decompensated cirrhosis (DC) patients and the impact of AKI on survival.
Method(s): This study was conducted in consecutive DC patients hospitalized in SCB Medical College between December 2016 and October 2018. AKI was defined as per ICA criteria. Demographic, clinical, and laboratory parameters and outcomes were compared between patients with and without AKI.
Result(s): A total of 576 DC subjects were enrolled, 315 (54.69%) of whom had AKI; 34% (n = 106) had stage 1A, 28% (n = 90) stage 1B, 21% (n = 65) stage 2, and 17% (n = 54) stage 3 AKI. Alcohol was the predominant cause of CLD (66.7%). In 207 (65.7%) patients, diuretic/lactulose/nonsteroidal anti-inflammatory drugs use was noted, and infection was present in 190 (60.3%) patients. Compared to those without AKI, patients with AKI had higher leucocyte count, higher serum urea and creatinine, higher Child-Turcotte-Pugh, higher Model of End-Stage

Liver Disease (MELD) scores (P < 0.001), longer hospital stay, and lower survival at 28 days and 90 days (P < 0.001). Besides, in patients with stages 1A to 3 AKI, there were differences in overall survival at 28 days (P < 0.001) and 90 days (P < 0.001).
Conclusion(s): Over half of DC patients had AKI, and alcohol was the most common cause of cirrhosis in them. Use of AKI-precipitating medications was the most common cause of AKI, followed by bacterial infection. AKI patients had increased prevalence of acute-on-chronic liver failure and had prolonged hospitalization and lower survival both at 28 days and 90 days.

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Publisher
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771.

Pediatric Acute Kidney Injury to the Subsequent CKD Transition.
Wang F., Ding J.
Embase
Kidney Diseases. 7(1) (pp 10-13), 2021. Date of Publication: January 2021.
[Review]
AN: 633624657
Background: Both acute kidney injury (AKI) and CKD are complex syndromes caused by multiple etiologies and presented with various degrees of severity. Studies on adults provide strong evidence that AKI is an independent risk factor for both the initiation and progression of CKD, and the severity, frequency, and duration of AKI are crucial factors in the subsequent development of CKD. However, without consensus definitions of AKI and CKD and long-term follow-up studies using predictive biomarkers, it is difficult to clarify the potential for transition from AKI to CKD in pediatric populations. The goal of this review is to describe the most recent studies in epidemiology of pediatric AKI and biomarkers aiding in the earlier detection of AKI and CKD.
Summary: KDIGO criteria for AKI have been widely applied for pediatric AKI studies. AKI in critically ill and non-critically ill children is common. CKD is highly prevalent in pediatric AKI survivors. Compared with traditional biomarkers such as serum Cr, proteinuria, and estimated glomerular filtration rate, urinary biomarkers earlier identifying AKI may also detect CKD earlier, but additional studies are required to determine their clinical utility. Key Messages: The use of consensus AKI criteria has improved our understanding of pediatric AKI epidemiology, and an association between AKI and CKD in pediatric populations has been endorsed. However, further studies are needed to better answer a definitive causal relationship between pediatric AKI and the subsequent development of CKD.

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772.

Clinicopathological Analysis of Medullary Ray Injury in 1-Year Protocol Paediatric Renal Allograft Biopsies.
Hashimoto J., Oguchi H., Mikami T., Hamasaki Y., Muramatsu M., Yamaguchi Y., Sakai K.
Embase
Nephron. 144(Suppl1) (pp 79-85), 2021. Date of Publication: January 2021.
[Conference Paper]
AN: 633622680
Aim: Medullary ray injury was recently reported in renal transplant biopsies. This study was performed to clarify the clinicopathological features of medullary ray injury in paediatric living renal transplant recipients.
Method(s): Paediatric recipients who completed a 5-year follow-up after living renal transplantation were enroled. We evaluated the clinical and pathological parameters of the presence or absence of medullary ray injury in their 1-year protocol biopsies.
Result(s): Of 48 1-year protocol biopsies, 18 (37.5%) showed histological evidence of medullary ray injury. The 48 paediatric recipients were classified as those with medullary ray injury (n = 18; MRI-1Y [+] group) and those without medullary ray injury (n = 30; MRI-1Y [-] group) in the 1-year protocol biopsies. The prevalence of histological evidence of calcineurin inhibitor (CNI) nephrotoxicity, chronic obstruction or reflux nephropathy, and imaging findings of vesicoureteral reflux was 66.7, 22.2, and 7.7% in the MRI-1Y (+) group and 33.3, 13.3, and 15.4% in the MRI-1Y (-) group, respectively. Only the prevalence of CNI nephrotoxicity was significantly different between the 2 groups. There was no significant difference in the mean estimated glomerular filtration rate at 1, 3, or 5 years after transplantation between the 2 groups.
Conclusion(s): In total, 37.5% of 1-year protocol biopsies showed histological evidence of medullary ray injury. This finding suggests that CNI nephrotoxicity might be the main contributor to medullary ray injury in 1-year protocol biopsies. The presence of medullary ray injury had little influence on renal function, at least during the first 5 years after transplantation.

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773.

Role of synthetic mesh renorrhaphy and neocapsule reconstruction to salvage posttransplant severely damaged renal allografts.
Garcher D., Ekwenna O., Ortiz J., Rees M., Selman S., Sindhwani P.
Embase
Experimental and Clinical Transplantation. 19(1) (pp 32-37), 2021. Date of Publication: 2021.
[Article]
AN: 2005940989
Objectives: As the recipient pool continues to rise, it is vital to conserve donor organs whenever possible. Injured renal allografts continue to be discarded for a variety of reasons, and salvaging potentially useable grafts is of utmost importance. Little information is available on outcomes of salvaged allografts. Here, we present an easily replicable technique to salvage damaged renal allografts using polyglactin mesh.
Material(s) and Method(s): Polyglactin woven mesh was used to salvage 4 otherwise irreparably injured allografts. In the first case, unidentified extracorporeal shockwave lithotripsy-induced microfractures 2 months before procurement of a deceased-donor kidney led to significant capsular injury. In the second case, rapid recovery of a deceased-donor kidney limited evaluation, and severe capsular rupture was diagnosed after perfusion. In the third case, an anticoagulated pediatric recipient received a living related-donor kidney from his mother, and a biopsy-induced hematoma 2 months posttransplant led to severe capsular denudation. In the fourth case, a pumped kidney from a donor after cardiac death developed severe focal capsular denudation. In each case, a keyhole hilar-sparing incision was made in an industry-standard 12 x 12-inch polyglactin mesh sheet, which was then fitted and sutured in a vest-over-pants method to provide a scaffold for hemostasis and capsular healing. Topical hemostatic agents were added in the first and fourth cases. Patients were followed longitudinally.
Result(s): All allografts were successfully salvaged using our technique, and none developed Page kidney, hydronephrosis, urinoma, or hemorrhage. At last follow-up, recipient 1 had kidney loss 7 years postrepair secondary to chronic allograft nephropathy, recipient 2 was lost to follow-up at 1 year with normal renal function, and recipients 3 and 4 had normal renal function at years 3 and 7 posttransplant.
Conclusion(s): This simple technique using readily available materials can salvage allografts that would have been potentially explanted or discarded.

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774.

Acute kidney injury after in-hospital cardiac arrest.
Mah K.E., Alten J.A., Cornell T.T., Selewski D.T., Askenazi D., Fitzgerald J.C., Topjian A., Page K., Holubkov R., Slomine B.S., Christensen J.R., Dean J.M., Moler F.W.
Embase

Resuscitation. 160 (pp 49-58), 2021. Date of Publication: March 2021.
[Article]
AN: 2010773429
Aim: Determine 1) frequency and risk factors for acute kidney injury (AKI) after in-hospital cardiac arrest (IHCA) in the Therapeutic Hypothermia after Pediatric Cardiac Arrest In-Hospital (THAPCA-IH) trial and associated outcomes; 2) impact of temperature management on post-IHCA AKI.
Method(s): Secondary analysis of THAPCA-IH; a randomized controlled multi-national trial at 37 children's hospitals. Eligibility: Serum creatinine (Cr) within 24 h of randomization.
Outcome(s): Prevalence of severe AKI defined by Stage 2 or 3 Kidney Disease Improving Global Outcomes Cr criteria. 12-month survival with favorable neurobehavioral outcome. Analyses stratified by entire cohort and cardiac subgroup. Risk factors and outcomes compared among cohorts with and without severe AKI.
Result(s): Subject randomization: 159 to hypothermia, 154 to normothermia. Overall, 80% (249) developed AKI (any stage), and 66% (207) developed severe AKI. Cardiac patients (204, 65%) were more likely to develop severe AKI (72% vs 56%,p = 0.006). Preexisting cardiac or renal conditions, baseline lactate, vasoactive support, and systolic blood pressure were associated with severe AKI. Comparing hypothermia versus normothermia, there were no differences in severe AKI rate (63% vs 70%,p = 0.23), peak Cr, time to peak Cr, or freedom from mortality or severe AKI (p = 0.14). Severe AKI was associated with decreased hospital survival (48% vs 65%,p = 0.006) and decreased 12-month survival with favorable neurobehavioral outcome (30% vs 53%,p < 0.001).
Conclusion(s): Severe post-IHCA AKI occurred frequently especially in those with preexisting cardiac or renal conditions and peri-arrest hemodynamic instability. Severe AKI was associated with decreased survival with favorable neurobehavioral outcome. Hypothermia did not decrease incidence of severe AKI post-IHCA.

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775.

Association of early hypotension in pediatric sepsis with development of new or persistent acute kidney injury.
Fitzgerald J.C., Ross M.E., Thomas N.J., Weiss S.L., Balamuth F., Chilutti M., Grundmeier R.W., Anderson A.H.
Embase
Pediatric Nephrology. 36(2) (pp 451-461), 2021. Date of Publication: February 2021.
[Article]
AN: 2005671363
Objective: To determine how hypotension in the first 48 h of sepsis management impacts acute kidney injury (AKI) development and persistence. Study design: Retrospective study of patients > 1 month to < 20 years old with sepsis in a pediatric ICU between November 2012 and January 2015 (n = 217). All systolic blood pressure (SBP) data documented within 48 h after sepsis recognition were collected and converted to percentiles for age, sex, and height. Time below SBP percentiles and below pediatric advanced life support (PALS) targets was calculated by summing elapsed time under SBP thresholds during the first 48 h. The primary outcome was new or persistent AKI, defined as stage 2 or 3 AKI present between sepsis day 3-7 using Kidney Disease: Improving Global Outcomes creatinine definitions. Secondary outcomes included AKI-free days (days alive and free of AKI) and time to kidney recovery.
Result(s): Fifty of 217 sepsis patients (23%) had new or persistent AKI. Patients with AKI spent a median of 35 min under the first SBP percentile, versus 4 min in those without AKI. After adjustment for potential confounders, the odds of AKI increased by 9% with each doubling of minutes spent under this threshold (p = 0.03). Time under the first SBP percentile was also associated with fewer AKI-free days (p = 0.02). Time spent under PALS targets was not associated with AKI.
Conclusion(s): The duration of severe systolic hypotension in the first 48 h of pediatric sepsis management is associated with AKI incidence and duration when defined by age, sex, and height norms, but not by PALS definitions. [Figure not available: see fulltext.].

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776.

Biomarkers of kidney injury among children in a high-risk region for chronic kidney disease of uncertain etiology.
Leibler J.H., Ramirez-Rubio O., Velazquez J.J.A., Pilarte D.L., Obeid W., Parikh C.R., Gadupudi S., Scammell M.K., Friedman D.J., Brooks D.R.
Embase
Pediatric Nephrology. 36(2) (pp 387-396), 2021. Date of Publication: February 2021.
[Article]
AN: 2005160327
Background: Mesoamerican Nephropathy (MeN), a form of chronic kidney disease of uncertain etiology, is a leading cause of death in Central America. The disease often presents in young adult male agricultural workers and progresses rapidly. Given the young age at presentation, we hypothesized that children in Central America experience subclinical kidney injury prior to working life.
Method(s): We assessed specimens from a cross-sectional study of youth, aged 7-17 years, predominantly residing in a high-risk region of Nicaragua (n = 210). We evaluated urinary concentrations and risk factors for kidney injury biomarkers neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1), interleukin-18 (IL-18), monocyte chemoattractant protein 1 (MCP-1), and chitinase-3-like protein 1 (YKL-40). We evaluated the association between biomarkers and contemporaneous eGFR and compared biomarker concentrations with reference values from healthy children in other countries.
Result(s): Median uNGAL, uIL-18, and uKIM-1 concentrations exceeded healthy reference values. A one-year increase in age was associated with 40% increase in odds of being in the highest quartile of uNGAL (OR 1.4; (95%CI 1.2, 1.5); p < 0.0001). Youth who reported ever experiencing dysuria had 2.5 times the odds of having uNGAL concentrations in the top quartile (OR 2.5; (95%CI 1.4, 4.6); p = 0.003). Girls had significantly higher concentrations of all biomarkers than boys. Nine percent of children demonstrated low eGFR (<= 100 ml/min/1.73 m2), while 29% showed evidence of hyperfiltration (eGFR >= 160 ml/min/1.73 m2), both potentially indicative of renal dysfunction.
Conclusion(s): Children residing in regions of Nicaragua at high risk for MeN may experience subclinical kidney injury prior to occupational exposures.

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Publisher
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777.

A study on the effect of N-acetylcysteine on acute kidney injury due to falciparum malaria.
Das G., Behera B.P., Karua P.C., Sethy R.C.
Embase
Journal of Clinical and Diagnostic Research. 15(1) (pp OC21-OC25), 2021. Date of Publication: January 2021.
[Article]
AN: 2010689917
Introduction: Acute Kidney Injury (AKI) occurs most commonly in Plasmodium falciparum infection. Next to cerebral malaria and anaemia, AKI is the third most common complication of falciparum malaria. N-Acetylcysteine (NAC) has been shown to decrease serum creatinine without affecting the Glomerular Filtration Rate (GFR) by activating creatinine kinase and possibly by increasing tubular secretion.
Aim(s): To study the effect of NAC on improvement and deterioration of falciparum malarial AKI.
Material(s) and Method(s): This prospective observational study was undertaken on 100 patients of falciparum malaria with AKI who were admitted to the Department of General Medicine ward, VSSIMSAR, Burla, Odisha from November 2014 to October 2016. Patients who were treated with NAC were considered as NAC group (n=50) and those who were not given were considered as Non N-Acetylcysteine (NNAC) group (n=50). In both the groups serum creatinine level and urine output were compared on day 1, day 3 and on day 5 of the study. Graph pad instat version-3 for windows was used for various statistical analyses. The numerical value was compared by Chi-square test. The comparison of mean values among the NAC and NNAC groups was performed by student t-test. The p-value less than 0.05 was considered statistically significant.
Result(s): A total of 63 males and 37 females were included in the study. Most of the cases were present in 15-34 years age group in both NAC and NNAC groups. The mean age of the patients for NAC group was 33.3+/-12.8 years and for NNAC group was 33.2+/-12.1 years with majority being males in both the groups. Out of 50 cases who were given NAC 600 mg twice daily for five days, 28 (56%) cases improved in AKI on day 5 as compared to day 1 of the study in NAC group. Similarly, out of 50 cases who were not given NAC, 26 (52%) cases improved in AKI on day 5 as compared to day 1 of the study in NNAC group. There was no difference in patients showing improvement in AKI after NAC therapy compared to patients with NNAC (chi2, 0.04; p=0.841).
Conclusion(s): In NAC group, improvement of falciparum malarial AKI after five days was found to be little bit more as compared to the NNAC group, though it did not reach statistically significant difference.

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Publisher
Journal of Clinical and Diagnostic Research
Year of Publication
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778.

Incidence, Risk Factors, the Role of Plasma NGAL and Outcome of Contrast-Induced Acute Kidney Injury in Critically Ill Children.
Agarwal Y., Rameshkumar R., Krishnamurthy S., Senthilkumar G.P.
Embase
Indian Journal of Pediatrics. 88(1) (pp 34-40), 2021. Date of Publication: January 2021.
[Article]
AN: 2005541300
Objectives: To study the incidence of contrast-induced acute kidney injury (CI-AKI), evaluate its risk factors, study the role of plasma neutrophil gelatinase-associated lipocalin (NGAL) and evaluate the outcome of CI-AKI in critically ill children.
Method(s): In this prospective cohort study, children aged 1 mo to 12 y who underwent contrast computed tomography (CECT) for various medical indications were included. Patients without renal function test before contrast administration, children with chronic kidney disease, children admitted for less than 48 h, and those with serum bilirubin more than 5 mg per dL were excluded. Serum creatinine and estimated-Glomerular filtration rate (e-GFR) were measured at admission, immediately before, and at 6, 24, 48 h after contrast. Plasma neutrophil gelatinase-associated lipocalin (NGAL) was measured before and 6 h after contrast. The incidence of CI-AKI by p-RIFLE (Pediatric Risk, Injury, Failure, Loss, End Stage Renal Disease) criteria, its risk factors, the diagnostic role of NGAL in CI-AKI, and outcomes [30 d unfavorable outcome (death, readmission) and renal recovery] were studied.
Result(s): One hundred children were enrolled. The indications for CECT were brain (58%) and respiratory pathology (20%). Incidence of CI-AKI was 35% (95% CI 26.4% to 44.8%); 71% in 'Risk,' and 29% in the 'Injury' stage. After multivariate logistic regression, age younger than 2 y was independently associated with CI-AKI. There was no significant difference in NGAL before (ROC-AUC 0.38, 95% CI 0.26 to 0.50) and 6 h after CECT scan (AUC 0.41, 95% CI 0.29 to 0.54) to predict CI-AKI. There were 7% deaths but no readmission at 30 d. Among 33 CI-AKI patients who survived, the operational definition of renal recovery was achieved in 51.5% (n = 17), complete renal recovery was achieved in 97% (n = 32), and partial renal recovery was achieved in 3% (n = 1) of patients at discharge, while none received renal supportive therapy.
Conclusion(s): The incidence of contrast-induced acute kidney injury was 35% with age younger than two year being independently associated with CI-AKI. NGAL did not predict the CI-AKI.

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779.

N-glycosylated IgG in patients with kidney transplants increases calcium/calmodulin kinase IV in podocytes and causes injury.
Bhargava R., Maeda K., Tsokos M.G., Pavlakis M., Stillman I.E., Tsokos G.C.
Embase
American Journal of Transplantation. 21(1) (pp 148-160), 2021. Date of Publication: January 2021.
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AN: 2005482084
Transplant glomerulopathy (TG) is a major cause of late allograft loss. Increased urine podocin/creatinine ratio in TG signifies accelerated podocyte loss. The mechanisms that lead to podocyte injury in TG remain unclear. We report that IgG from kidney transplant recipients with TG, but not from those without TG, cause a reduction in the expression of nephrin, significant podocyte actin cytoskeleton, and motility changes. These changes are preceded by increased expression of calcium/calmodulin kinase IV (CAMK4). Mechanistically, we found that CAMK4 phosphorylates GSK3beta (glycogen synthase kinase 3 beta), activates the Wnt pathway and stabilizes the nephrin transcriptional repressor SNAIL. Silencing neonatal Fc Receptor (FcRn) or CAMK4 prevented the podocyte-damaging effects of IgG from patients with TG. Furthermore, we show that removal of N-linked glycosyl residues from these IgG did not interfere with its entry into the podocytes but eliminated its ability to upregulate CAMK4 and cause podocyte injury. The translational value of these findings is signified by the fact that CAMK4 is increased in podocytes of patients with TG but not in those without TG despite other forms of renal dysfunction. Our results offer novel considerations to limit podocyte injury in patients with kidney transplants, which may lead to eventual glomerular destabilization and transplant glomerulopathy.

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780.

Acute kidney injury and mortality in pediatric Lassa fever versus question of access to dialysis.
Adetunji A.E., Ayenale M., Akhigbe I., Akerele L.O., Isibor E., Idialu J., Aideloje F.O., Emuebonam E., Aire C., Adomeh D.I., Odia I., Atafo R.O., Okonofua M.O., Owobu A., Ogbaini-Emovon E., Tobin E.A., Asogun D.A., Okogbenin S.A., Sabeti P., Happi C.T., Gunther S., Azubuike C.O., Rafiu M., Odike A., Olomu S.C., Ibadin M.O., Okokhere P.O., Akpede G.O.
Embase
International Journal of Infectious Diseases. 103 (pp 124-131), 2021. Date of Publication: February 2021.
[Article]
AN: 2010404653
Objectives: To assess the prevalence of acute kidney injury (AKI), and its impact on outcome in hospitalized pediatric patients with Lassa fever (LF).
Method(s): We reviewed the presenting clinical and laboratory features and outcomes of 40 successive hospitalized children with PCR-confirmed LF. The diagnosis and staging of AKI was based on KDIGO criteria. We compared groups of patients using t- or chi2 tests as necessary, and took p-values <0.05 as indicative of the presence of significant differences.
Result(s): Sixteen (40%) children had AKI. Case fatality rate (CFR) was 9/16 (56%) in children with and 1/24 (4%) in those without AKI (OR [95% CI] of CFR associated with AKI = 29.57 [3.17, 275.7]). Presentation with abnormal bleeding (p = 0.008), encephalopathy (p = 0.004), hematuria plus proteinuria (p = 0.013), and elevated serum transaminase levels (p <0.02) were significantly associated with an increased prevalence of AKI.
Conclusion(s): AKI prevalence in hospitalized pediatric patients with Lassa fever is high, and correlated with illness severity/CFR. The high prevalence underscores the need for access to hemodialysis, and clinical presentation and/or presence of hematuria plus proteinuria could serve as a ready prompt for referral for such specialized care.

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781.

Correction to: Prediction of risk factors and outcomes of neonatal acute kidney injury (Journal of Nephrology, (2021), 34, 5, (1659-1668), 10.1007/s40620-021-01130-x).
AlGadeeb K., Qaraqei M., Algadeeb R., Faqeehi H., Al-Matary A.
Embase
Journal of Nephrology. 34(6) (pp 2179), 2021. Date of Publication: December 2021.
[Erratum]
AN: 2013695495
The co-authors and their affiliations are omitted in the published article. The correct list of author names and their affiliations are copied below: Kumail AlGadeeb1, Mostafa Qaraqei2, Rahma Algadeeb3, Hassan Faqeehi4, Abdulrahman Al-Matary1,* 1. Neonatology department, Maternity and children hospital, Alhasa, Saudi Arabia 2. Neonatology department, King Fahad Medical city, Riyadh, Saudi Arabia 3. Postgraduate center for preventive medicine, Alhasa, Saudi Arabia 4. Department of Nephrology, Children's hospital, King Fahad Medical City, Riyadh, Saudi Arabia *Corresponding author, amatary@yahoo.com The original article has been corrected.

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782.

Prediction of risk factors and outcomes of neonatal acute kidney injury.
AlGadeeb K., Qaraqei M., Algadeeb R., Faqeehi H., Al-Matary A.
Embase
Journal of Nephrology. 34(5) (pp 1659-1668), 2021. Date of Publication: October 2021.
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AN: 2013599813
Introduction: Neonatal Acute kidney injury (AKI) is an underestimated morbidity in the neonatal intensive care unit (ICU). However, there is a paucity of information about risk factors, outcomes, and possible preventive measures to limit its occurrence.
Aim(s): This study aimed to determine the prevalence of neonatal AKI in a neonatal ICU. Data obtained from this study will help to better understand current local practices and investigate possible preventive strategies.
Material(s) and Method(s): Charts from January 2011 to December 2018 were reviewed. Neonates less than 2 weeks old who depended on intravenous fluid as a nutrition source for at least two days were included.
Result(s): Overall, the eight-year prevalence of neonatal AKI in the neonatal ICU was 19.6%, and severity was distributed as follows: stage 1 (46.2%), stage 2 (26.5%), and stage 3 (27.3%). Caffeine administration before 29 weeks' gestational age significantly decreased the incidence of neonatal AKI. The incidence of neonatal AKI was independently associated with death (odds ratios (OR) = 7.11, P < 0.001) and extended length of hospital stay (OR = 2.47, P < 0.001). In the multivariate regression model, vancomycin (AOR = 1.637, P < 0.004), loop diuretics (AOR = 2.203, P < 0.001), intraventricular hemorrhage (AOR = 2.605, P < 0.001), surgical intervention (AOR = 1.566, P < 0.008), mechanical ventilation (AOR = 1.463, P < 0.015), and dopamine administration (AOR = 2.399, P < 0.001) were independently associated with neonatal AKI.
Conclusion(s): Neonatal AKI occurred in one-fifth of the study population in a neonatal ICU. Outcomes can be improved by identifying high-risk infants and cautiously monitoring kidney function.

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783.

Evaluation of hydroxylated metabolites of polycyclic aromatic hydrocarbons and biomarkers of early kidney damage in indigenous children from Ticul, Yucatan, Mexico.
Diaz de Leon-Martinez L., Ortega-Romero M.S., Barbier O.C., Perez-Herrera N., May-Euan F., Perera-Rios J., Rodriguez-Aguilar M., Flores-Ramirez R.

Embase
Environmental science and pollution research international. 28(37) (pp 52001-52013), 2021. Date of Publication: 01 Oct 2021.
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AN: 635104061
Polycyclic aromatic hydrocarbons (PAHs) are environmental persistent chemicals, produced by the incomplete combustion of solid fuels, found in smoke. PAHs are considered carcinogenic, teratogenic, and genotoxic. Children are susceptible to environmental pollutants, particularly those living in high-exposure settings. Therefore, the main objective of this study was to evaluate the exposure to PAHs through hydroxylated metabolites of PAHs (OH-PAHs), 1-hydroxynaphtalene (1-OH-NAP), and 2-hydroxynaphtalene (2-OH-NAP); 2-,3-, and 9-hydroxyfluorene (2-OH-FLU, 3-OH-FLU, 9-OH-FLU); 1-,2-,3-, and 4-hydroxyphenanthrene (1-OH-PHE, 2-OH-PHE, 3-OH-PHE, 4-OH-PHE); and 1-hydroxypyrene (1-OH-PYR), as well as kidney health through biomarkers of early kidney damage (osteopontin (OPN), neutrophil gelatinase-associated lipocalin (NGAL), alpha1-microglobulin (alpha1-MG), and cystatin C (Cys-C)) in children from an indigenous community dedicated to footwear manufacturing and pottery in Ticul, Yucatan, Mexico. The results show a high exposure to PAHs from the found concentrations of OH-PAHs in urine in 80.5% of the children in median concentrations of 18.4 (5.1-71.0) mug/L of total OH-PAHs, as well as concentrations of kidney damage proteins in 100% of the study population in concentrations of 4.8 (3-12.2) and 7.9 (6.5-13.7) mug/g creatinine of NGAL and Cys-C respectively, and 97.5% of the population with concentrations of OPN and alpha1-MG at mean concentrations of 207.3 (119.8-399.8) and 92.2 (68.5-165.5) mug/g creatinine. The information provided should be considered and addressed by the health authorities to establish continuous biomonitoring and programs to reduce para-occupational exposure in the vulnerable population, particularly children, based on their fundamental human right to health.

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784.

Acute kidney injury in a patient with COVID-19: Answers.

Tastemel Ozturk T., Baltu D., Kurt Sukur E.D., Ozsurekci Y., Gucer S., Basaran O., Gulhan B., Ozaltin F., Duzova A., Topaloglu R.
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Pediatric Nephrology. (no pagination), 2021. Date of Publication: 2021.
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785.

Acute kidney injury in a patient with COVID-19: Questions.
Tastemel Ozturk T., Baltu D., Kurt Sukur E.D., Ozsurekci Y., Gucer S., Basaran O., Gulhan B., Ozaltin F., Duzova A., Topaloglu R.
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786.

Observation vs. early drainage for grade IV blunt renal trauma: a multicenter study.
Chebbi A., Peyronnet B., Giwerc A., Freton L., Hutin M., Olivier J., Langouet Q., Ruggiero M., Dominique I., Millet C., Bergerat S., Panayatopoulos P., Betari R., Matillon X., Caes T., Patard P.-M., Szabla N., Brichart N., Boehm A., Sabourin L., Guleryuz K., Dariane C., Lebacle C., Rizk J., Gryn A., Madec F.-X., Rod X., Fiard G., Pradere B., Pfister C., Nouhaud F.-X.
Embase
World journal of urology. 39(3) (pp 963-969), 2021. Date of Publication: 01 Mar 2021.
[Article]
AN: 631883736
INTRODUCTION: The aim of this study was to compare observation and early drainage by ureteral stenting in patients with blunt renal trauma and urinary extravasation. MATERIALS AND METHODS: A retrospective national multicenter study was performed including all patients admitted for renal trauma at 17 hospitals between 2005 and 2015. Patients presenting with a urinary extravasation on initial imaging were considered for inclusion. Patients were divided in two groups according to the initial approach: observation vs. early drainage by ureteral stent (within 48 h after admission). The primary endpoint was the persistence of urinary extravasation on follow-up imaging.
RESULT(S): Out of 1799 patients with renal trauma, 238 were included in the analysis (57 in the early drainage and 181 in the observation group). In the early drainage group, 29 patients had persistent urinary extravasation vs. 77 in the observation group (50.9% vs. 42.5%; p value=0.27). The rates of secondary upper urinary tract drainage did not differ significantly between the early drainage group (26.4%) and the observation group (16%) (p=0.14). There were no statistically significant differences between the two groups in terms of secondary nephrectomy (0% vs. 2.8%; p=0.34), and death from trauma (0% vs. 1.8%; p=0.99). In multivariate analysis, early drainage remained not statistically associated with persistence of urinary extravasation on follow-up imaging (OR=1.35; p=0.36)
CONCLUSION(S): In this multicenter cohort, observation was not different from early drainage in terms of persistent urinary extravasation after grade IV blunt renal trauma. Further randomized controlled prospective trials are needed to confirm these findings.
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787.

Acute kidney injury after the arterial switch operation: Incidence, risk factors, and outcomes.
Schoenmaker N.J., Weeda J.A., Van Der Palen R.L.F., Hazekamp M.G., Bunker-Wiersma H.E.
Embase
Cardiology in the Young. (no pagination), 2021. Date of Publication: 2021.
[Article]
AN: 635714109
Background: The aim of this retrospective cohort study was to determine the incidence, potential risk factors, characteristics, and outcomes of acute kidney injury in children following the arterial switch operation for transposition of the great arteries.
Method(s): Retrospective review of children who underwent ASO between 2000 and 2020 in our tertiary children's hospital in the Netherlands. Pre-and post-ASO serum creatinine levels were collected. Severe AKI was defined as 100% serum creatinine rise or estimated creatinine clearance <35 ml/min/1.73 m2 according to pRIFLE criteria. Logistic regression was used to adjust for confounders.
Result(s): A total of 242 children were included. Fifty-seven (24%) children developed severe AKI after ASO. Four patients with severe AKI were treated with renal replacement therapy. Children with severe AKI had a longer duration of mechanical ventilation 4.5 (1.0-29) versus 3 (1.0-12) days (p = 0.001), longer PICU stay 7 (2-76) versus 5 (1-70) days, (p = 0.001), higher rate of myocardial infarction 5% versus 0.5% (p = 0.001), sepsis 24% versus 9% (p = 0.002), post-operative pulmonary hypertension 19% versus 6% (p = 0.002), post-operative bleeding 9% versus 3% (p = 0.044), longer time to sternal closure 3 (1-19) versus 2 (1-6) days, (p = 0.009), and a higher mortality rate 9.0% versus 0.5% (p = 0.001) compared to children without severe AKI. Sepsis was a risk factor for developing severe AKI.

Conclusion(s): In this single-centre cohort, 24% of our patients developed severe AKI after ASO, which is associated with increased morbidity, longer PICU stay, and higher mortality.

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788.

Assessment of the renal angina index for the prediction of acute kidney injury in patients admitted to a European pediatric intensive care unit.
Ribeiro-Mourao F., Vaz A.C., Azevedo A., Pinto H., Silva M.J., Jardim J., Ribeiro A.
Embase
Pediatric Nephrology. (no pagination), 2021. Date of Publication: 2021.
[Article]
AN: 2012344683
Background: Acute kidney injury (AKI) is associated with worse outcomes and increased morbidity and mortality in pediatric intensive care unit (PICU) patients. The renal angina index (RAI) has been proposed as an early prediction tool for AKI development.
Objective(s): The objective was to evaluate outcomes of RAI-positive patients and to compare RAI performance with traditional AKI markers across different patient groups (medical/post-surgical). This was an observational retrospective study. All children admitted to a tertiary hospital PICU over a 3-year period were included. Electronic medical records were reviewed. Day 1 RAI was calculated, as was the presence and staging of day 3 AKI.
Result(s): A total of 593 patients were included; 56% were male, the mean age was 55 months, and 17% had a positive RAI. This was associated with day 3 AKI development and worse outcomes, such as greater need for kidney replacement therapy, longer duration of mechanical ventilation, vasoactive support and PICU stay, and higher mortality. For all-stage kidney injury, RAI presented a sensitivity of 87.5% and a specificity of 88.1%. Prediction of day 3 all-stage AKI by RAI had an AUC=0.878; its performance increased for severe AKI (AUC = 0.93). RAI was superior to serum creatinine increase and KDIGO AKI staging on day 1 in predicting severe AKI development. The performance remained high irrespective of the type of admission.
Conclusion(s): The RAI is a simple and inexpensive tool that can be used with medical and post-surgical PICU patients to predict AKI development and anticipate complications, allowing for the adoption of preventive measures. Graphical abstract: [Figure not available: see fulltext.]

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789.

Diuretic therapy and acute kidney injury in preterm neonates and infants.
Mohamed T.H., Klamer B., Mahan J.D., Spencer J.D., Slaughter J.L.
Embase
Pediatric Nephrology. (no pagination), 2021. Date of Publication: 2021.
[Article]
AN: 2011595740
Background: Acute kidney injury (AKI) in preterm infants is associated with prolonged hospitalization and high mortality. Diuretic therapy has been used to enhance urine output in preterm infants with AKI. Treatment with diuretics, prescription patterns, and relationship with length of stay (LOS), mechanical ventilation (MV), and mortality in preterm infants who also had AKI have not been fully evaluated.
Method(s): This multicenter retrospective study used the Pediatric Hospital Information System database. We included 2121 preterm infants with AKI diagnosis from 46 hospital Neonatal Intensive Care Units (NICUs) born <37 weeks gestational age (GA). Treatment with diuretics, practice patterns across 46 NICUs in the USA, and associated outcomes including LOS, MV, and mortality were evaluated.
Result(s): Seventy-six percent of infants received at least one dose of diuretics (median treatment 18 days). Diuretic prescription varied significantly across hospitals and ranged from 42 to 96%. Diuretics were used more frequently in infants with younger GA and smaller birth weight. Infants with older GA who received diuretics at or before 28 days postnatally had worse survival even after adjusting for known confounders.
Conclusion(s): Preterm infants with AKI diagnosis were frequently treated with diuretics. Moreover, infants with younger GA and smaller birth weight were more likely to receive diuretics. Worse survival in infants with older GA who received diuretics could be the result of more underlying severe illness in these infants and not the cause of more severe illness. Prospective studies are needed to best determine patient safety and outcomes with diuretic treatment in preterm infants with AKI. Graphical abstract: [Figure not available: see fulltext.].

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790.

Erratum: Age appropriate reference intervals for eight kidney function and injury markers in infants, children and adolescents (Clinical Chemistry and Laboratory Medicine (CCLM) (2021) 58:2 (373-382) DOI: 10.1515/cclm-2020-0781).
Van Donge T., Staub E., Atkinson A., Gotta V., Van Den Anker J., Risch L., Welzel T., Pfister M.
Embase
Clinical Chemistry and Laboratory Medicine. (no pagination), 2021. Date of Publication: 2021. [Erratum]
AN: 2011292607
The authors regret to inform you that it came to our attention that we have discovered an error in our recently published paper "Age appropriate reference intervals for eight kidney function and injury markers in infants, children and adolescents - 2020 Aug 6;59(2):373-382. doi: 10.1515/cclm-2020-0781." The paper characterized eight kidney function and injury markers in healthy infants, children and adolescents. The error is related to the medium in which these kidney biomarkers were measured. These biomarkers were in fact measured in plasma and not in serum. Although an incorrect termfor themediumis used, we believe that this error does not influence the results and the conclusion of our study as the statistical analysis is not affected by this inaccuracy. In order to be transparent, we would like to have this information printed as an erratum.

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791.

Cardiac Biomarkers for Risk Stratification of Acute Kidney Injury After Pediatric Cardiac Surgery.
Greenberg J.H., Parsons M., Zappitelli M., Jia Y., Thiessen-Philbrook H.R., Devarajan P., Everett A.D., Parikh C.R.
Embase
Annals of Thoracic Surgery. 111(1) (pp 191-198), 2021. Date of Publication: January 2021.
[Article]
AN: 2005869670
Background: Children undergoing a cardiac surgical procedure are at increased risk for acute kidney injury (AKI). Novel biomarkers are needed to improve risk stratification of AKI after cardiac surgery.
Method(s): We enrolled children aged 1 month to 18 years old from July 2007 to December 2010 undergoing cardiopulmonary bypass. Three United States Food and Drug Administration-approved plasma biomarkers of cardiac stretch, N-terminal pro B-type natriuretic peptide (NTproBNP), inflammation (ST2), or fibrosis (galectin-3), were measured preoperatively and postoperatively within 6 hours of cardiac surgery. All analyses were stratified by age (<2 or >=2 years old) to account for changing biomarker distributions during childhood and due to a significant interaction between biomarker and age for galectin-3 and NTproBNP (P <.05).
Result(s): Postoperatively, AKI, defined by a doubling of baseline serum creatinine, was diagnosed in 51 of 194 children <2 years and in 28 of 201 children >=2 years. After multivariable adjustment, for children <2 years, none of the biomarkers were independently associated with AKI, whereas for children >=2 years, the highest tertile of preoperative galectin-3 and NTproBNP as well as the postoperative galectin-3 and ST2 were associated with AKI.
Conclusion(s): Preoperative plasma galectin-3 and NTproBNP and the first postoperative galectin-3 and ST2 levels were independently associated with AKI in children >=2 years old. The performance of cardiac biomarkers after cardiac surgical procedure is affected by age, and research is required to develop biomarkers for children <2 years old.

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792.

137 INCIDENCE OF ACUTE KIDNEY INJURY AMONG PATIENTS TREATED WITH CAR-T CELL THERAPIES: A SYSTEMATIC REVIEW AND META-ANALYSIS:.
Kanduri S.R., Cheungpasitporn W., Thongprayoon C., Petnak T., Lin Y., Kovvuru K., Manohar S., Kashani K., Herrmann S.
Embase
American Journal of Kidney Diseases. 77(4) (pp 610), 2021. Date of Publication: April 2021.
[Article]
AN: 2011319091
Cytokine release syndrome (CRS) is a well-known complication of chimeric antigen receptor T-cell (CAR-T) therapies. Proportionally increased incidence of acute kidney injury (AKI) requiring renal replacement therapy(RRT) with higher grades of CRS has not been reported. The current systematic review is conducted to assess AKI incidence among patients with CAR-T therapies and its correlation with CRS severity. A systematic literature search in Ovid MEDLINE, EMBASE, and Cochrane Databases was done to identify studies that provided data on the incidence of AKI and severe AKI requiring renal replacement therapy (AKI-RRT) in patients receiving CAR-T-cell therapy. Pooled effect estimates were examined using random-effects, generic inverse variance method of DerSimonian-Laird. 22 cohort studies with 3,376 patients were enrolled. Overall, the pooled estimated incidence of AKI among patients on CAR-T therapies was 18.6% (95%CI 14.3-23.8%), and the pooled estimated incidence of AKI-RRT was 4.4% (95%CI 2.1-8.9%). Subgroup analysis report that the pooled incidence of AKI and AKI-RRT among adults was 17.0% (95%CI 12.8-22.2%) and 2.7% (95%CI 1.0-7.3%), respectively. However, the pooled estimated incidence of AKI and AKI-RRT among pediatrics was slightly higher at 22.5% (95%CI 11.1-40.1%) and 6.0% (95%CI 2.2-15.5%), respectively. Additionally, severity of CRS significantly correlated with the incidence of AKI-RRT (slope = +0.0413, p = 0.01). The pooled incidence of overall AKI and AKI-RRT is high among all patients on CAR-T therapies. A trend towards a higher incidence of AKI was noted among pediatrics than older adults. Further, we also report a strong correlation between the incidence of AKI-RRT and severe CRS.

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793.

187 ACUTE KIDNEY INJURY IN COVID-19 PEDIATRIC PATIENTS: ANALYSIS OF THE VIRTUAL PEDIATRIC SYSTEMS DATA:.
Mawby I., Chakraborty R., Pandya A., Mahajan S., Raina R.
Embase
American Journal of Kidney Diseases. 77(4) (pp 625), 2021. Date of Publication: April 2021.
[Article]
AN: 2011318889
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is responsible for the 2019 novel coronavirus disease pandemic (COVID-19). Despite vast research about the adult population, there has been little data collected on acute kidney injury (AKI) epidemiology, associated risk factors, treatments, and mortality in pediatric COVID-19 patients admitted to the ICU. AKI is a severe complication of COVID-19 among children and adolescents. Therefore, understanding all aspects of the disease is crucial to further developing treatment and preventative care strategies to reduce morbidity and mortality. This study aims to assess AKI incidence among COVID-19 pediatric patients in the pediatric intensive care unit (ICU) within North America using the Virtual Pediatric Systems (VPS) database. Additionally, this study assesses AKI associated risk factors, treatments such as kidney replacement therapy (KRT) and associated mortality rates among COVID-19 pediatric patients within North America using VPS data. This is a retrospective study of COVID-19 pediatric patients (age < 24 years) in the pediatric ICU within North America using the VPS COVID-19 database between January 1, 2020 and June 30, 2020. Currently data regarding 1240 pediatric COVID-19 patients has been analyzed. 172 of these patients had renal/urinary system involvement. Of the 172 patients with renal involvement, there were 19 confirmed deaths. This means that 45% of all confirmed pediatric COVID-19 deaths were associated with renal involvement. 36 patients received KRT and there are 2 confirmed deaths in this group. Additionally, 264 (24.67%) patients were diagnosed with Multisystem Inflammatory Syndrome in Children (MIS-C). Although COVID-19 in the pediatric population tends to present more favorably, renal involvement among the pediatric COVID-19 patient population may be considered a negative prognostic factor with respect to patient outcomes.

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794.

590 ACUTE LYMPHOBLASTIC LEUKEMIA (ALL) PRESENTING AS SPONTANEOUS TUMOR LYSIS SYNDROME WITH ACUTE KIDNEY INJURY (AKI) REQUIRING HEMODIALYSIS (HD) IN AN ELDERLY PATIENT:.
Edding S., Gnanasekaran I., Shin J.H., Far R.F., Barker C.
Embase
American Journal of Kidney Diseases. 77(4) (pp 590), 2021. Date of Publication: April 2021.
[Article]
AN: 2011319208
Spontaneous tumor lysis syndrome (STLS) as an initial presentation with AKI in ALL is extremely rare. Here we report a case of an elderly male presenting with acute urate nephropathy requiring HD, later diagnosed to have Pre-B Cell ALL. A 77-year-old male with hypertension and diabetes presented with an 8-day history of fatigue, anorexia and decreasing urine output. Physical examination was remarkable for minimal wheezing and bipedal trace edema. Initial labs (Table1) showed azotemia, severe hyperuricemia, hyperkalemia, hyperphosphatemia, highanion gap acidosis and mild anemia with normal peripheral blood smear. Imaging studies revealed bilateral pleural effusion and moderate pericardial effusion. Diagnostic thoracentesis revealed exudative effusion with lymphocytic predominance. CT of chest, abdomen and pelvis noncontributory. Multiple Myeloma workup was negative. STLS was suspected and hemodialysis was initiated on admission. Exudative pleural effusion, persistent hyperuricemia and pericardial effusion despite 18 HD sessions during 25 days of hospital stay were suggestive of malignancy. Bone marrow biopsy with flow cytometry was done, which revealed 70-80% blasts with phenotype consistent with Pre-B Cell ALL. STLS is very rare in ALL, mostly described in children. STLS with AKI as initial presentation is even rarer. Other unique features in our case included: older age, normal hematology and peripheral blood smear, AKI-requiring intensive HD and unyielding workup for malignancy. Diagnosis was confirmed by bone marrow analysis. AKI with severe hyperuricemia without unknown etiology warrants an aggressive search for occult malignancy. Bone marrow studies should be contemplated even with a normal WBC count and peripheral blood smear.

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795.

7 THE USE OF THE RENAL ANGINA INDEX IN PREDICTING ACUTE KIDNEY INJURY:.
Kumar N., Mawby I., Agrawal N., Maskey S., Chakraborty R., Raina R.
Embase
American Journal of Kidney Diseases. 77(4) (pp 568-569), 2021. Date of Publication: April 2021.
[Article]
AN: 2011319061
In recent years, the use of the renal angina index (RAI) to calculate and accurately predict risk for the development of acute kidney injury (AKI) has been heavily explored. AKI is traditionally diagnosed by an increase in serum creatinine (sCr) concentration or oliguria, both of which are

neither specific or sensitive, especially among children. An RAI score may be calculated by combining objective signs of kidney dysfunction (such as sCr), and patient context, (such as risk factors for AKI), thus potentially serving as a more accurate biomarker for AKI. Due to the propitious and novel nature of RAI, this systematic review aims to analyze how well RAI serves as a predictor of AKI outcomes. A comprehensive literature search was conducted in PubMed/Medline and Google Scholar. The literature that studied the prognostic aspect of early prediction of AKI in the pediatric and adult population via renal angina index versus Cr was included. The initial literature search included 149 studies and a total of 10 studies reporting the outcomes of interest were included. The overall sample size across these studies was 11,026. The predictive ability of RAI included a pooled (95% CI) sensitivity of 79.21%, specificity of 73.22%, and negative predictive value of 94.83%. Currently, without RAI, clinicians lack a way to risk stratify patients capable of developing AKI. RAI shows benefit in the prediction of AKI among adult and pediatric populations.

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796.

PREDICTORS FOR WORSENING KIDNEY DISEASE AND ASSOCIATED MORTALITY AMONG HOSPITALIZED PATIENTS WITH CIRRHOSIS AND ACUTE KIDNEY INJURY.
Rajan A., Raab G.T., Restifo D., Ying X., Pan Y., Tafesh Z., Rosenblatt R.E., Fortune B.E.
Embase
Gastroenterology. 160(6 Supplement) (pp S-857), 2021. Date of Publication: May 2021.
[Article]
AN: 2011987690
Background: Hospitalized patients with cirrhosis who present with acute kidney injury (AKI) have increased mortality risk, and those who experience worsening kidney disease during their course perform even worse. While criteria for AKI severity have been defined by the Acute Kidney Injury Network (AKIN), risk factors that predict worsening kidney disease, i.e. AKIN progression, remain poorly described. Therefore, this study sought to elucidate predictors for in-hospital AKIN progression among patients with cirrhosis.
Method(s): We performed a single-center, retrospective longitudinal study using a cohort of hospitalized adult patients with cirrhosis and AKI from Jan 2012-Jan 2020. Included patients were identified by diagnosis or billing codes for cirrhosis and had at least one hospital stay with AKI. Patients with prior kidney or liver transplant were excluded. Patient demographics and hospital course details were collected. The primary outcome was AKIN progression. Secondary outcomes included in-hospital and one-year overall mortality. Univariable analyses were performed using Chi-Square and Kruskal-Wallis tests for categorical and continuous variables, respectively. Selected significant variables ($p<0.05$) were used in multivariable logistic regression models to determine independent predictors. Kaplan-Meier curves with log-rank estimates were created to find differences in survival.
Result(s): This study included 176 hospitalized patients with cirrhosis and AKI, with patient characteristics as well as univariable analyses for AKIN progression provided in Table 1. Thirty-

four patients (19%) had kidney disease progression during index admission. When adjusting for Child-Turcotte-Pugh (CTP) score in multivariable modeling, NAFLD cirrhosis etiology (OR 2.65, 95% CI 1.00-6.89, p=0.046) and hepatorenal syndrome (HRS; OR 5.81, 95% CI 1.79-19.72, p=0.004) or acute tubular necrosis (ATN; OR 24.18, 95% CI 4.14-164.90, p=0.001) as AKI etiology were independent predictors for AKIN progression. AKIN progressors experienced a five-fold increase for in-hospital mortality (p=0.008) and a significantly shorter 1-year overall survival (p=0.015; Figure 1).
Conclusion(s): This study confirmed that hospitalized cirrhotic patients with AKIN progression have significantly poor outcomes. Interestingly, after adjusting for CTP score, patients with NAFLD cirrhosis and AKI episode due to either HRS or ATN were more likely to experience worsening renal disease during their hospital course. Establishing factors that can accurately predict progressive renal impairment, particularly those determined within the first 1-2 days of admission, is crucial in order to improve our prognostication and assist decisions towards effective therapy, referral for liver transplant, and timely goals-of-care discussions. Further studies using external cohorts are needed to validate these findings. (Table presented.)

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797.

Delayed exploration and repair to manage pediatric anterior urethral blast injury.
Wang N, Chen Y, Wu X, Lin X
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
World Journal of Pediatric Surgery. 3(3):e000167, 2020.
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798.

The association of acute kidney injury with hospital readmission and death after pediatric cardiac surgery.
Nunes S, Brown J, Parikh CR, Greenberg JH, Devarajan P, Philbrook HT, Pizzi M, Palijan A, Zappitelli M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
JTCVS Open. 4:70-85, 2020 Dec.
[Journal Article]
UI: 36004303
Background: Acute kidney injury (AKI) in children undergoing cardiac surgery (CS) is strongly associated with increased hospital mortality and length of stay. The association of AKI with postdischarge outcomes is unclear. We evaluated the association of AKI with all-cause readmissions and death within 30 days and 1 year of CS discharge.
Methods: This was a prospective, 3-center cohort study of children after CS with cardiopulmonary bypass. The primary exposures were postoperative >=stage 1 AKI and >=stage 2 AKI defined by Kidney Disease: Improving Global Outcomes AKI definition. Two separate outcomes were hospital readmission and death within 30 days and 1 year of discharge. Association of AKI with time to outcomes was determined using multivariable Cox-proportional hazards analysis. Age, The Society of Thoracic Surgeons-European Association for Cardio-Thoracic Surgery risk adjustment tool score >=3, cardiopulmonary bypass >120 minutes, and cyanotic heart disease were evaluated as effect modifiers.
Results: Of 402 participants included (median age 1.8 years [interquartile range 0.4, 5.2]), 32 (8.0%) and 109 (27.1%) were readmitted; 7 (1.7%) and 9 (2.2%) died within 30 days and 1 year of CS, respectively. AKI was not associated with readmission at 30 days or 1 year postdischarge. >=Stage 2 AKI (adjusted hazard ratio, 11.68 [1.88, 72.61]) was associated with mortality 30 days post-CS.
Conclusions: Postoperative AKI was not associated with readmission at 30 days and 1-year postdischarge. However, more severe AKI (>=stage 2) appears to be associated with increased morality risk at 30 days post-CS.

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1
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799.

Early Sequential Risk Stratification Assessment to Optimize Fluid Dosing, CRRT Initiation and Discontinuation in Critically Ill Children with Acute Kidney Injury: Taking Focus 2 Process Article.
Roy JP, Krallman KA, Basu RK, Chima RS, Fei L, Wilder S, Schmerge A, Gerhardt B, Fox K, Kirby C, Goldstein SL
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Clinical Trials. 10(6), 2020.
[Journal Article]
UI: 34476130
BACKGROUND: Acute Kidney Injury (AKI) is common in critically ill children and is associated with increased morbidity and mortality. Recognition and management of AKI is often delayed, predisposing patients to risk of clinically significant fluid accumulation (Fluid Overload (FO)). Early recognition and intervention in high risk patients could decrease fluid associated morbidity. We aim to assess an AKI Clinical Decision Algorithm (CDA) using a sequential risk stratification strategy integrating the Renal Angina Index (RAI), urine Neutrophil Gelatinase-Associated Lipocalin (NGAL) and the Furosemide Stress Test (FST) to optimize AKI and FO prediction and management in critically ill children.
METHODS/DESIGN: This single center prospective observational cohort study evaluates the AKI CDA in a Pediatric Intensive Care Unit (PICU). Every patient >= 3 months old has the risk score RAI calculated automatically at 12 hours of admission. Patients with a RAI >= 8 (fulfilling renal angina) have risk further stratified with a urine NGAL and, if positive (NGAL >= 150ng/mL), subsequently by their response to a standardized dose of furosemide (namely FST). RAI negative or NGAL negative patients are treated per usual care. FST-responders are managed conservatively, while non-responders receive fluid restrictive strategy and/or continuous renal replacement therapy (CRRT) at 10%-15% of FO. 2100 patients over 3 years will be evaluated to capture 210 patients with severe AKI (KDIGO Stage 2 or 3 AKI), 100 patients with >10% FO, and 50 requiring CRRT. Primary analyses: Standardizing a pediatric FST and assessing prediction accuracy of CDA for severe AKI, FO>10% and CRRT requirement in children. Secondary analyses in patients with AKI: Renal function return to baseline, RRT and mortality within 28 days.
DISCUSSION: This will be the first prospective evaluation of feasibility of AKI CDA, integrating individual prediction tools in one cohesive and comprehensive approach, and its prediction of FO>10% and AKI, as well as the first to standardize the FST in the pediatric population. This will increase knowledge on current AKI prediction tools and provide actionable insight for early interventions in critically ill children based on their level of risk.
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1
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800.

Frequency of Exposure of Nephrotoxic Drugs and Drug-Induced Acute Kidney Injury in Pediatric Intensive Care Unit: A Retrospective Review From a Tertiary Care Centre in Pakistan.
Ahmed R, Shahzad M, Umer A, Azim A, Jamil MT, Haque A
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cureus. 12(12):e12183, 2020 Dec 20.
[Journal Article]
UI: 33489594
Introduction Acute kidney injury (AKI) is one of the most common problems seen in the pediatric intensive care unit (PICU), with an overall 27% incidence. Besides many other factors, nephrotoxic medications (Nephrotoxins; Ntx) are also responsible for a large proportion of potentially avoidable pediatric AKI, directly accounting for 16% of AKI events. Objective To assess potential associations between nephrotoxic drugs and the risk of developing AKI in children admitted in PICU. Material and methods This is a retrospective cross-sectional study. Children (aged 1 month - 18 years) admitted to the PICU, with a length of stay >24 hours, were included. AKI was defined as according to KDIGO (Kidney Disease Improving Global Outcomes) criteria. Mild AKI was defined as a rise in creatinine value of 0.3 mg/dl from presenting value at a

24-hour interval. Patients were grouped according to the presence or absence of AKI. All medications administered in the ICU were assessed for nephrotoxicity through a review of adverse reactions mentioned in the Pediatric Dosage Handbook, along with consultation with a clinical pharmacist. Results Among 752 patients, the mean age was 4.8 years +/- 4.37. There were 57.3% male and 42.7% female children. Among the exposed children, 37.4% received one drug, 32.4% received two drugs and 12.1% had high nephrotoxin exposure. The most commonly used drug was vancomycin (16.8%), as a single Ntx; vancomycin/colistin (12.9%), in dual nephrotoxic combination; and vancomycin/colistin/amphotericin (2.9%) in highly exposed children (i.e., with equal or more than three). Overall, the incidence of AKI was 14.9%. Conclusion Nephrotoxins are potentially avoidable risk factors in critically ill children. Whenever a combination of medications is required, it's advisable to review all medications for better protection of kidneys and preventing of acute kidney injury.

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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7815304
Year of Publication
2020

801.

Proton pump inhibitors and the risk of hospital-acquired acute kidney injury in children.
Li Y, Xiong M, Yang M, Wang L, Nie S, Liu D, Pi M, Zhang A, Mao J, Liu HP, Xia H, Xu H, Liu Z, Feng S, Zhou W, Liu X, Yang Y, Tao Y, Feng Y, Chen C, Wang M, Zha Y, Feng JH, Li Q, Ge S, Chen J, He Y, Teng S, Hao C, Liu BC, Tang Y, He W, Hou FF, Xu X
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Annals of Translational Medicine. 8(21):1438, 2020 Nov.
[Journal Article]
UI: 33313183
BACKGROUND: To evaluate the association between use of proton pump inhibitor (PPI) and the risk of hospital-acquired acute kidney injury (HA-AKI) in hospitalized children.
METHODS: We conducted a multicenter retrospective cohort study in hospitalized children aged 1 month to 18 years from 25 tertiary hospitals across China from 2013 to 2015. Patient-level data were obtained from the electronic hospitalization databases. AKI was defined and staged using the serum creatinine (SCr) data according to the Kidney Disease Improving Global Outcomes (KDIGO) criteria.
RESULTS: Among 42,232 children analyzed, 11,496 (27.2%) used PPI, 1,760 (4.2%) used histamine 2 receptor antagonist (H2RA), and 3,514 (8.3%) had HA-AKI during hospitalization.

Over 85% of PPIs were prescribed for prophylaxis of gastro-duodenal lesions in children. The use of PPI was associated with a significantly increased risk of HA-AKI compared with both non-users [odds ratio (OR), 1.37; 95% confidence interval (CI), 1.23-1.53)] and H2RA users (OR, 1.24; 95% CI, 1.01-1.52). The associations were consistent across children of different age range, gender, subtypes of PPIs and methods of administration. A larger effect was observed in children with chronic kidney disease (OR, 3.37; 95% CI, 2.46-4.62) and those needed intensive care (OR, 1.54; 95% CI, 1.33-1.78). The risk of HA-AKI was increased even within the recommended dosage range of PPI.
CONCLUSIONS: PPIs were widely used and associated with an increased risk of HA-AKI in hospitalized children in China.

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1
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802.

Aminophylline for improving acute kidney injury in pediatric patients: A systematic review and meta-analysis. [Review]
Alsaadoun S, Rustom F, Hassan HA, Alkhurais H, Aloufi M, Alzahrani S, Bakhsh S, Dalbhi SA
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International Journal of Health Sciences. 14(6):44-51, 2020 Nov-Dec.
[Journal Article. Review]
UI: 33192231
OBJECTIVES: Acute kidney injury (AKI) is a major cause of morbidity and mortality. Whether aminophylline administration can prevent or treat AKI among pediatric patients are not clear. This meta-analysis aimed to assess the efficacy and effectiveness of aminophylline for pediatric AKI.
METHODS: We carried out a systematic search of six databases: PubMed, EMBASE/Excerpta Medica, Scopus, Cochrane library, and Google Scholar from January 1995 up till May 2019. Summary measures of risk ratios and standard mean difference were calculated using the random effects model.
RESULTS: We identified seven papers containing data on aminophylline use in children with AKI. Meta-analysis of single-arm studies indicated no statistically significant difference in mean rate of serum creatinine clearance (-0.39 [-0.80-1.58], P = 0.52), mean urine output (1.99 [-1.43-5.42]; P = 0.25), or mean blood urea nitrogen levels (0.83 [-1.86-3.03], P = 0.54) before and after aminophylline administration. However, among double-arm studies, aminophylline administration in the intervention arm significantly reduced the serum creatinine level as compared to control arm (mean diff = -34 [-55.18--12.83]; P = 0.002). Mean urine output (-112.68 [-27.43-48.9], P = 0.17), incidence of AKI (RR = 1.05 [0.80-1.37], P = 0.72), and mortality rates (RR = 0.79 [0.42-1.47], P = 0.45) were found to be statistically insignificant.
CONCLUSIONS: Aminophylline administration in children with AKI reduces serum creatinine level without significant adverse effects or effect on the incidence of AKI, urine output, or

mortality. Further, large-scale well-planned randomized controlled trials are needed to evaluate its use and its potential long-term effects.

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1
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803.

A clinical predictive model of renal injury in children with isolated antenatal hydronephrosis.
Costa FP, Simoes E Silva AC, Mak RH, Ix JH, Vasconcelos MA, Dias CS, Fonseca CC, Oliveira MCL, Oliveira EA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Clinical Kidney Journal. 13(5):834-841, 2020 Oct.
[Journal Article]
UI: 33123360
BACKGROUND: Antenatal hydronephrosis (ANH) affects ~1-5% of pregnancies. The aim of this study was to develop a clinical prediction model of renal injury in a large cohort of infants with isolated ANH.
METHODS: This is a longitudinal cohort study of 447 infants with ANH admitted since birth between 1989 and 2015 at a tertiary care center. The primary endpoint was time until the occurrence of a composite event of renal injury, which includes proteinuria, hypertension and chronic kidney disease (CKD). A predictive model was developed using a Cox proportional hazards model and evaluated by C-statistics.
RESULTS: Renal pelvic dilatation (RPD) was classified into two groups [Grades 1-2 (n = 255) versus Grades 3-4 (n = 192)]. The median follow-up time was 6.4 years (interquartile range 2.8-12.5). Thirteen patients (2.9%) developed proteinuria, 6 (1.3%) hypertension and 14 (3.1%) CKD

Stage 2. All events occurred in patients with RPD Grades 3-4. After adjustment, three covariables remained as predictors of the composite event: creatinine {hazard ratio [HR] 1.27, [95% confidence interval (CI) 1.05-1.56]}, renal parenchyma thickness at birth [HR 0.78(95% CI 0.625-0.991)] and recurrent urinary tract infections [HR 4.52 (95% CI 1.49-13.6)]. The probability of renal injury at 15 years of age was estimated as 0, 15 and 24% for patients assigned to the low-risk, medium-risk and high-risk groups, respectively (P < 0.001).
CONCLUSION: Our findings indicate an uneventful clinical course for patients with Society for Fetal Urology (SFU) Grades 1-2 ANH. Conversely, for infants with SFU Grades 3-4 ANH, our prediction model enabled the identification of a subgroup of patients with increased risk of renal injury over time.

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1
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804.

Corrigendum: The Application of External Ureteral Catheters in Children With Acute Kidney Injury Caused by Ceftriaxone-Induced Urolithiasis.
Lin H, Geng H, Xu G, Fang X, He L, Xu M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Frontiers in Pediatrics. 8:513, 2020.
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1
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Comments
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805.

Patterns of Urinary Neutrophil Gelatinase-Associated Lipocalin and Acute Kidney Injury in Neonates Receiving Cardiopulmonary Bypass.
Brennan KG, Parravicini E, Lorenz JM, Bateman DA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Children. 7(9), 2020 Sep 09.
[Journal Article]
UI: 32916929
Elevated urinary neutrophil gelatinase-associated lipocalin (uNGAL) predicts acute kidney injury (AKI) in children following cardiopulmonary bypass (CPB) during cardiac surgery, but little is known about uNGAL's predictive ability in neonates in this setting. We sought to determine the relationship between AKI and post-CPB uNGAL in neonates in the first 72 post-operative hours.
METHODS: Urine samples for uNGAL analysis were collected at preoperative baseline and serially post-operatively from 76 neonates undergoing CPB. Mixed-effects regression models and logistic models assessed associations between uNGAL and AKI (controlling for sex, gestational age, CPB time, surgical complexity, and age at surgery). Receiver-operator curves were applied to define optimal uNGAL cut-off values for AKI diagnosis.
RESULTS: Between 0 and 4 h post-operatively, uNGAL values did not differ between neonates with and without AKI. After 4 h until 16 h post-operatively, significant time-wise separation occurred between uNGAL values of neonates with AKI and those without AKI. Odds ratios at each time point significantly exceeded unity, peaking at 10 h post-operatively (3.48 (1.58, 8.71)). Between 4 and 16 h post-operatively, uNGAL discriminated AKI from no-AKI, with a sensitivity of 0.63 (0.49, 0.75) and a specificity of 0.68 (0.62, 0.74) at a cut-off value of 100 ng/mL.
CONCLUSION: After 4 h until 16 h post-operatively, elevated uNGAL is associated with AKI in neonates receiving CPB during cardiac surgery; however, this relationship is more complex than in older children.
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1
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806.

Challenging Management of Refractory Metabolic Acidosis and Acute Kidney Injury in a Child with Diabetic Ketoacidosis.
Jain R, Kumar P

OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Indian Journal of Critical Care Medicine. 24(6):475-476, 2020 Jun.
[Journal Article]
UI: 32863643
Diabetic ketoacidosis (DKA) is the most serious complication of type I diabetes mellitus (DM) in children. Majority of these patients respond to fluid resuscitation, insulin, and supportive measures and rarely require renal replacement therapy. Here, we report the case of a young girl with DKA with severe refractory metabolic acidosis and acute kidney injury (AKI) and was successfully managed with renal replacement therapy. How to cite this article: Jain R, Kumar P. Challenging Management of Refractory Metabolic Acidosis and Acute Kidney Injury in a Child with Diabetic Ketoacidosis. Indian J Crit Care Med 2020;24(6):475-476.

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807.

Incidence, Mortality and Predictors of Acute Kidney Injury in Patients with Cirrhosis: A Systematic Review and Meta-analysis.
Tariq R, Hadi Y, Chahal K, Reddy S, Salameh H, Singal AK
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Clinical & Translational Hepatology. 8(2):135-142, 2020 Jun 28.
[Journal Article]
UI: 32832393
Background and Aims: Acute kidney injury (AKI) is common in patients with cirrhosis but the incidence is heterogeneous among studies. We performed a meta-analysis to describe the incidence of AKI and its impact on patient mortality in patients with cirrhosis. We also evaluated the admission variables predicting development of AKI. Methods: A systematic search of various databases was performed up to November 2018. Meta-analyses were performed using random effects models. Results: Of 18,474 patients with cirrhosis from 30 selected studies, 5,648 developed AKI, with a pooled incidence of 29% (95% confidence interval [CI]: 28-30%, I 2 of 99%). In-hospital mortality assessed in eight studies was six-fold higher among AKI patients, as compared to those without AKI (odds ratio [OR] 6.72, 95% CI: 3.47-13, p<0.0001, I 2 of 70%). Three studies on patients admitted to intensive care showed about six-fold higher mortality among AKI patients (OR 5.90, 95% CI: 3.21-10.85, p>0.0001). Mortality remained significantly high, at days 30 and 90 and even at 1-year follow up after development of AKI. Of 12 admission variables analyzed, model for end-stage liver disease score, Child-Pugh-Turcotte stage C, presence of ascites, and presence of sepsis/septic shock were statistically significant risk factors

for AKI. Conclusions: AKI occurred in about 29% of patients with cirrhosis and is associated with a six-fold increased risk of in-hospital mortality. Mortality remained high even in long-term follow-up of 1 year. Patients at risk for AKI development can be recognized at admission. Prospective studies are needed to develop strategies for improving outcome of these patients.

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808.

Correction to: Short-term outcome associated with disease severity and electrolyte abnormalities among critically ill children with acute kidney injury.
Safdar OY, Alhasan KA, Shalaby MA, Khathlan N, Al Rezgan SA, Albanna AS, Kari JA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
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809.

Corrigendum to "Risk factors and associated outcomes of early acute kidney injury in pediatric liver transplant recipients: A retrospective study" [J Pediatr Surg 55 (2020) 446-450].
Zhang Y, Xiang B, Wu Y, Xie X, Wang J, Jjin S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Pediatric Surgery. 55(4):781, 2020 Apr.
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1
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810.

An adolescent male with acute kidney injury: Answers.
Dixon A, Styres C, Ashoor I, Craver R

OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 35(9):1623-1624, 2020 09.
[Journal Article]
UI: 32166356
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1
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811.

An adolescent male with acute kidney injury: Questions.
Dixon A, Styres C, Ashoor I, Craver R
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 35(9):1621-1622, 2020 09.
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Comments
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812.

Acute Kidney Injury in Pediatric Patients Treated with Vancomycin and Piperacillin-Tazobactam Versus Vancomycin and Cefotaxime: A Single-center Study.
Alqurashi R, Batwa M, Alghamdi B, Aljohani S, Zaher N, Alzahrani A, Aldigs E, Safdar O
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cureus. 12(1):e6805, 2020 Jan 28.
[Journal Article]
UI: 32140363
Background Previous literature showed a higher incidence of acute kidney injury (AKI) in pediatric patients using vancomycin + piperacillin-tazobactam compared to cefepime + vancomycin. Our aim was to compare the incidence of developing AKI during the use of vancomycin + cefotaxime with that during the use of vancomycin + piperacillin-tazobactam in pediatric patients. Methods This was a retrospective, matched cohort study that used electronic records from May 1, 2015 through April 30, 2018 for all patients aged less than 16 years who received intravenous (IV) vancomycin + piperacillin-tazobactam or cefotaxime + vancomycin for at least 72 hours. AKI was defined by Kidney Disease Improving Global Outcomes (KDIGO) guidelines. Each patient from the vancomycin + piperacillin-tazobactam group was matched 1:1 with those in the vancomycin + cefotaxime group according to their age, chronic disease, gender, and the number of concomitant nephrotoxic agents. A total of 64 cases were included. Statistical analysis was performed using descriptive statistics and binary logistic regression. Results AKI developed in 10 of 32 patients (31.25%) who were using vancomycin + piperacillin-tazobactam. On the other hand, 13 of 32 patients (40.62%) were using cefotaxime + vancomycin (p = 0.047). Of the 10 patients who were on vancomycin + piperacillin-tazobactam regimen, 80% developed AKI Stage I. Of the 13 patients who were using cefotaxime + vancomycin, 46% developed AKI Stage II, although no statistical significance was noted in all stages. Conclusion Our study showed that patients treated with cefotaxime and vancomycin showed a higher incidence of AKI than patients treated with vancomycin and piperacillin-tazobactam, although the study showed no statistical significance.

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7047341
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813.

Acute kidney injury and perinephric fluid collection: Questions.
Kurt T, Aydin F, Karabulut B, Bayrakci US, Uncu N, Acar B
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 35(6):981-982, 2020 06.
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814.

Racial and Ethnic Disparities in Pregnancy-Related Acute Kidney Injury.
Beers K, Wen HH, Saha A, Chauhan K, Dave M, Coca S, Nadkarni G, Chan L
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Kidney360. 1(3):169-178, 2020 Mar 26.
[Journal Article]
UI: 35368630
Background: Pregnancy-related AKI (PR-AKI) is increasing in the United States. PR-AKI is associated with adverse maternal outcomes. Disparities in racial/ethnic differences in PR-AKI by race have not been studied.
Methods: This was a retrospective cohort study using the National Inpatient Sample (NIS) from 2005 to 2015. We identified patients who were admitted for a pregnancy-related diagnosis using the Neomat variable provided by the NIS database that indicates the presence of a maternal or neonatal diagnosis code or procedure code. PR-AKI was identified using ICD codes. Survey logistic regression was used for multivariable analysis adjusting for age, medical comorbidities, socioeconomic factors, and hospital/admission factors.
Results: From 48,316,430 maternal hospitalizations, 34,001 (0.07%) were complicated by PR-AKI. Hospitalizations for PR-AKI increased from 3.5/10,000 hospitalizations in 2005 to

11.8/10,000 hospitalizations in 2015 with the largest increase seen in patients aged >=35 and black patients. PR-AKI was associated with higher odds of miscarriage (adjusted odds ratio [aOR], 1.64; 95% CI, 1.34 to 2.07) and mortality (aOR, 1.53; 95% CI, 1.25 to 1.88). After adjustment for age, medical comorbidities, and socioeconomic factors, blacks were more likely than whites to develop PR-AKI (aOR, 1.17; 95% CI, 1.04 to 1.33). On subgroup analyses in hospitalizations of patients with PR-AKI, blacks and Hispanics were more likely to have preeclampsia/eclampsia compared with whites (aOR, 1.29; 95% CI, 1.01 to 1.65; and aOR, 1.69; 95% CI, 1.23 to 2.31, respectively). Increased odds of mortality in PR-AKI compared with whites were only seen in black patients (aOR, 1.61; 95% CI, 1.02 to 2.55).
Conclusions: The incidence of PR-AKI has increased and the largest increase was seen in older patients and black patients. PR-AKI is associated with miscarriages, adverse discharge from hospital, and mortality. Black and Hispanic patients with PR-AKI were more likely to have adverse outcomes than white patients. Further research is needed to identify factors contributing to these discrepancies.

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1
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Year of Publication
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815.

Clinical features of acute kidney injury in patients with nephrotic syndrome and minimal change disease: a retrospective, cross-sectional study.
Lin SP, Zhu FG, Meng JL, Sun XW, Cui J, Liang S, Yin Z, Sun XF, Cai GY
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Chinese Medical Journal. 134(2):206-211, 2020 Nov 04.

[Journal Article]
UI: 33443939
BACKGROUND: Minimal change nephropathy (MCD) is a common pathological type of nephrotic syndrome and is often associated with acute kidney injury (AKI). This study aimed to investigate the clinical characteristics and related factors of AKI in patients with MCD and nephrotic syndrome.
METHODS: Patients from Chinese People's Liberation Army General Hospital who were diagnosed with pathological renal MCD with clinical manifestations of nephrotic syndrome were included from January 1, 2013 to December 31, 2017. Patients diagnosed with membranous nephropathy (MN) by renal biopsy from January 1, 2013 to December 31, 2017 are included as a control population. We retrospectively analyzed the clinical and pathological characteristics of patients as well as the percentages and clinical characteristics of AKI in different age groups. We assessed the correlation of pathological characteristics with serum creatinine using multivariate linear regression analysis.
RESULTS: A total of 367 patients with MCD were included in the analysis, with a sex ratio of 1.46: 1 (male: female) and an age range of 6 to 77 years. Among all the patients, 109 developed AKI (29.7%), and of these patients, 85 were male (78.0%). In the 586 patients with MN, 27 (4.6%) patients developed AKI. The percentage of AKI in MCD patients was significantly higher than that in MN patients (chi2 = 41.063, P < 0.001). The percentage of AKI increased with age in the MCD patients. The percentage of AKI in patients aged 50 years or older was 52.9% (46/87), which was significantly higher than that [22.5% (63/280)] in patients under 50 years (chi2 = 6.347, P = 0.013). We observed statistically significant differences in age (43 [27, 59] years vs. 28 [20, 44] years, Z = 5.487, P < 0.001), male (78.0% vs. 51.4%, chi2 = 22.470, P < 0.001), serum albumin (19.9 +/- 6.1 g/L vs. 21.5 +/- 5.7 g/L, t = 2.376, P = 0.018), serum creatinine (129.5 [105.7, 171.1] mumol/L vs. 69.7 [57.7, 81.9] mumol/L, Z = 14.190, P < 0.001), serum urea (10.1 [6.2, 15.8] mmol/L vs. 4.7 [3.6, 6.4] mmol/L, Z = 10.545, P < 0.001), IgE (266.0 [86.7, 963.0] IU/ml vs. 142.0 [35.3, 516.5] IU/ml, Z = 2.742, P = 0.007), history of diabetes (6.4% vs. 1.2%, P = 0.009), and history of hypertension (23.9% vs. 5.1%, chi2 = 28.238, P < 0.001) between the AKI group and the non-AKI group. According to multivariate linear regression analysis, among the renal pathological features analyzed, renal tubular epithelial cell damage (beta = 178.010, 95% CI: 147.888-208.132, P < 0.001) and renal interstitial edema (beta = 28.833, 95% CI: 11.966-45.700, P = 0.001) correlated with serum creatinine values.
CONCLUSIONS: The percentage of AKI in MCD patients is significantly higher than that in MN patients. Patients over 50 years old are more likely to develop AKI. Renal tubular epithelial cell injury and renal interstitial edema may be the main pathological lesions that are associated with elevated serum creatinine in patients with MCD.

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816.

Early versus late acute kidney injury among patients with COVID-19-a multicenter study from Wuhan, China.
Peng S, Wang HY, Sun X, Li P, Ye Z, Li Q, Wang J, Shi X, Liu L, Yao Y, Zeng R, He F, Li J, Ge S, Ke X, Zhou Z, Dong E, Wang H, Xu G, Zhang L, Zhao MH
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Nephrology Dialysis Transplantation. 35(12):2095-2102, 2020 12 04.
[Journal Article. Multicenter Study. Research Support, Non-U.S. Gov't]
UI: 33275762
BACKGROUND: Acute kidney injury (AKI) is an important complication of coronavirus disease 2019 (COVID-19), which could be caused by both systematic responses from multi-organ dysfunction and direct virus infection. While advanced evidence is needed regarding its clinical features and mechanisms. We aimed to describe two phenotypes of AKI as well as their risk factors and the association with mortality.
METHODS: Consecutive hospitalized patients with COVID-19 in tertiary hospitals in Wuhan, China from 1 January 2020 to 23 March 2020 were included. Patients with AKI were classified as AKI-early and AKI-late according to the sequence of organ dysfunction (kidney as the first dysfunctional organ or not). Demographic and clinical features were compared between two AKI groups. Their risk factors and the associations with in-hospital mortality were analyzed.
RESULTS: A total of 4020 cases with laboratory-confirmed COVID-19 were included and 285 (7.09%) of them were identified as AKI. Compared with patients with AKI-early, patients with AKI-late had significantly higher levels of systemic inflammatory markers. Both AKIs were associated with an increased risk of in-hospital mortality, with similar fully adjusted hazard ratios of 2.46 [95% confidence interval (CI) 1.35-4.49] for AKI-early and 3.09 (95% CI 2.17-4.40) for AKI-late. Only hypertension was independently associated with the risk of AKI-early. While age, history of chronic kidney disease and the levels of inflammatory biomarkers were associated with the risk of AKI-late.
CONCLUSIONS: AKI among patients with COVID-19 has two clinical phenotypes, which could be due to different mechanisms. Considering the increased risk for mortality for both phenotypes, monitoring for AKI should be emphasized during COVID-19.

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1
Status
MEDLINE
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817.

Predictive role of vitamin B12 in acute kidney injury in living donor liver transplantation: a propensity score matching analysis.
Park J, Choi JH, Choi HJ, Hong SH, Park CS, Choi JH, Chae MS
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BMJ Open. 10(11):e038990, 2020 11 14.
[Journal Article]

UI: 33191257
OBJECTIVES: We examine the association between vitamin B12 level and risk for acute kidney injury (AKI) in patients undergoing living donor liver transplantation (LDLT).
DESIGN: Retrospective observational cohort study.
SETTING: University hospital, from January 2009 to December 2018.
PARTICIPANTS: A total of 591 patients who underwent elective LDLT were analysed in this study. Those with a preoperative history of kidney dysfunction, vitamin B12 supplementation due to alcoholism, low vitamin B12 (<200 pg/mL) or missing laboratory data were excluded.
PRIMARY AND SECONDARY OUTCOME MEASURES: The population was classified into AKI and non-AKI groups according to Kidney Disease Improving Global Outcomes (KDIGO) criteria, and associations between perioperative factors and AKI were analysed. After 1:1 propensity score (PS) matching, the association between high vitamin B12 (>900 pg/mL) and postoperative AKI was evaluated.
RESULTS: Preoperative vitamin B12 was higher in the AKI group. Potentially significant perioperative factors from univariate analyses were entered into multivariate analyses, including preoperative factors (vitamin B12, diabetes), intraoperative factors (hourly urine output) and donor graft fatty change in LDLT patients. PS matching analyses with adjustment using PS revealed that high serum vitamin B12 (>900 pg/mL) was associated with risk for AKI, and the risk was 2.8-fold higher in patients with high vitamin B12 than in those with normal vitamin B12. Higher vitamin B12 was also related to a higher AKI stage. In addition, inflammatory factors (C reactive protein, white blood cells and albumin) were associated with vitamin B12 level.
CONCLUSIONS: Our study may improve the accuracy of predicting postoperative AKI by introducing preoperative vitamin B12 into risk assessments for patients undergoing LDLT.

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2020

818.

Cross-site transportability of an explainable artificial intelligence model for acute kidney injury prediction.
Song X, Yu ASL, Kellum JA, Waitman LR, Matheny ME, Simpson SQ, Hu Y, Liu M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Nature communications . 11(1):5668, 2020 11 09.
[Journal Article. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 33168827
Artificial intelligence (AI) has demonstrated promise in predicting acute kidney injury (AKI), however, clinical adoption of these models requires interpretability and transportability. Non-interoperable data across hospitals is a major barrier to model transportability. Here, we leverage the US PCORnet platform to develop an AKI prediction model and assess its transportability across six independent health systems. Our work demonstrates that cross-site performance deterioration is likely and reveals heterogeneity of risk factors across populations to be the cause. Therefore, no matter how accurate an AI model is trained at the source hospital, whether it can be adopted at target hospitals is an unanswered question. To fill the research gap, we derive a method to predict the transportability of AI models which can accelerate the adaptation process of external AI models in hospitals.
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1
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819.

4-methylpyrazole protects against acetaminophen-induced acute kidney injury.
Akakpo JY, Ramachandran A, Orhan H, Curry SC, Rumack BH, Jaeschke H
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Toxicology & Applied Pharmacology. 409:115317, 2020 12 15.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 33157119
Acetaminophen (APAP) hepatotoxicity is the most common cause of acute liver failure in the United States, and while a significant percentage of APAP overdose patients develop kidney injury, molecular mechanisms involved in APAP-induced nephrotoxicity are relatively unknown. We have shown that 4-methylpyrazole (4MP, Fomepizole) protects against APAP-induced liver injury by inhibiting reactive metabolite formation through Cyp2E1, and analysis of data from APAP overdose patients indicated that kidney dysfunction strongly correlated with severe liver injury. Since Cyp2E1 is also expressed in the kidney, this study explored protection by 4MP against APAP-induced nephrotoxicity. Male C57BL/6 J mice were treated with either 300 or 600 mg/kg APAP with or without 4MP for 2, 6 or 24 h, followed by measurement of APAP metabolism and tissue injury. Interestingly, levels of APAP and its non-oxidative metabolites were significantly higher in kidneys when compared to the liver. APAP-protein adducts were present in both tissues within 2 h, but were absent in kidney mitochondria, unlike in the liver. While GSH depletion was seen in both tissues, activation of c-jun N-terminal kinase and its translocation to the mitochondria, which is a critical feature of APAP-induced liver injury, was not detected in the kidney. Treatment with 4MP attenuated APAP oxidative metabolite generation, GSH depletion as well as kidney injury indicating its potential use in protection against APAP-induced nephrotoxicity. In conclusion, since reactive metabolite formation seems to be common in both liver and kidney, 4MP mediated inhibition of Cyp2E1 protects against APAP-induced nephrotoxicity. However, downstream mechanisms of APAP-induced nephrotoxicity seem distinct from the liver.

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1
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820.

Acute kidney injury associated with COVID-19: A retrospective cohort study.
Kolhe NV, Fluck RJ, Selby NM, Taal MW
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
PLoS Medicine / Public Library of Science. 17(10):e1003406, 2020 10.
[Journal Article]
UI: 33125416
BACKGROUND: Initial reports indicate a high incidence of acute kidney injury (AKI) in Coronavirus Disease 2019 (COVID-19), but more data are required to clarify if COVID-19 is an independent risk factor for AKI and how COVID-19-associated AKI may differ from AKI due to other causes. We therefore sought to study the relationship between COVID-19, AKI, and outcomes in a retrospective cohort of patients admitted to 2 acute hospitals in Derby, United Kingdom.
METHODS AND FINDINGS: We extracted electronic data from 4,759 hospitalised patients who were tested for COVID-19 between 5 March 2020 and 12 May 2020. The data were linked to electronic patient records and laboratory information management systems. The primary outcome was AKI, and secondary outcomes included in-hospital mortality, need for ventilatory support, intensive care unit (ICU) admission, and length of stay. As compared to the COVID-19-negative group (n = 3,374), COVID-19 patients (n = 1,161) were older (72.1 +/- 16.1 versus 65.3 +/- 20.4 years, p < 0.001), had a greater proportion of men (56.6% versus 44.9%, p < 0.001), greater proportion of Asian ethnicity (8.3% versus 4.0%, p < 0.001), and lower proportion of white ethnicity (75.5% versus 82.5%, p < 0.001). AKI developed in 304 (26.2%) COVID-19-positive patients (COVID-19 AKI) and 420 (12.4%) COVID-19-negative patients (AKI controls). COVID-19 patients aged 65 to 84 years (odds ratio [OR] 1.67, 95% confidence interval [CI] 1.11 to 2.50), needing mechanical ventilation (OR 8.74, 95% CI 5.27 to 14.77), having congestive cardiac failure (OR 1.72, 95% CI 1.18 to 2.50), chronic liver disease (OR 3.43, 95% CI 1.17 to 10.00), and chronic kidney disease (CKD) (OR 2.81, 95% CI 1.97 to 4.01) had higher odds for developing AKI. Mortality was higher in COVID-19 AKI versus COVID-19 patients without AKI (60.5% versus 27.4%, p < 0.001), and AKI was an independent predictor of mortality (OR 3.27, 95% CI 2.39 to 4.48). Compared with AKI controls, COVID-19 AKI was observed in a higher proportion of men (58.9% versus 51%, p = 0.04) and lower proportion with white ethnicity (74.7% versus 86.9%, p = 0.003); was more frequently associated with cerebrovascular disease (11.8% versus 6.0%, p = 0.006), chronic lung disease (28.0% versus 19.3%, p = 0.007), diabetes (24.7% versus 17.9%, p = 0.03), and CKD (34.2% versus 20.0%, p < 0.001); and was more likely to be hospital acquired (61.2% versus 46.4%, p < 0.001). Mortality was higher in the COVID-19 AKI as compared to the control AKI group (60.5% versus 27.6%, p < 0.001). In multivariable analysis, AKI patients aged 65 to 84 years, (OR 3.08, 95% CI 1.77 to 5.35) and >=85 years of age (OR 3.54, 95% CI 1.87 to 6.70), peak AKI stage 2 (OR 1.74, 95% CI 1.05 to 2.90), AKI stage 3 (OR 2.01, 95% CI 1.13 to 3.57), and COVID-19 (OR 3.80, 95% CI 2.62 to 5.51) had higher odds of death. Limitations of the study include retrospective design, lack of urinalysis data, and low ethnic diversity of the region.

CONCLUSIONS: We observed a high incidence of AKI in patients with COVID-19 that was associated with a 3-fold higher odds of death than COVID-19 without AKI and a 4-fold higher odds of death than AKI due to other causes. These data indicate that patients with COVID-19 should be monitored for the development of AKI and measures taken to prevent this.
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821.

The Value of d-Dimer Level in Predicting Contrast-Induced Acute Kidney Injury in Patients With Acute ST-Segment Elevation Myocardial Infarction After PCI.
Luo E, Wang D, Liu B, Hou J, Yan G, Tang C
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Clinical & Applied Thrombosis/Hemostasis. 26:1076029620944492, 2020 Jan-Dec.
[Journal Article]
UI: 33032448
Contrast-induced acute kidney injury (CI-AKI) is a serious complication of percutaneous coronary intervention (PCI) in patients with acute ST-segment elevation myocardial infarction (STEMI). Early identification of high-risk patients has an essential role in preventing CI-AKI. This study was designed to evaluate the predictive value of d-dimer, a marker of thrombosis and hypercoagulable state, for CI-AKI and prognosis in patients with STEMI. We included 400 patients with STEMI who underwent PCI. The patients were subdivided into 4 groups according

to d-dimer level using the 4-quantile method. Contrast-induced acute kidney injury occurred in 66 (16.5%) patients. The incidence of CI-AKI in the highest quartile of the d-dimer groups (29.0%) was higher than that in the other 3 groups. Multivariable logistic regression showed that a low d-dimer level was significantly associated with a decreased risk of CI-AKI independent of confounding factors, with an odds ratio (OR) of 0.487 (95% CI: 0.178-0.931, P = 0.041) for those in the first quartile compared with those in the highest quartile. Age (OR: 1.047, 95% CI: 1.003-1.092), diabetes mellitus (OR: 5.896, 95% CI: 2.496-13.927), anemia (OR: 3.488, 95% CI: 1.308-9.306), and total bilirubin (OR: 0.946, 95% CI: 0.904-0.992) were independent predictors of CI-AKI. The incidence of major adverse cardiovascular and cerebral events and all-cause mortality within 30 days, 6 months, and 1 year after PCI in the highest quartile of the d-dimer groups were higher than those in the other 3 groups. In conclusion, increasing d-dimer levels were independently associated with the incidence of CI-AKI and adverse outcomes in patients with STEMI after PCI.
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822.

Assessment of acute kidney injury related to small-molecule protein kinase inhibitors using the FDA adverse event reporting system.
Fan Q, Ma J, Zhang B, Li Q, Liu F, Zhao B
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cancer Chemotherapy & Pharmacology. 86(5):655-662, 2020 11.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 33001273
PURPOSE: Small-molecule protein kinase inhibitors (PKIs) have substantially improved clinical outcomes of various diseases. However, some studies suggested these agents might induce acute kidney injury (AKI). This study was designed to comprehensively assess the adverse events of AKI in real-world patients receiving small-molecule PKIs using the Food and Drug Administration (FDA) Adverse Event Reporting System (FAERS).
METHODS: The FAERS data between 2004 and 2019 were extracted to describe the characteristics of AKI cases after the use of small-molecule PKIs approved by the FDA. The

reporting odds ratio (ROR) with 95% confidence interval (CI) for AKI was calculated for each small-molecule PKI agent. A disproportionality signal was defined when the lower limit of 95% CI > 1.
RESULTS: Among the 462,020 adverse event reports for small-molecule PKIs, 9970 (2.16%) were identified as AKI cases. The median AKI onset time was 32 (interquartile range 11-124) days after the initiation of small-molecule PKI treatment. A total of 61.38% and 26.04% of AKI cases resulted in hospitalization and death, respectively. Based on RORs, 14 of 52 small-molecule PKIs yielded disproportionality signals for AKI, including six VEGFR inhibitors, three mTOR inhibitors and five small-molecule PKIs with other targets. The agents with the highest AKI RORs were entrectinib (ROR 6.40, 95% CI 2.23, 18.34), sirolimus (ROR 3.76, 95% CI 3.45, 4.09), and cobimetinib (ROR 3.40, 95% CI 2.69, 4.28).
CONCLUSION: Analysis of the FAERS data helped identify the small-molecule PKIs that were most frequently reported for AKI. Further investigations are needed to confirm these potential risks.
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823.

Bartter Syndrome Masquerading as Acute Kidney Injury in a Neonate.
Jaladi RT, Biswas A, Mitra S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Indian Pediatrics. 57(9):865-866, 2020 09 15.
[Journal Article]
UI: 32999122
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7498554
Year of Publication
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824.

The incidence, risk factors, and outcomes of acute kidney injury in the intensive care unit in Sudan.
Magboul SM, Osman B, Elnour AA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
International Journal of Clinical Pharmacy. 42(6):1447-1455, 2020 Dec.
[Journal Article]
UI: 32951181
Background There is a paucity of studies in acute kidney injury in the intensive care unit, particularly in Sudan.
Objectives The current study has estimated the incidence; risk factors and outcomes of subjects with acute kidney injury developed during admission to the intensive care unit at Fedail Hospital, Khartoum, Sudan. Methodology This was a cross-sectional study conducted in the intensive care unit during the period from July 2018 to June 2019. The data was collected from the clinical profiles of all adult subjects' who have met the published criteria for acute kidney injury. Analysis of association (Chi square test chi2) and multivariate logistic regression were used to analyze data. Main outcome measure The development of acute kidney injury during the subjects' stay in the intensive care unit, length of hospital stay and death. Results From a total of 187 subjects admitted to the intensive care unit; only (105, 56.2%) have met the inclusion criteria (mean age was 61 +/- 3.5 years). The main finding of the study was the high incidence of acute kidney injury 39%. The major significant predictors for the development of acute kidney injury with respective odds ratio (OR) were: sepsis (OR 7.5 [95% CI 3-19.7]; P .001); hypovolemia (OR 5.1 [95% CI 2-15.7]; P .001); chronic cardiovascular diseases (OR 3.4 [95% CI 1.2-9.4]; P .017); age > 60 years (OR 2.7 [95% CI 1.2-6.3]; P .018); diabetes mellitus (OR 2.6 [95% CI 1.2-6]; P .02); hypertension (OR 2.4 [95% CI 1.2-5.4]; P .028); and renal replacement therapy (OR 0.2 [95% CI 0.15-0.3]; P .001). The length of hospital stay within the AKI cohort was (6.7 +/- 3.8; [range 2-17]) and the mortality rate was (36, 87.8%). Conclusion The major significant predictors for the development of acute kidney injury in the intensive care unit were: sepsis; hypovolemia; chronic cardiovascular diseases; age > 60 years; diabetes mellitus; hypertension; and renal replacement therapy. Sepsis and hypovolemia were common etiologies for acute kidney injury post-admission to the intensive care unit. Acute kidney injury was associated with increased length of hospital stay and a very high absolute mortality rate.
Version ID
1
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Year of Publication
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825.

Changing relative risk of clinical factors for hospital-acquired acute kidney injury across age groups: a retrospective cohort study.
Wu L, Hu Y, Zhang X, Chen W, Yu ASL, Kellum JA, Waitman LR, Liu M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BMC Nephrology. 21(1):321, 2020 08 02.
[Journal Article. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 32741377
BACKGROUND: Likelihood of developing acute kidney injury (AKI) increases with age. We aimed to explore whether the predictability of AKI varies between age groups and assess the volatility of risk factors using electronic medical records (EMR).
METHODS: We constructed a retrospective cohort of adult patients from all inpatient units of a tertiary care academic hospital and stratified it into four age groups: 18-35, 36-55, 56-65, and > 65. Potential risk factors collected from EMR for the study cohort included demographics, vital signs, medications, laboratory values, past medical diagnoses, and admission diagnoses. AKI was defined based on the Kidney Disease Improving Global Outcomes (KDIGO) serum creatinine criteria. We analyzed relative importance of the risk factors in predicting AKI using Gradient Boosting Machine algorithm and explored the predictability of AKI across age groups using multiple machine learning models.
RESULTS: In our cohort, older patients showed a significantly higher incidence of AKI than younger adults: 18-35 (7.29%), 36-55 (8.82%), 56-65 (10.53%), and > 65 (10.55%) ($p < 0.001$). However, the predictability of AKI decreased with age, where the best cross-validated area under the receiver operating characteristic curve (AUROC) achieved for age groups 18-35, 36-55, 56-65, and > 65 were 0.784 (95% CI, 0.769-0.800), 0.766 (95% CI, 0.754-0.777), 0.754 (95% CI, 0.741-0.768), and 0.725 (95% CI, 0.709-0.737), respectively. We also observed that the relative risk of AKI predictors fluctuated between age groups.
CONCLUSIONS: As complexity of the cases increases with age, it is more difficult to quantify AKI risk for older adults in inpatient population.
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1
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826.

A meta-analysis of clinical predictors for renal recovery and overall mortality in acute kidney injury requiring continuous renal replacement therapy.
Hansrivijit P, Yarlagadda K, Puthenpura MM, Ghahramani N, Thongprayoon C, Vaitla P, Cheungpasitporn W
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Critical Care. 60:13-22, 2020 12.
[Journal Article. Meta-Analysis]
UI: 32731101
PURPOSE: To determine clinical predictors for continuous renal replacement therapy (CRRT) discontinuation in patients with acute kidney injury (AKI).
MATERIALS AND METHODS: Ovid MEDLINE, EMBASE, and Cochrane Library were searched. The protocol is registered on researchregistry.com (reviewregistry909). Our criteria included non-end-stage kidney disease adults who required CRRT for AKI. Renal recovery was defined by CRRT discontinuation. Risk of bias was assessed using ROBINS-I tool.
RESULTS: We classified our analyses into renal recovery cohort and overall mortality cohort. All studies were observational. For renal recovery cohort, increasing urine output at time of CRRT discontinuation, elevated initial SOFA score and serum creatinine at CRRT initiation were predictive of renal recovery with OR 1.021 (95%CI = 1.011-1.031), 0.869 (95%CI = 0.811-0.932) and 0.995 (95%CI = 0.996-0.999), respectively. For overall mortality cohort, age and presence of sepsis were significantly associated with overall mortality with OR of 1.028 (95%CI = 1.008-1.048) and 2.160 (95%CI = 0.973-1.932), respectively.

CONCLUSIONS: Urine output at CRRT discontinuation, lower initial SOFA score, and lower serum creatinine levels at CRRT initiation were associated with higher likelihood of renal recovery. Increasing age and the presence of sepsis were associated with increased overall mortality from AKI on CRRT. However, there were limited data on co-morbidities which might preclude their inclusion in our analysis.

Version ID
1
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Year of Publication
2020

827.

Stopping renin-angiotensin system blockers after acute kidney injury and risk of adverse outcomes: parallel population-based cohort studies in English and Swedish routine care.
Bidulka P, Fu EL, Leyrat C, Kalogirou F, McAllister KSL, Kingdon EJ, Mansfield KE, Iwagami M, Smeeth L, Clase CM, Bhaskaran K, van Diepen M, Carrero JJ, Nitsch D, Tomlinson LA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BMC Medicine. 18(1):195, 2020 07 29.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 32723383
BACKGROUND: The safety of restarting angiotensin-converting enzyme inhibitors (ACEI) or angiotensin II receptor blockers (ARB) after acute kidney injury (AKI) is unclear. There is concern that previous users do not restart ACEI/ARB despite ongoing indications. We sought to determine the risk of adverse events after an episode of AKI, comparing prior ACEI/ARB users who stop treatment to those who continue.
METHODS: We conducted two parallel cohort studies in English and Swedish primary and secondary care, 2006-2016. We used multivariable Cox regression to estimate hazard ratios (HR) for hospital admission with heart failure (primary analysis), AKI, stroke, or death within 2 years after hospital discharge following a first AKI episode. We compared risks of admission between

people who stopped ACEI/ARB treatment to those who were prescribed ACEI/ARB within 30 days of AKI discharge. We undertook sensitivity analyses, including propensity score-matched samples, to explore the robustness of our results.
RESULTS: In England, we included 7303 people with AKI hospitalisation following recent ACEI/ARB therapy for the primary analysis. Four thousand three (55%) were classified as stopping ACEI/ARB based on no prescription within 30 days of discharge. In Sweden, we included 1790 people, of whom 1235 (69%) stopped treatment. In England, no differences were seen in subsequent risk of heart failure (HR 1.10; 95% confidence intervals (CI) 0.93-1.30), AKI (HR 0.90; 95% CI 0.77-1.05), or stroke (HR 0.99; 95% CI 0.71-1.38), but there was an increased risk of death (HR 1.27; 95% CI 1.15-1.41) in those who stopped ACEI/ARB compared to those who continued. Results were similar in Sweden: no differences were seen in risk of heart failure (HR 0.91; 95% CI 0.73-1.13) or AKI (HR 0.81; 95% CI 0.54-1.21). However, no increased risk of death was seen (HR 0.94; 95% CI 0.78-1.13) and stroke was less common in people who stopped ACEI/ARB (HR 0.56; 95% CI 0.34-0.93). Results were similar across all sensitivity analyses.
CONCLUSIONS: Previous ACEI/ARB users who continued treatment after an episode of AKI did not have an increased risk of heart failure or subsequent AKI compared to those who stopped the drugs.
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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7389346
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828.

Early Prediction of Acute Kidney Injury in the Emergency Department With Machine-Learning Methods Applied to Electronic Health Record Data.
Martinez DA, Levin SR, Klein EY, Parikh CR, Menez S, Taylor RA, Hinson JS
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Annals of Emergency Medicine. 76(4):501-514, 2020 10.
[Journal Article. Multicenter Study. Research Support, N.I.H., Extramural. Research Support, U.S. Gov't, P.H.S.]
UI: 32713624
STUDY OBJECTIVE: Acute kidney injury occurs commonly and is a leading cause of prolonged hospitalization, development and progression of chronic kidney disease, and death. Early acute kidney injury treatment can improve outcomes. However, current decision support is not able to detect patients at the highest risk of developing acute kidney injury. We analyzed routinely collected emergency department (ED) data and developed prediction models with capacity for early identification of ED patients at high risk for acute kidney injury.
METHODS: A multisite, retrospective, cross-sectional study was performed at 3 EDs between January 2014 and July 2017. All adult ED visits in which patients were hospitalized and serum creatinine level was measured both on arrival and again with 72 hours were included. We built machine-learning-based classifiers that rely on vital signs, chief complaints, medical history and active medical visits, and laboratory results to predict the development of acute kidney injury stage 1 and 2 in the next 24 to 72 hours, according to creatinine-based international consensus criteria. Predictive performance was evaluated out of sample by Monte Carlo cross validation.
RESULTS: The final cohort included 91,258 visits by 59,792 unique patients. Seventy-two-hour incidence of acute kidney injury was 7.9% for stages greater than or equal to 1 and 1.0% for stages greater than or equal to 2. The area under the receiver operating characteristic curve for acute kidney injury prediction ranged from 0.81 (95% confidence interval 0.80 to 0.82) to 0.74 (95% confidence interval 0.74 to 0.75), with a median time from ED arrival to prediction of 1.7 hours (interquartile range 1.3 to 2.5 hours).
CONCLUSION: Machine learning applied to routinely collected ED data identified ED patients at high risk for acute kidney injury up to 72 hours before they met diagnostic criteria. Further prospective evaluation is necessary.

Version ID
1
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Comments
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Year of Publication
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829.

Elevated serum iron level is a predictor of prognosis in ICU patients with acute kidney injury.
Shu J, Hu Y, Yu X, Chen J, Xu W, Pan J
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BMC Nephrology. 21(1):303, 2020 07 25.
[Journal Article]
UI: 32711469
BACKGROUND: Accumulation of iron is associated with oxidative stress, inflammation, and regulated cell death processes that contribute to the development of acute kidney injury (AKI). We aimed to investigate the association between serum iron levels and prognosis in intensive care unit (ICU) patients with AKI.
METHODS: A total of 483 patients with AKI defined as per the Kidney Disease: Improving Global Guidelines were included in this retrospective study. The data was extracted from the single-centre Medical Information Mart for Intensive Care III database. AKI patients with serum iron parameters measured upon ICU admission were included and divided into two groups (low group and high group). The prognostic value of serum iron was analysed using univariate and multivariate Cox regression analysis.
RESULTS: The optimal cut-off value for serum iron was calculated to be 60 mug/dl. Univariable Cox regression analysis showed that serum iron levels were significantly correlated with prognosis of AKI patients. After adjusting for possible confounding variables, serum iron levels higher than 60 mug/dl were associated with increases in 28-day (hazard [HR] 1.832; P < 0.001) and 90-day (HR 1.741; P < 0.001) mortality, as per multivariable Cox regression analysis.
CONCLUSIONS: High serum iron levels were associated with increased short- and long-term mortality in ICU patients with AKI. Serum iron levels measured upon admission may be used for predicting prognosis in AKI patients.
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1
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830.

LncRNA NEAT1 accelerates renal mesangial cell injury via modulating the miR-146b/TRAF6/NF-kappaB axis in lupus nephritis.
Zhang LH, Xiao B, Zhong M, Li Q, Chen JY, Huang JR, Rao H
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cell & Tissue Research. 382(3):627-638, 2020 Dec.
[Journal Article]
UI: 32710276
Although growing advances have been made in the regulation of lupus nephritis recently, lupus nephritis is still one of the major causes of death in SLE patients and the pathogenesis remains largely unknown. Therefore, exploring the pathological mechanisms is urgently needed for designing and developing novel therapeutic strategies for lupus nephritis. Human renal mesangial cells (HRMCs) were transfected with sh-NEAT1, miR-146b mimic, pcDNA-NEAT1, miR-146b inhibitor, or sh-TRAF6 to modify their expression. Lipopolysaccharide (LPS) was used to induce inflammatory injury. Cell viability was examined with CCK8. Apoptosis was determined by flow cytometry and Hoechst staining. qRT-PCR and western blot were used to analyze gene expression. The secretion of inflammatory cytokines was examined with ELISA. The bindings of NEAT1 with miR-146b and miR-146b with TRAF6 were tested by dual-luciferase reporter assay. NEAT1 was upregulated in LPS-treated HRMCs. Both the knockdown of NEAT1 and TRAF6 suppressed the LPS-induced inflammatory injury in HRMCs. NEAT1 directly targeted miR-146b to control miR-146b-mediated regulation of TRAF6 expression in HRMCs. NEAT1 promoted the expression of TRAF6 via targeting miR-146b to accelerate the LPS-mediated renal mesangial cell injury in HRMCs. Moreover, TRAF6 activated the NF-kappaB signaling in HRMCs. NEAT1 accelerated renal mesangial cell injury via directly targeting miR-146b, promoting the expression of TRAF6, and activating the NF-kappaB signaling in lupus nephritis. Our investigation elucidated novel pathological mechanisms and provided potential therapeutic targets for lupus nephritis.
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Year of Publication
2020

831.

Does contrast-enhanced ultrasound have a role in evaluation and management of pediatric renal trauma? A preliminary experience.
Bowen DK, Back SJ, Van Batavia JP, Darge K, Long CJ, Weiss DA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Pediatric Surgery. 55(12):2740-2745, 2020 Dec.
[Journal Article]
UI: 32674845
BACKGROUND: To report our initial experience using intravenous contrast-enhanced ultrasound (CEUS) in pediatric renal trauma with the potential for substantial radiation reduction.
METHODS: A retrospective review of all patients who underwent intravenous CEUS at our institution between May 2015 and January 2018 for the suspicion of blunt renal trauma. CEUS was obtained either as an immediate or short-term comparison to contrast-enhanced computed tomography (CECT), or in outpatient follow-up.
RESULTS: CEUS was performed on 7 patients (9 kidneys) with age range 2months to 16years old. CEUS was utilized as a comparison to CECT in 4 of 7 patients for initial evaluation, clinical change, or short-term follow-up. CEUS alone was used in one patient with low suspicion for renal injury. In the remaining two patients, CEUS was obtained as a follow-up study weeks after the initial CECT, following conservative management. All patients with confirmed renal injury by CECT (n=5) underwent a follow-up CEUS at 1-2months.
CONCLUSIONS: In an era of conservative management for renal trauma in which operative intervention is dictated more often by the clinical course than radiographic findings, it is

reasonable to consider alternative imaging methods such as CEUS in stable patients to decrease radiation exposure.
LEVEL OF EVIDENCE RATING: IV.

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1
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Year of Publication
2020

832.

Acute Kidney Injury in Acute Ischemic Stroke Patients in Clinical Trials.
Qureshi AI, Aslam H, Zafar W, Huang W, Lobanova I, Naqvi SH, Malhotra K, Arora N, Chandrasekaran PN, Siddiq F, French BR, Gomez CR
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Critical Care Medicine. 48(9):1334-1339, 2020 09.
[Journal Article. Multicenter Study. Randomized Controlled Trial]
UI: 32618695
OBJECTIVES: Acute ischemic stroke patients are at risk of acute kidney injury due to volume depletion, contrast exposure, and preexisting comorbid diseases. We determined the occurrence rate and identified predictors associated with acute kidney injury in acute ischemic stroke patients.
SETTING: Multiple specialized ICUs within academic medical centers.
DESIGN: Post hoc analysis of pooled data from prospective randomized clinical trials.
PATIENTS: Acute ischemic stroke patients recruited within 3 hours or within 5 hours of symptom onset.
INTERVENTIONS: IV recombinant tissue plasminogen activator, endovascular treatment, IV albumin, or placebo.

MEASUREMENTS AND MAIN RESULTS: Serum creatinine levels from baseline and within day 5 or discharge were used to classify acute kidney injury classification into stages. Any increase in serum creatinine was seen in 697 (36.1%) and acute kidney injury was seen in 68 (3.5%) of 1,931 patients with acute ischemic stroke. Severity of acute kidney injury was grade I, II, and III in 3.1%, 0.4%, and 0.05% patients, respectively. Patients with albumin (5.5% compared with 2.6%; p = 0.001), preexisting hypertension (4.3% compared with 1.5%; p = 0.0041), and preexisting renal disease (9.1% compared with 3.0%; p < 0.0001) had higher risk of acute kidney injury. The risk of acute kidney injury was lower between those who either underwent CT angiography (2.0% compared with 4.7%; p = 0.0017) or endovascular treatment (1.6% compared with 4.2%; p = 0.0071). In the multivariate analysis, hypertension (odds ratio, 2.6; 95% CI, 1.2-5.6) and renal disease (odds ratio, 3.5; 95% CI, 1.9-6.5) were associated with acute kidney injury. The risk of death was significantly higher among patients with acute kidney injury (odds ratio, 2.7; 95% CI, 1.4-4.9) after adjusting for age and National Institutes of Health Stroke Scale score strata. CONCLUSIONS: The occurrence rate of acute kidney injury in acute ischemic stroke patients was low and was not higher in patients who underwent CT angiogram or those who received endovascular treatment. Occurrence of acute kidney injury increased the risk of death within 3 months among acute ischemic stroke patients.
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1
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833.

Severe Acute Kidney Injury Is Associated With Increased Risk of Death and New Morbidity After Pediatric Septic Shock.

Starr MC, Banks R, Reeder RW, Fitzgerald JC, Pollack MM, Meert KL, McQuillen PS, Mourani PM, Chima RS, Sorenson S, Varni JW, Hingorani S, Zimmerman JJ
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Pediatric Critical Care Medicine. 21(9):e686-e695, 2020 09.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 32569242
OBJECTIVES: Acute kidney injury is common in critically ill children; however, the frequency of septic shock-associated acute kidney injury and impact on functional status are unknown. We evaluated functional outcomes of children with septic shock-associated acute kidney injury.
DESIGN: Secondary analysis of patients with septic shock from the prospective Life after Pediatric Sepsis Evaluation study. We defined acute kidney injury using Kidney Disease Improving Global Outcomes criteria, comparing patients with absent/Stage 1 acute kidney injury to those with Stage 2/3 acute kidney injury (severe acute kidney injury). Our primary outcome was a composite of mortality or new functional morbidity at day 28 of hospitalization or discharge. We also assessed poor long-term outcome, defined as mortality or a persistent, serious deterioration in health-related quality of life at 3 months.
SETTING: Twelve academic PICUs in the United States.
PATIENTS: Critically ill children, 1 month to 18 years, with community-acquired septic shock requiring vasoactive-inotropic support.
INTERVENTIONS: None.
MEASUREMENTS AND MAIN RESULTS: More than 50% of patients (176/348) developed severe acute kidney injury; of those, 21.6% (38/176) required renal replacement therapy. Twice as many patients with severe acute kidney injury died or developed new substantive functional morbidity (38.6 vs 16.3%; $p < 0.001$). After adjustment for age, malignancy, and initial illness severity, severe acute kidney injury was independently associated with mortality or new substantive morbidity (adjusted odds ratio, 2.78; 95% CI, 1.63-4.81; $p < 0.001$). Children with severe acute kidney injury had poorer health-related quality of life at 3 months (adjusted effect size 2.46; 95% CI, 1.44-4.20; $p = 0.002$). Children with severe acute kidney injury required longer duration of mechanical ventilation (11.0 vs 7.0 d; $p < 0.001$) and PICU stay (11.7 vs 7.1 d; $p < 0.001$).
CONCLUSIONS: Among children with septic shock, severe acute kidney injury was independently associated with increased risk of death or new substantive functional morbidity. Survivors of sepsis with severe acute kidney injury were more likely to have persistent, serious health-related quality of life deterioration at 3 months.
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Life After Pediatric Sepsis Evaluation (LAPSE) Investigators
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834.

Mortality and Recovery Associated with Kidney Failure due to Acute Kidney Injury.
Shah S, Leonard AC, Harrison K, Meganathan K, Christianson AL, Thakar CV
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[Journal Article. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 32554731
BACKGROUND AND OBJECTIVES: AKI requiring dialysis is a contributor to the growing burden of kidney failure, yet little is known about the frequency and patterns of recovery of AKI and its effect on outcomes in patients on incident dialysis.
DESIGN, SETTING, PARTICIPANTS, & MEASUREMENTS: Using the US Renal Data System, we evaluated a cohort of 1,045,540 patients on incident dialysis from January 1, 2005 to December 31, 2014, retrospectively. We examined the association of kidney failure due to AKI with the outcome of all-cause mortality and the associations of sex and race with kidney recovery.
RESULTS: Mean age was 63+/-15 years, and 32,598 (3%) patients on incident dialysis had kidney failure due to AKI. Compared with kidney failure due to diabetes mellitus, kidney failure attributed to AKI was associated with a higher mortality in the first 0-3 months following dialysis initiation (adjusted hazard ratio, 1.28; 95% confidence interval, 1.24 to 1.32) and 3-6 months (adjusted hazard ratio, 1.16; 95% confidence interval, 1.11 to 1.20). Of the patients with kidney failure due to AKI, 11,498 (35%) eventually recovered their kidney function, 95% of those within 12 months. Women had a lower likelihood of kidney recovery than men (adjusted hazard ratio, 0.86; 95% confidence interval, 0.83 to 0.90). Compared with whites, blacks (adjusted hazard ratio, 0.68; 95% confidence interval, 0.64 to 0.72), Asians (adjusted hazard ratio, 0.82; 95% confidence interval, 0.69 to 0.96), Hispanics (adjusted hazard ratio, 0.82; 95% confidence

interval, 0.76 to 0.89), and Native Americans (adjusted hazard ratio, 0.72; 95% confidence interval, 0.54 to 0.95) had lower likelihoods of kidney recovery.
CONCLUSIONS: Kidney failure due to AKI confers a higher risk of mortality in the first 6 months compared with kidney failure due to diabetes or other causes. Recovery within 12 months is common, although less so among women than men and among black, Asian, Hispanic, and Native American patients than white patients.

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835.

Risk factors for high-dose methotrexate associated acute kidney injury in patients with hematological malignancies.
Amitai I, Rozovski U, El-Saleh R, Shimony S, Shepshelovich D, Rozen-Zvi B, Raanani P, Gafter-Gvili A, Gurion R
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Hematological Oncology. 38(4):584-588, 2020 Oct.
[Clinical Trial. Journal Article]
UI: 32506594
High dose methotrexate (HDMTX)-induced acute kidney injury (AKI) is a well-known adverse event in hemato-oncology patients. Our purpose was to define factors and setup cut-offs that may help better identify patients at-risk for developing AKI following HDMTX. All consecutive patients who received MTX dose >=1 g were retrospectively reviewed. We compared patients with or without renal toxicity. We used a logistic regression model to define baseline variables associated with AKI. Overall survival (OS) was estimated by the Kaplan-Meier method employing log-rank test. Between 2012 and 2017, 160 patients were included with a total of 265 courses. Indications

included: primary central nervous system (CNS) lymphoma, CNS prophylaxis in other lymphoma types, acute lymphatic leukemia and others. Median age at diagnosis was 58 years (range, 18-84), 54% were males, median MTX dose was 1941 mg/m2 (range, 743-5442) and AKI developed in 9% of drug administrations (n = 24). In univariate analysis: age > 40, LDH > 380 units/L, eGFR < 112 mL/min, albumin <3.6 mg/dL at baseline and Charlson comorbidity index (CCI) were associated with AKI. In multivariable analysis, only LDH > 380 units/L (OR = 4.1, 95% confidence interval [CI] 1.04-20.9, P = .04) and albumin levels <3.6 g/dL (OR = 4.17, 95% CI 1.04-6.5, P = .04) remained significant. In patients with AKI, median drug elimination was longer (8 days vs 5 days). In 80% of cases, the creatinine levels returned to normal within 1 month. Yet, the median survival of patients who developed AKI was 37 months, compared to 145 months in patients without AKI (Log rank = 0.015). In conclusion, LDH > 380 units/L and albumin <3.6 g/dL were the strongest factors associated with AKI in patients receiving HDMTX. Although the rise in creatinine levels was almost uniformly reversible, AKI was associated with increased mortality rates.

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Year of Publication
2020

836.

Correlation between environmental low-dose cadmium exposure and early kidney damage: A comparative study in an industrial zone vs. a living quarter in Shanghai, China.
Jin Y, Lu Y, Li Y, Zhao H, Wang X, Shen Y, Kuang X
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Environmental Toxicology & Pharmacology. 79:103381, 2020 Oct.
[Comparative Study. Journal Article]
UI: 32413495
To investigate heavy metal exposure in an industrial zone vs. a living quarter in Shanghai and explore the relationship between the heavy metal source and urine cadmium (Cd) and early kidney damage. Blood lead and urine Cd, manganese (Mn), mercury (Hg), arsenic (As) and EKD indexes were compared between residents in Exposure group (n = 168) and Control group (n = 168). It was found that PM2.5 level in Exposure group was significantly higher than that in Control group, and serum Cys-C and urine Cd, NAG, mAlb, KIM-1 and Cd-MT levels in Exposure group were also significantly higher than those in Control group, suggesting that differences in urine Cd and heavy metal levels between the residents of the two groups may be due to different PM2.5 concentrations in the environments of the two areas. Cd accumulation within the human body can induce kidney damage, probably through its potential hazard to the proximal tubular epithelial cells.

Version ID
1
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2020

837.

Relationship of endoscopic lesions of the renal papilla with type of renal stone and 24 h urine analysis.
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BMC Urology. 20(1):46, 2020 Apr 25.
[Journal Article]
UI: 32334600
BACKGROUND: Our purpose was to study the relationship of the 3 different types of endoscopic calcifications of the renal papilla (Randall's plaque, intratubular calcification, papillary crater) with the type of stone and urine analysis.
METHODS: This prospective study examined 41 patients (age range: 18 to 80 years) who received retrograde intrarenal surgery (RIRS) for renal lithiasis (mean stone size: 15.3 +/- 7.2 mm). The renal papilla injuries were endoscopically classified as Randall's plaque, intratubular calcification, or papillary crater. Calculi were classified as uric acid, calcium oxalate monohydrate (COM; papillary and cavity), calcium oxalate dihydrate (COD), or calcium phosphate (CP). A 24 h urine analysis of calcium, oxalate, citrate, phosphate, and pH was performed in all patients. The relationship of each type of papillary injury with type of stone and urine chemistry was determined. Fisher's exact test and Student's t-test were used to determine the significance of relationships, and a p value below 0.05 was considered significant.
RESULTS: The most common injury was tubular calcification (78%), followed by Randall's plaque (58%), and papillary crater (39%). There was no significant relationship of Randall's plaque with type of stone. However, endoscopic intratubular calcification (p = 0.025) and papillary crater (p = 0.041) were more common in patients with COD and CP stones. There were also significant relationships of papillary crater with hypercalciuria (p = 0.036) and hyperoxaluria (p = 0.024), and of Randall's plaque with hypocitraturia (p = 0.005).
CONCLUSIONS: There are certain specific relationships between the different types of papillary calcifications that were endoscopically detected with stone chemistry and urine analysis. COD and CP stones were associated with endoscopic tubular calcifications and papillary craters. Hypercalciuria was associated with tubular calcification, and hypocitraturia was associated with Randall's plaque.
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838.

Comparison of computed tomography (CT), magnetic resonance imaging (MRI) and contrast-enhanced ultrasound (CEUS) in the evaluation of unclear renal lesions. Vergleich von Computertomografie (CT), Magnetresonanztomografie (MRT) und kontrastverstarktem Ultraschall (CEUS) bei der Beurteilung unklarer Nierenlasionen. <Vergleich von Computertomografie (CT), Magnetresonanztomografie (MRT) und kontrastverstarktem Ultraschall (CEUS) bei der Beurteilung unklarer Nierenlasionen.>
Marschner CA, Ruebenthaler J, Schwarze V, Negrao de Figueiredo G, Zhang L, Clevert DA
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Rofo: Fortschritte auf dem Gebiete der Rontgenstrahlen und der Nuklearmedizin. 192(11):1053-1059, 2020 Nov.
[Comparative Study. Journal Article]
UI: 32294790
PURPOSE: To compare the sensitivity and specificity of contrast-enhanced ultrasound (CEUS), computed tomography (CT) and magnetic resonance imaging (MRI) in the evaluation of unclear renal lesions to the histopathological outcome.
MATERIALS AND METHODS: A total of 255 patients with a single unclear renal mass with initial imaging studies between 2005 and 2015 were included. Patient ages ranged from 18 to 86 with (mean age 62 years; SD +/- 13). CEUS (255 patients), CT (88 out of 255 patients; 34.5 %) and MRI (36 out of 255 patients; 14.1 %) were used for determining malignancy or benignancy and initial findings were correlated with the histopathological outcome.
RESULTS: CEUS showed a sensitivity of 99.1 % (95 % confidence interval (CI): 96.7 %, 99.9 %), a specificity of 80.5 % (95 % CI: 65.1 %, 91.2 %), a positive predictive value (PPV) of 96.4 % (95 % CI: 93.0 %, 98.4 %) and a negative predictive value (NPV) of 94.3 % (95 % CI: 80.8 %, 99.3 %). CT showed a sensitivity of 97.1 % (95 % CI: 89.9 %, 99.6 %), a specificity of 47.4 % (95 % CI: 24.4 %, 71.1 %), a PPV of 87.0 % (95 % CI: 77.4 %, 93.6 %) and a NPV of 81.8 % (95 % CI: 48.2 %, 97.7 %). MRI showed a sensitivity of 96.4 % (95 % CI: 81.7 %, 99.9 %), a specificity of 75.0 % (95 % CI: 34.9 %, 96.8 %), a PPV of 93.1 % (95 % CI: 77.2 %, 99.2 %) and a NPV of 85.7 % (95 % CI: 42.1 %, 99.6 %). Out of the 212 malignant lesions a total of 130 clear cell renal carcinomas, 59 papillary renal cell carcinomas, 7 chromophobe renal cell carcinomas, 4 combined clear cell and papillary renal cell carcinomas and 12 other malignant lesions, e. g. metastases, were diagnosed. Out of the 43 benign lesions a total 10 angiomyolipomas, 3 oncocytomas, 8 benign renal cysts and 22 other benign lesions, e. g. renal adenomas were diagnosed. Using CEUS, 10 lesions were falsely identified as malignant or benign, whereas 8 lesions were false positive and 2 lesions false negative.
CONCLUSION: CEUS is an useful method which can be additionally used to clinically differentiate between malignant and benign renal lesions. CEUS shows a comparable sensitivity, specificity, PPV and NPV to CT and MRI. In daily clinical routine, patients with contraindications for other imaging modalities can particularly benefit using this method.
KEY POINTS: . Wide availability. . Safe applicability in patients with known renal insufficiency or allergies to iodine or gadolinium. . Comparable sensitivity, specificity, PPV and NPV to CT and MRT. . May lead to a reduction in interventional radiological or surgical interventions.
CITATION FORMAT: . Marschner CA, Ruebenthaler J, Schwarze V et al. Comparison of computed tomography (CT), magnetic resonance imaging (MRI) and contrast-enhanced ultrasound (CEUS) in the evaluation of unclear renal lesions. Fortschr Rontgenstr 2020; 192: 1053 - 1058.

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ZIEL: Vergleich der Sensitivitat und Spezifitat von kontrastverstarktem Ultraschall (CEUS), Computertomografie (CT) und Magnetresonanztomografie (MRT) bei der Beurteilung von unklaren Nierenlasionen mit der histopathologischen Korrelation.MATERIAL UND METHODEN: Zwischen 2005 und 2015 wurden 255 Patienten mit einer einzelnen unklaren Nierenlasion in die vorliegende retrospektive monozentrische Studie eingeschlossen. Das Alter der Patienten lag zwischen 18 und 86 Jahren (Durchschnittsalter 62 Jahre; SD +/- 13). CEUS (255 Patienten), CT (88 von 255 Patienten; 34,5 %) und MRT (36 von 255 Patienten; 14,1 %) wurden zur Diagnostik angewendet und die Ergebnisse mit dem histopathologischen Ergebnis korreliert.ERGEBNISSE: CEUS zeigte eine Sensitivitat von 99,1 % (95 %-Konfidenzintervall (KI): 96,7 %-99,9 %), eine Spezifitat von 80,5 % (95 %-KI: 65,1 %-91,2 %), einen positiven Vorhersagewert (PPV) von 96,4 % (95 %-KI: 93,0 %-98,4 %) und einen negativen Vorhersagewert (NPV) von 94,3 % (95 %-KI: 80,8 %-99,3 %). Die CT zeigte eine Sensitivitat von 97,1 % (95 %-KCI: 89,9 %-99,6 %), eine Spezifitat von 47,4 % (95 %-KI: 24,4 %-71,1 %), einen PPV von 87,0 % (95 %-KI: 77,4 %-93,6 %) und einen NPV von 81,8 % (95 %-KI: 48,2 %-97,7 %). Die MRT zeigte eine Sensitivitat von 96,4 % (95 %-KI: 81,7 %-99,9 %), eine Spezifitat von 75,0 % (95 %-KI: 34,9 %-96,8 %), einen PPV von 93,1 % (95 %-KI: 77,2 %-99,2 %) und einen NPV von 85,7 % (95 %-KI: 42,1 %-99,6 %). Aus den 212 als maligne eingestuften Lasionen wurden insgesamt 130 klarzellige, 59 papillare, 7 chromophobe und 4 kombinierte klarzellige und papillare Nierenzellkarzinome sowie 12 weitere maligne Lasionen, z. B. Metastasen, diagnostiziert. Von den 43 benignen Lasionen wurden insgesamt 10 Angiomyolipome, 3 Onkozytome, 8 gutartige Nierenzysten und 22 weitere gutartige Lasionen, z. B. Nierenadenome, diagnostiziert. Mit der CEUS wurden 10 Lasionen falschlicherweise als maligne oder benigne identifiziert, wahrend 8 Lasionen falsch positiv und 2 Lasionen falsch negativ waren.SCHLUSSFOLGERUNG: CEUS stellt eine hilfreiche Methode dar, die zusatzlich zur Differenzierung zwischen benignen und malignen Nierenlasionen eingesetzt werden kann. CEUS zeigt eine vergleichbare Sensitivitat, Spezifitat, PPV und NPV gegenuber CT und MRT. In der taglichen klinischen Routine konnen Patienten mit Kontraindikationen fur andere bildgebende Verfahren durch die Anwendung des CEUS besonders profitieren.KERNAUSSAGEN: . Breite Verfugbarkeit.. . Bedenkenlose Anwendbarkeit bei Patienten mit bekannter Niereninsuffizienz oder Allergien gegenuber jodhaltigen oder Gadolinium-basierten Kontrastmitteln.. . Vergleichbare Sensitivitat, Spezifitat, PPV und NPV gegenuber CT und MRT.. . CEUS kann zu einer Reduktion von interventionell-radiologischen oder chirurgischen Interventionen fuhren..ZITIERWEISE: . Marschner CA, Ruebenthaler J, Schwarze V et al. Comparison of computed tomography (CT), magnetic resonance imaging (MRI) and contrast-enhanced ultrasound (CEUS) in the evaluation of unclear renal lesions. Fortschr Rontgenstr 2020; 192: 1053 - 1059.
Language: German
Year of Publication
2020

839.

Diagnostic accuracy of pneumo-CT-cystography in the detection of bladder rupture in patients with blunt pelvic trauma.
Trinci M, Cirimele V, Cozzi D, Galluzzo M, Miele V
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Radiologia Medica. 125(10):907-917, 2020 Oct.
[Journal Article]
UI: 32274620
PURPOSE: To evaluate the diagnostic utility of bladder air distension (pneumo-CT-cystography) in the detection of bladder rupture in patients with blunt pelvic trauma.
MATERIALS AND METHODS: 843 patients with blunt pelvic trauma were evaluated. Intravenous contrast-enhanced CT was performed for trauma staging. 97 of 843 patients had clinical and radiological signs of possible bladder injury and underwent retrograde air distension.
RESULTS: Among 97 patients, 31/97 showed CT signs of bladder rupture, of which 5/31 (16%) intraperitoneal, 25/31 (81%) extraperitoneal and 1/31 (3%) combined. 23 of these patients underwent surgery, which confirmed bladder injury in 100% of cases. The other 8 patients were managed conservatively, and follow-up studies showed disappearance of free air. Among the 66/97 patients with no signs of bladder injury, 38/66 had surgery, which confirmed bladder integrity, while 28/66 were managed conservatively and showed no signs of bladder rupture at clinico-radiological follow-up examinations.
CONCLUSIONS: CT evaluation of urinary bladder after retrograde air distension (pneumo-CT-cystography) may be a reliable diagnostic tool in the detection of bladder rupture in patients with blunt pelvic trauma. This technique is faster, cheaper and allows to overcome some of the limitations of conventional CT-cystography.
Version ID
1
Status
MEDLINE
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Year of Publication
2020

840.

Effect of mannitol plus hypertonic saline combination versus hypertonic saline monotherapy on acute kidney injury after traumatic brain injury.
Narayan SW, Castelino R, Hammond N, Patanwala AE
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Critical Care. 57:220-224, 2020 06.
[Journal Article. Multicenter Study. Randomized Controlled Trial]

UI: 32220771
PURPOSE: To compare the effect of mannitol plus hypertonic saline combination (MHS) versus hypertonic saline monotherapy (HS) on renal function in patients with traumatic brain injury (TBI).
MATERIALS AND METHODS: This was a secondary analysis of data from the Resuscitation Outcomes Consortium Hypertonic Saline Trial Shock Study and Traumatic Brain Injury Study. The study cohort included a propensity matched subset of patients with TBI who received MHS or HS. The primary outcome measure was the maximum serum creatinine value during critical illness.
RESULTS: The cohort consisted of 163 patients in the MHS group and 163 patients in the HS group (n = 326). The maximum serum creatinine value during hospitalization was 82 +/- 47 mumol/L (0.86 +/- 0.26 mg/dL) in the MHS group and 76 +/- 23 mumol/L (0.92 +/- 0.53 mg/dL) in the HS group (difference -6 mumol/L, 95% CI -14 to 2 mumol/L, p = .151). The lowest eGFR during hospitalization was 108 +/- 25 mL/min in the MHS group and 112 +/- 24 mL/min in the HS group (difference -4 mL/min, 95% CI -1 to 9 mLmin, p = .150).
CONCLUSIONS: The addition of mannitol to HS did not increase the risk of renal dysfunction compared to HS alone in patients with TBI.

Version ID
1
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MEDLINE
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Year of Publication
2020

841.

Contrast-Induced Acute Kidney Injury in Radiologic Management of Acute Ischemic Stroke in the Emergency Setting.
Myung JW, Kim JH, Cho J, Park I, Kim HY, Beom JH
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Ajnr: American Journal of Neuroradiology. 41(4):632-636, 2020 04.
[Journal Article. Observational Study]
UI: 32165364
BACKGROUND AND PURPOSE: The use of invasive cerebral angiography with CTA for active treatment of patients with suspected ischemic strokes has been increasing recently. This study

aimed to identify the incidence of postcontrast acute kidney injury using baseline renal function when CTA and cerebral angiography were performed sequentially.
MATERIALS AND METHODS: This retrospective observational study evaluated adults (18 years of age or older) with ischemic stroke who underwent CTA and cerebral angiography sequentially between 2010 and 2018. The incidence of postcontrast acute kidney injury was determined using the baseline estimated glomerular filtration rate. The value of the baseline estimated glomerular filtration rate at which the occurrence of postcontrast acute kidney injury increased was also determined.
RESULTS: Postcontrast acute kidney injury occurred in 57/601 (9.5%) patients. Those with a baseline estimated glomerular filtration rate of <30 mL/min/1.73 m2 showed a higher incidence of acute kidney injury. Age, chronic kidney disease, medication (nonsteroidal anti-inflammatory drugs, angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers, beta blockers, statins, and insulin) use following contrast media exposure, and serum albumin affected the incidence of postcontrast acute kidney injury. The incidence of postcontrast acute kidney injury increased when the baseline estimated glomerular filtration rate was <43 mL/min/1.73 m2.
CONCLUSIONS: Patients with low baseline renal function had the highest incidence of postcontrast acute kidney injury after CTA and cerebral angiography, but no fatal adverse effects were documented. Thus, patients suspected of having a stroke should be actively managed with respect to neurovascular function.

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7144631
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842.

Perioperative intravenous contrast administration and the incidence of acute kidney injury after major gastrointestinal surgery: prospective, multicentre cohort study.
Anonymous
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
British Journal of Surgery. 107(8):1023-1032, 2020 07.
[Journal Article. Multicenter Study. Observational Study]
UI: 32026470
BACKGROUND: This study aimed to determine the impact of preoperative exposure to intravenous contrast for CT and the risk of developing postoperative acute kidney injury (AKI) in patients undergoing major gastrointestinal surgery.
METHODS: This prospective, multicentre cohort study included adults undergoing gastrointestinal resection, stoma reversal or liver resection. Both elective and emergency procedures were included. Preoperative exposure to intravenous contrast was defined as exposure to contrast administered for the purposes of CT up to 7 days before surgery. The primary endpoint was the rate of AKI within 7 days. Propensity score-matched models were adjusted for patient, disease and operative variables. In a sensitivity analysis, a propensity score-matched model explored the association between preoperative exposure to contrast and AKI in the first 48 h after surgery.
RESULTS: A total of 5378 patients were included across 173 centres. Overall, 1249 patients (23.2 per cent) received intravenous contrast. The overall rate of AKI within 7 days of surgery was 13.4 per cent (718 of 5378). In the propensity score-matched model, preoperative exposure to contrast was not associated with AKI within 7 days (odds ratio (OR) 0.95, 95 per cent c.i. 0.73 to 1.21; P = 0.669). The sensitivity analysis showed no association between preoperative contrast administration and AKI within 48 h after operation (OR 1.09, 0.84 to 1.41; P = 0.498).
CONCLUSION: There was no association between preoperative intravenous contrast administered for CT up to 7 days before surgery and postoperative AKI. Risk of contrast-induced nephropathy should not be used as a reason to avoid contrast-enhanced CT.

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1
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Clinical Trial Number
STARSurg Collaborative
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Publisher
ANTECEDENTES: El objetivo de este estudio fue determinar el impacto de la exposicion preoperatoria al contraste intravenoso para la tomografia computarizada (TC) y el riesgo de desarrollar insuficiencia renal aguda (IRA) postoperatoria en pacientes sometidos a cirugia gastrointestinal mayor. METODOS: Este estudio de cohorte prospectivo y multicentrico incluyo adultos sometidos a una reseccion gastrointestinal, cierre de estoma o reseccion hepatica. Se incluyeron tanto procedimientos electivos como urgentes. La exposicion al contraste intravenoso preoperatorio se definio como la administracion de contraste para la realizacion de una TC durante los 7 dias previos a la cirugia. El criterio de valoracion principal fue la tasa de IRA a los 7 dias. Se utilizaron modelos de puntuacion de propension emparejados (propensity score matched, PSM) ajustados por paciente, enfermedad y variables operatorias. Los resultados del modelo se presentan como razon de oportunidades (odds ratio, OR) e i.c. del 95%. En un analisis de sensibilidad, se examino la asociacion entre la exposicion preoperatoria al contraste y la IRA en las primeras 48 horas despues de la cirugia mediante un modelo de PSM.RESULTADOS: Se incluyeron un total de 5.378 pacientes de 173 centros. Globalmente, el 23,2% (n = 1.249) de los pacientes recibieron medios de contraste intravenosos. La tasa global de IRA postoperatoria a los 7 dias fue del 13,4% (718/5.378). En el modelo de puntuacion de

propension emparejado, la exposicion preoperatoria al contraste no se asocio con IRA a los 7 dias (OR 0,95; i.c. del 95%: 0,73-1,21; P = 0,669). En el analisis de sensibilidad no se observo una asociacion entre la administracion de contraste preoperatorio y la IRA postoperatoria a las 48 horas (OR 1,09; i.c. del 95% 0,84-1,41; P = 0,498). CONCLUSION: No hubo asociacion entre la administracion preoperatoria de contraste intravenoso para tomografias computarizadas durante los 7 dias previos a la cirugia y la IRA postoperatoria. El riesgo de nefropatia inducida por el contraste no debe usarse de manera rutinaria como una razon para evitar la practica de un TC con contraste.
Language: Spanish
Year of Publication
2020

843.

Laboratory changes during adrenocorticotropic hormone therapy associated with renal calcified lesions.
Miyahara H, Akiyama T, Hasegawa K, Akiyama M, Oka M, Kobayashi K, Tsukahara H
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatrics International. 62(5):587-592, 2020 May.
[Journal Article]
UI: 31957090
BACKGROUND: Renal calcified lesions are known as one of the complications during adrenocorticotropic hormone (ACTH) therapy for intractable epilepsy. However, laboratory changes during the therapy or laboratory features of high-risk cases with renal calcified lesions are yet to be clarified.
METHODS: In this study, 43 patients with West syndrome aged <=2 years were included. We retrospectively reviewed age and body mass index at the beginning of ACTH therapy, as well as the amount of fluid intake, daily urinary volume, and laboratory data during therapy. In addition, we studied the urinary sediment of the cases with renal calcified lesions diagnosed by computed tomography.
RESULTS: After initiating ACTH treatment, urinary calcium (Ca)/creatinine ratio and urinary pH increased within 2 weeks. Urinary crystals and renal tubular epithelial cells (RTECs) in urinary sediment were frequently found in most cases. Urinary Ca levels, proteinuria or frequency of urinary crystals, and number of RTECs in the urinary sediment were significantly higher in patients with epithelial casts (ECs) or hematuria than in patients without these findings. Among the seven patients who underwent abdominal CT, ECs or hematuria were found only in those with renal calcified lesions. These findings suggested that patients with ECs or hematuria were more likely to have calcified lesions.
CONCLUSIONS: The risk of renal calcified lesions increased after 2 weeks of ACTH treatment. Abnormal findings in urinary sediments might be an early sign of renal calcification during ACTH therapy.

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Year of Publication
2020

844.

Novel Urinary Biomarkers for Acute Kidney Injury and Prediction of Clinical Outcomes After Pediatric Cardiac Surgery.
Yoneyama F, Okamura T, Takigiku K, Yasukouchi S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Cardiology. 41(4):695-702, 2020 Apr.
[Journal Article]
UI: 31872282
Acute kidney injury (AKI) is a serious complication of pediatric cardiac surgery, with high morbidity and mortality. We aimed to evaluate the perioperative risk factors for AKI, and the validity of novel diagnostic urinary biomarkers after pediatric cardiac surgery. We analyzed 103 consecutive pediatric patients (<= 18 years old), who underwent cardiac surgery. AKI was defined by >= 50% increase in serum creatinine levels from baseline. Urinary liver-type fatty acid binding protein (L-FABP) and neutrophil gelatinase-associated lipocalin (NGAL) were measured postoperatively at the intensive care unit (ICU) admission, subsequently at 4, 12, and 24 h. Areas under the receiver-operating characteristic curves (AUC) were calculated at each assessment time. AKI had developed in 47 patients (45.6%) by the second postoperative day. Univentricular status, aortic cross-clamping time, and intraoperative fluid balance were independently associated with AKI ($p = 0.02$, 0.01 and 0.01, respectively). Urinary L-FABP and NGAL were significantly higher in the AKI group at each point ($p < 0.05$). The predictive abilities of both biomarkers (AUC = 0.78-0.90) at ICU admission and 4 h after were especially high. The patients with L-FABP greater than the cutoff value at ICU admission and 4 h after ICU admission had significantly longer intubation and hospitalization periods ($p < 0.05$). Those with elevated NGAL levels at admission, and 4 h and 24 h after ICU admission, had significantly longer intubation, ICU stay, and hospitalization ($p < 0.05$). L-FABP and NGAL can be useful biomarkers for detecting early AKI after pediatric cardiac surgery and predicting adverse clinical outcomes.
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1
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845.

Non-radiological assessment of kidney stones using the kidney injury test (KIT), a spot urine assay.
Yang JYC, Sarwal RD, Ky K, Dong V, Stoller M, Sarwal MM, Chi T
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BJU International. 125(5):732-738, 2020 05.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 31869527
OBJECTIVES: To evaluate the utility of kidney injury test (KIT) assay urinary biomarkers to detect kidney stones and quantify stone burden.
PATIENTS AND METHODS: A total of 136 spot urine samples from 98 individuals, with and without kidney stone disease, were processed in a predefined assay to measure six DNA and protein markers in order to generate a risk score for the non-invasive detection of nephrolithiasis. From this cohort, 56 individuals had spot, non-timed urine samples collected at the time of radiographically confirmed kidney stones, and 54 demographically matched, healthy controls without kidney stone disease also provided spot, non-timed urine samples. Sixteen individuals with persistent stone disease had more than one urine sample. Using a proprietary microwell-based KIT assay, we measured cell-free DNA (cfDNA), methylated cfDNA, clusterin, creatinine, protein and CXCL10. A KIT stone score was computed across all markers using the prior locked KIT algorithm. The KIT stone score, with a scale of 0 to 100, was then correlated with demographic variables, kidney stone burden, obstructive kidney stone disease, and urine solutes in 24-h urine collections.
RESULTS: The scaled KIT stone score, a composite of all six biomarkers, readily discriminated individuals with current or prior radiographically confirmed kidney stones from healthy controls without kidney stone disease ($P < 0.001$). In individuals with nephrolithiasis, KIT stone score also correlated with radiologically measured stone size ($P = 0.017$) and differentiated patients with a clinical radiological diagnosis of obstructive nephrolithiasis associated with upper renal tract dilatation ($P = 0.001$). Stone burden as assessed by KIT stone score, however, did not correlate with the any of the traditional measures of 24-h urine solutes or the 24-h urine supersaturation levels. In patients with persistent stone disease, where multiple urine samples were collected over time and after different interventions, the use of KIT stone score could non-invasively track stone burden over time through a spot urine, non-timed urine sample.
CONCLUSIONS: A random, spot urine-based assay, KIT stone score, can non-invasively detect, quantify and monitor current stone burden, and may thus minimize radiographic exposure for

kidney stone detection. The KIT stone score assay may also help monitor stone recurrence risk for patients with nephrolithiasis, without the requirement for 24-h urine collections.

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1
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Year of Publication
2020

846.

Traumatic Kidney Injury: An Observational Descriptive Study.
Khoschnau S, Jabbour G, Al-Hassani A, El-Menyar A, Abdelrahman H, Afifi I, Momin UZ, Peralta R, Al-Thani H
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Urologia Internationalis. 104(1-2):148-155, 2020.
[Journal Article. Observational Study]
UI: 31846981
BACKGROUND: Trauma is a major cause of death and disability worldwide. Renal injuries account for 8-10% of abdominal trauma. We aimed to describe the incidence, presentation, and management of traumatic kidney injury in our institution.
METHODS: This is a retrospective analysis of all patients admitted with traumatic kidney injury at a level 1 trauma center between January 2014 and December 2017.
RESULTS: During a period of 3 years, a total of 152 patients with blunt renal trauma were admitted to a level 1 trauma center; 91% of these were males, with a mean age of 32.8 +/- 13.7 years. Motor vehicle crashes accounted for 68% of cases, followed by fall from height (23%). Seventy-one percent of patients had associated chest injuries, 38% had pelvis injuries, and 32% had head injury. Associated abdominal injuries included the liver (35%) and spleen (26%). The mean abdominal abbreviated injury scale was 2.8 +/- 1.0; and for those with severe renal injury, it was 3.9 +/- 0.9. The mean injury severity score was 24.9 +/- 13.7 (31.8 +/- 14.2 with renal vs. 21.9 +/- 12.9 without renal injury, p = 0.004). Most of the patients were treated conservatively (93%), including severe renal injuries (grades IV and V), and 7% had surgical exploration, mainly those with severe injuries (grades IV and V). The mortality rate was 11%.

CONCLUSIONS: High-grade renal injuries in hemodynamically stable patients can be managed conservatively. A multidisciplinary approach coordinated by trauma, urology, and radiology services facilitates the care of these patients in our trauma center.

Version ID
1
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Year of Publication
2020

847.

Clindamycin, Gentamicin, and Risk of Clostridium difficile Infection and Acute Kidney Injury During Delivery Hospitalizations.
Duffy CR, Huang Y, Andrikopoulou M, Stern-Ascher CN, Wright JD, Goffman D, D'Alton ME, Friedman AM
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Obstetrics & Gynecology. 135(1):59-67, 2020 01.
[Journal Article. Research Support, N.I.H., Extramural]
UI: 31809424
OBJECTIVE: To describe risk of Clostridium difficile infection associated with clindamycin and acute kidney injury associated with gentamicin during delivery hospitalizations.
METHODS: Women admitted for delivery from January 2006 to March 2015 were analyzed using an inpatient administrative database. Primary outcomes were C difficile infection and acute kidney injury. C difficile infection was compared between women receiving clindamycin (with or without other antibiotics) and women receiving antibiotics other than clindamycin. Acute kidney injury was compared between women receiving gentamicin (with or without other antibiotics), women receiving antibiotics other than gentamicin, and women receiving no antibiotics. Unadjusted and adjusted log linear models analyzing the role of patient demographics, mode of delivery, and hospital-level characteristics were created evaluating risk of C difficile infection and acute kidney injury with risk ratios (RRs) and adjusted risk ratios with 99% CIs as measures of association. A sensitivity analysis for gentamicin and acute kidney injury was performed restricted to women with preeclampsia.

RESULTS: Of 5,657,523 women admitted for delivery hospitalization, 266,402 (4.7%) received clindamycin and 165,726 (2.9%) received gentamicin. C difficile infection was diagnosed in 0.04% of women receiving clindamycin. Compared with women receiving other antibiotics, clindamycin was associated with a nearly threefold increased risk of C difficile infection (RR 2.93, 99% CI 2.21-3.90). Acute kidney injury was diagnosed in 0.24% of women receiving gentamicin. Gentamicin was associated with a threefold increased risk of acute kidney injury (RR 3.01, 99% CI 2.62-3.45) compared with women receiving other antibiotics, whereas receipt of no antibiotics was associated with significantly lower risk (RR 0.18, 99% CI 0.15-0.20). In adjusted analyses, these associations retained significance. Significantly increased risk of acute kidney injury was noted for women with preeclampsia receiving gentamicin (RR 2.04, 99% CI 1.64-2.53).
CONCLUSION: Receipt of clindamycin was associated with significantly increased likelihood for C difficile infection and receipt of gentamicin with significantly increased likelihood of acute kidney injury, although the absolute risk of these complications was low.
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1
Status
MEDLINE
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Year of Publication
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848.

Preoperative Risk and the Association between Hypotension and Postoperative Acute Kidney Injury.
Mathis MR, Naik BI, Freundlich RE, Shanks AM, Heung M, Kim M, Burns ML, Colquhoun DA, Rangrass G, Janda A, Engoren MC, Saager L, Tremper KK, Kheterpal S, Aziz MF, Coffman T, Durieux ME, Levy WJ, Schonberger RB, Soto R, Wilczak J, Berman MF, Berris J, Biggs DA, Coles P, Craft RM, Cummings KC, Ellis TA 2nd, Fleishut PM, Helsten DL, Jameson LC, van Klei WA, Kooij F, LaGorio J, Lins S, Miller SA, Molina S, Nair B, Paganelli WC, Peterson W, Tom S, Wanderer JP, Wedeven C
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Anesthesiology. 132(3):461-475, 2020 03.
[Journal Article. Multicenter Study. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 31794513
BACKGROUND: Despite the significant healthcare impact of acute kidney injury, little is known regarding prevention. Single-center data have implicated hypotension in developing postoperative acute kidney injury. The generalizability of this finding and the interaction between hypotension and baseline patient disease burden remain unknown. The authors sought to determine whether the association between intraoperative hypotension and acute kidney injury varies by preoperative risk.
METHODS: Major noncardiac surgical procedures performed on adult patients across eight hospitals between 2008 and 2015 were reviewed. Derivation and validation cohorts were used,

and cases were stratified into preoperative risk quartiles based upon comorbidities and surgical procedure. After preoperative risk stratification, associations between intraoperative hypotension and acute kidney injury were analyzed. Hypotension was defined as the lowest mean arterial pressure range achieved for more than 10 min; ranges were defined as absolute (mmHg) or relative (percentage of decrease from baseline).
RESULTS: Among 138,021 cases reviewed, 12,431 (9.0%) developed postoperative acute kidney injury. Major risk factors included anemia, estimated glomerular filtration rate, surgery type, American Society of Anesthesiologists Physical Status, and expected anesthesia duration. Using such factors and others for risk stratification, patients with low baseline risk demonstrated no associations between intraoperative hypotension and acute kidney injury. Patients with medium risk demonstrated associations between severe-range intraoperative hypotension (mean arterial pressure less than 50 mmHg) and acute kidney injury (adjusted odds ratio, 2.62; 95% CI, 1.65 to 4.16 in validation cohort). In patients with the highest risk, mild hypotension ranges (mean arterial pressure 55 to 59 mmHg) were associated with acute kidney injury (adjusted odds ratio, 1.34; 95% CI, 1.16 to 1.56). Compared with absolute hypotension, relative hypotension demonstrated weak associations with acute kidney injury not replicable in the validation cohort.
CONCLUSIONS: Adult patients undergoing noncardiac surgery demonstrate varying associations with distinct levels of hypotension when stratified by preoperative risk factors. Specific levels of absolute hypotension, but not relative hypotension, are an important independent risk factor for acute kidney injury.
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1
Status
MEDLINE
Clinical Trial Number
Multicenter Perioperative Outcomes Group Investigators
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Comments
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849.

Coupled-plasma filtration and adsorption for severe burn patients with septic shock and acute kidney injury treated with renal replacement therapy.
Mariano F, Hollo' Z, Depetris N, Malvasio V, Mella A, Bergamo D, Pensa A, Berardino M, Stella M, Biancone L
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Burns. 46(1):190-198, 2020 02.
[Journal Article. Observational Study]
UI: 31787473
BACKGROUND: Coupled-plasma filtration adsorption (CPFA) is a sorbent-based technology aimed at removing soluble mediators of septic shock. We present our experience on the use of CPFA in septic shock severe burn patients with acute kidney injury (AKI) needing renal replacement therapy (RRT) with the main goal to evaluate efficacy and safety of CPFA in this specific subset of septic shock patients.
METHODS: In this observational study, we retrospectively reviewed the medical notes of all burn patients admitted to our adult Burn Center who received CPFA, as part of the septic shock treatment requiring RRT, between January 2001 and December 2017 (CPFA group). We compared CPFA group with all the burn patients admitted to our Center in the same period of time, with the same range of relevant clinical characteristics, who developed AKI and were treated with RRT, but not CPFA (control group). We collected demographic characteristics, burn size, Sequential Organ Assessment Failure (SOFA) score, microbiological data, and patient outcome, in terms of in-hospital mortality rate and the probability of survival calculated using the revised Baux score. We also collected data regarding CPFA safety (hemorrhagic episodes, catheter associated-complications, hypersensitivity reactions) and efficiency (number and duration of CPFA sessions, plasma treated amount, plasma processed dose).
RESULTS: 39 severe burn patients were treated with CPFA (CPFA group) (mean age 46.0 years, range 40.0-56.0 years; mean burn size 48.0% TBSA, range 35.0-60.0% TBSA), and 87 patients treated with RRT, but not CPFA, who had similar clinical characteristics (control group). Observed mortality rate was 51.3% in the CPFA group and 77.1% in the control group (p 0.004). Regarding factors affecting survival in the CPFA group, SOFA score on the 1st day of CPFA resulted significant (OR 2.016, 95% CI, 1.221-3.326; $p < 0.004$) in the multivariate analysis logistic model.

CONCLUSIONS: CPFA treatment for burn patients with AKI-RRT and septic shock, sustained by bacterial strains non or poorly responsive to therapy, was associated with a lower mortality rate, compared to RRT alone. However, further research, such as large prospective studies, is required to clarify the role of CPFA in the treatment of burns with septic shock and AKI-RRT.

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1
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MEDLINE
Authors Full Name
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Year of Publication
2020

850.

Coadministration of vindesine with high-dose methotrexate therapy increases acute kidney injury via BCRP, MRP2, and OAT1/OAT3.
Huang C, Xia F, Xue L, Liu L, Bian Y, Jin Z, Miao L
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Cancer Chemotherapy & Pharmacology. 85(2):433-441, 2020 02.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 31691080
PURPOSE: To investigate whether coadministration of vindesine is a risk factor for acute kidney injury caused by high-dose methotrexate in patients with hematologic malignancies and identify its mechanism.

METHODS: A retrospective analysis was conducted on 211 cycles of HD-MTX therapy in 178 patients with hematological malignancies. Multivariate logistic regression analysis was performed to evaluate whether VDS coadministration was a risk factor for AKI and the inhibitory effect of VDS on MTX was studied in cell models in vitro.
RESULTS: The occurrence of AKI was significantly higher in the MTX + VDS group than in the MTX group. Multivariate logistic regression analysis showed that VDS coadministration was an important risk factor for the occurrence of AKI [odds ratio (OR) = 2.62, 95% confidence interval (CI) 1.03-6.66]. After coadministration of VDS, serum MTX concentrations at 24 h, 48 h, and 72 h increased from 0.42 +/- 0.46 mumol/L, 0.07 +/- 0.01 mumol/L, and 0.03 +/- 0.01 mumol/L to 0.98 +/- 2.73 mumol/L, 0.18 +/- 0.42 mumol/L, and 0.09 +/- 0.21 mumol/L ($p < 0.05$, $p < 0.01$, and $p < 0.01$), respectively. Delayed elimination was closely related to AKI ($p < 0.001$). The transfected cell model results showed that VDS is an inhibitor of the transporters BCRP, MRP2, and OAT1/OAT3. VDS inhibited BCRP and MRP2-mediated transport of MTX with IC50 values of 17.91 microM and 34.73 microM, respectively.
CONCLUSIONS: Coadministration of VDS increases HD-MTX-induced AKI in patients with hematologic malignancies, which may be explained by the fact that VDS increases the exposure to and decreases the excretion of MTX by inhibiting OAT1/OAT3, BCRP, and MRP2.
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1
Status
MEDLINE
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Year of Publication
2020

851.

More Frequent Premature Antibiotic Discontinuations and Acute Kidney Injury in the Outpatient Setting With Vancomycin Compared to Daptomycin.
Tuerff D, Nunez M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Clinical Pharmacology. 60(3):384-390, 2020 03.

[Comparative Study. Journal Article. Research Support, Non-U.S. Gov't]
UI: 31630403
Vancomycin and daptomycin are often used in outpatient parenteral antimicrobial therapy for gram-positive coverage. Vancomycin's narrow therapeutic window poses challenges. We retrospectively assessed acute kidney injury (AKI) and other adverse drug events in outpatient parenteral antimicrobial therapy patients receiving vancomycin or daptomycin at home after hospital discharge. Among 191 patients included, AKI was the most common adverse drug event. Early antibiotic discontinuation and AKI were more frequent in the vancomycin group. Vancomycin use (odds ratio [OR], 4.57; 95% confidence interval [CI], 1.02-20.51); p = 0.04], female sex (OR, 3.28; 95%CI, 1.41-7.67; P < .01), and longer hospitalization (OR, 1.06; 95%CI, 1.01-1.11; P = .02] independently predicted moderate-to-severe AKI. In the vancomycin group, trough concentrations increased after discharge, and were higher in female compared to male patients, and in those who developed moderate-to-severe AKI compared to those who did not. Female sex (OR, 8.37; 95%CI, 2.35-29.82; P < .01) and higher concentrations (OR, 1.12; 95%CI, 1.05-1.19; P < .01) predicted moderate-to-severe AKI in patients receiving vancomycin. In conclusion, premature antibiotic discontinuations and nephrotoxicity are more frequent in patients treated at home with vancomycin compared to daptomycin. Among patients receiving vancomycin, plasma concentrations increased after hospital discharge and predicted moderate-to-severe AKI. Women had higher vancomycin concentrations and higher risk for AKI.

Version ID
1
Status
MEDLINE
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Year of Publication
2020

852.

Transesophageal Echocardiography, Acute Kidney Injury, and Length of Hospitalization Among Adults Undergoing Coronary Artery Bypass Graft Surgery.
MacKay EJ, Werner RM, Groeneveld PW, Desai ND, Reese PP, Gutsche JT, Augoustides JG, Neuman MD
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Cardiothoracic & Vascular Anesthesia. 34(3):687-695, 2020 Mar.
[Journal Article. Multicenter Study]
UI: 31558399
OBJECTIVE: To test the association between transesophageal echocardiography (TEE) and incidence of acute kidney injury and length of hospitalization among United States adults undergoing isolated coronary artery bypass graft (CABG) surgery.
DESIGN: This was an observational, retrospective cohort analysis.
SETTING: This study used a multicenter claims dataset from a commercially insured population undergoing CABG surgery in the United States between 2004 and 2016.

PARTICIPANTS: Adults aged 18 years or older with continuous insurance enrollment and an absence of renal-related diagnoses before the index CABG surgery.
INTERVENTIONS: Receipt of TEE within 1 calendar day of the index CABG surgery date.
MEASUREMENTS AND MAIN RESULTS: Of 51,487 CABG surgeries, 5,361 (10.4%; [95% confidence interval [CI]: 10.1-10.7%]) developed acute kidney injury and the mean length of hospitalization was 8.8 days (95% CI: 8.7-8.8). The TEE group demonstrated a greater absolute risk difference (RD) for acute kidney injury by multiple linear regression, overall, (RD=+1.0; [95% CI: 0.4-1.5%]; p < 0.001) and among a low-risk subgroup (RD=+1.0; [95% CI: 0.4-1.6; p=0.002), but not by instrumental variable analysis (RD=+0.9 [95% CI: -1.1 to 2.9%]; p=0.362). The TEE group demonstrated a longer length of hospitalization by multiple linear regression, overall (+2.0%; [95% CI: 1.1-2.9%]; p < 0.001), among a low-risk subgroup (+2.2%; [95% CI: 1.2-3.2%]; p < 0.001), and by instrumental variable analysis (+10.3%; [95% CI: 7.0-13.7%]; p < 0.001).
CONCLUSIONS: TEE monitoring in CABG surgery was not associated with a lower incidence of acute kidney injury or decreased length of hospitalization. These findings highlight the importance of additional work to study the clinical effectiveness of TEE in CABG surgery.

Version ID
1
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MEDLINE
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6986995

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2020

853.

RE Re Do urethroplasty after multiple failed surgeries of pelvic fracture urethral injury.
Kulkarni SB, Orabi H, Kavanagh A, Joshi PM
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World Journal of Urology. 38(12):3019-3025, 2020 Dec.
[Journal Article]
UI: 31485741
INTRODUCTION: We quantify surgical success rate in the management of pelvic fracture urethral injury (PFUI) with repeat urethroplasty in the setting of two or more failed prior urethroplasties.
MATERIALS AND MATERIALS: A retrospective analysis was completed of a single surgeon urethroplasty database from Jan 1, 2012 to June 31, 2018. Patients with a history of PFUI recurrent urethral stricture despite two or more failed prior urethroplasty procedures were included.
RESULTS: We identified 87 patients that had two more more failed prior urethroplasties. These had 2 main categories. One requiring anastomotic urethroplasty and other requiring substitution urethroplasty. Total success rate was 74.75% for anastomotic group and 84.61% for substitution group with a median follow-up of 34 months (range 6-60). Overall success rate for re redo Urethroplasty was 82.70%. Bulbar urethral ischemic necrosis was identified in 14 of 64 patients (21.9%). In these cases urethral substitution measures were performed including 12 with preputial flap and tubularization, 1 sigmoid colon substitution, medial thigh flap. No significant difference was observed between the success or failure group with respect to age, BMI, stricture length, number of prior urethroplasty procedure or endoscopic procedures or comorbidities.
CONCLUSIONS: Our findings demonstrate that high success rates can be achieved for repeat urethroplasty in recurrent PFUI urethral stricture after two or more failed prior urethroplasty procedures. Bulbar urethral ischemic necrosis is a common finding in this patient population. Patients should be managed at a tertiary high volume referral center.
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1
Status
MEDLINE
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Comments
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854.

Platelet count as a new biomarker for acute kidney injury induced by hemorrhagic shock.
Wu M, Luan YY, Lu JF, Li H, Zhan HC, Chen YH, Zhang F, Tian YY, Yang ZL, Yao YM, Feng YW
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Platelets. 31(1):94-102, 2020.
[Journal Article]
UI: 30810451
The aim of this study was to investigate the association between nadir platelet count and acute kidney injury (AKI) or 28-day all-cause mortality induced by hemorrhagic shock (HS), and to determine the cutoff value of nadir platelet count in HS clinical practice. This retrospective study included hospitalized patients enrolled in a tertiary-care teaching hospital from January 1, 2010 to December 31, 2015. Clinical data from HS admitted to the intensive care unit (ICU) were evaluated. Nadir platelet count was defined as the lowest values in the first 48 h. Multivariate logistic regression and Cox proportional hazards regression were used to assess the correlation between nadir platelet count and AKI or 28-day all-cause mortality induced by HS, respectively; the area under receiver operating characteristic (AU-ROC) and Youde's index were used to determine the optimal cutoff value of nadir platelet count. Kaplan-Meier's method and log-rank test were assessed for the 28-day all-cause mortality in AKI and non-AKI groups. Of 1589 patients screened, 84 patients (mean age,37.1 years; 58 males) were included in the primary analysis in which 30 patients with AKI. Multiple logistic results indicated that nadir platelet count was a risk factor of AKI (OR = 0.71,95% confidence interval [CI] 0.54-0.93, P < 0.05). Cox regression analysis revealed that nadir platelet count was independent risk factors for 28-day all-cause mortality (Hazard ratios [HR]0.89,95%CI 0.76-0.99, P < 0.05). Kaplan-Meier curve showed that 28-day all-cause mortality was significantly higher in patients with AKI than non-AKI (P < 0.001). These results suggest that nadir platelet count in the first 48 h is a new biomarker for AKI and 28-day all-cause mortality induced by HS. Moreover, the risk for AKI and 28-day all-cause mortality in HS patients decreased by 29% and 11%, respectively, for every 10 x 109/L increase in platelet count. Additional studies are needed to investigate whether elevation of nadir platelet count reduces the risk in different genders.
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1
Status
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Year of Publication
2020

855.

Temporal trends in acute kidney injury across health care settings in the Irish health system: a cohort study.
Stack AG, Li X, Kaballo MA, Elsayed ME, Johnson H, Murray PT, Saran R, Browne LD
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Nephrology Dialysis Transplantation. 35(3):447-457, 2020 03 01.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 30099517
BACKGROUND: Complete ascertainment of the true rates of acute kidney injury (AKI) and emerging trends are essential for planning of preventive strategies within health systems.
METHODS: We conducted a retrospective cohort study from 2005 to 2014 using data from regional laboratory information systems to determine incidence rates of AKI and severity Stages 1-3 in the Irish health system. Multivariable models were developed to explore annual trends and the contributions of demographic factors, clinical measures, geographic factors and location of medical supervision expressed as adjusted odds ratios (ORs) and 95% confidence intervals (CIs).
RESULTS: From 2005 to 2014, incidence rates of AKI increased from 6.1% (5.8-6.3) to 13.2% (12.7-13.8) per 100 patient-years in men and from 5.0% (4.8-5.2) to 11.5% (11.0-12.0) in women, P < 0.001. Stage 1 AKI accounted for the greatest growth in incidence, from 4.4% (95% CI 4.3-4.6) in 2005 to 10.1% (95% CI 9.8-10.5) in 2014 (P < 0.001 for trend). Compared with 2005, patients in 2014 were more likely to experience AKI [OR 4.53 (95% CI 4.02-5.1) for Stage 1, OR 5.22 (4.16-6.55) for Stage 2 and OR 4.11 (3.05-5.54) for Stage 3], adjusting for changing demographic and clinical profiles. Incidence rates of AKI increased in all locations of medical supervision during the period of observation, but were greatest for inpatient [OR 19.11 (95% CI 17.69-20.64)] and emergency room settings [OR 5.97 (95% CI 5.56-6.42)] compared with a general practice setting (referent).

CONCLUSION: Incidence rates of AKI have increased substantially in the Irish health system, which were not accounted for by changing demographic patterns, clinical profiles or location of medical supervision.

Version ID
1
Status
MEDLINE
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Comments
Erratum in (EIN)
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Year of Publication
2020

856.

Early Diagnostic Markers for Detection of Acute Kidney Injury in Allogeneic Hematopoietic Stem Cell Transplant Recipients.
Deger SM, Erten Y, Suyani E, Aki SZ, Ulusal Okyay G, Pasaoglu OT, Pasaoglu H, Arinsoy T, Turkoz Sucak G
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Experimental & Clinical Transplantation: Official Journal of the Middle East Society for Organ Transplantation. 18(1):98-105, 2020 02.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 28411358
OBJECTIVES: Acute kidney injury is a relatively frequent complication of allogenic hematopoietic stem cell transplant, resulting in increased risk of morbidity and mortality. Early diagnosis and management of acute kidney injury is of great importance for prevention of poor outcomes in these transplant recipients.
MATERIALS AND METHODS: Fifty consecutive patients, hospitalized for allogenic hematopoietic stem cell transplant at the Bone Marrow Transplantation Unit of Gazi University Faculty of Medicine, were included in this prospective study. Serial measurements of serum creatinine and

creatinine clearance were obtained before administration of conditioning regimen and at 0, 7, 14, 21, and 28 days after start of conditioning. Blood and urine samples were also obtained for the measurement of serum cystatin C and urine neutrophil gelatinase-associated lipocalin levels before conditioning and 24 hours before each serum creatinine measurement.
RESULTS: During the median 25 days of follow-up, acute kidney injury developed in 19 patients: 10 patients had stage 1, 7 had stage 2, and 2 had stage 3 acute kidney injury according to the Acute Kidney Injury Network classification. There were significant positive correlations between serum cystatin C levels and serum creatinine levels and negative correlations with creatinine clearance levels at each time point (P < .001), whereas no statistically significant associations were observed with urinary neutrophil gelatinase-associated lipocalin levels. Both univariate and multivariate Cox regression models showed a statistically significant association between serum cystatin C levels and development of acute kidney injury, whereas urine neutrophil gelatinase-associated lipocalin levels did not show any significant associations.
CONCLUSIONS: Serum cystatin C levels might be a useful marker for early detection of acute kidney injury in adult allogenic hematopoietic stem cell transplant recipients. Close monitoring of kidney function by sensitive biomarkers might provide early recognition and timely management of acute kidney injury in high-risk patient populations.
Version ID
1
Status
MEDLINE
Authors Full Name
Deger, Serpil Muge, Erten, Yasemin, Suyani, Elif, Aki, Sahika Zeynep, Ulusal Okyay, Gulay, Pasaoglu, Ozge T, Pasaoglu, Hatice, Arinsoy, Turgay, Turkoz Sucak, Gulsan
Institution
Deger, Serpil Muge. Department of Internal Medicine, Division of Nephrology, Gazi University Faculty of Medicine, Ankara, Turkey.
Year of Publication
2020

857.

Acute kidney injury and diabetic ketoacidosis in pediatric patients: Risk factors.
Garcia C.S., Castellanos M.B., Morales A.V.
Embase
Archivos Argentinos de Pediatria. 118(2) (pp 135-138), 2020. Date of Publication: 2020.
[Article]
AN: 2005488107
Acute kidney injury is a cause of morbidity in children with diabetes in developing countries, especially in patients with diabetic ketoacidosis. The objective of this study was to identify the risk factors for acute kidney injury in patients with diabetic ketoacidosis. This was a retrospective cohort study. A total of 50 patients with diabetic ketoacidosis were included; 54 % developed kidney injury. These had higher glucose and uric acid levels (541 mg/dL vs. 407 mg/dL, p = 0.014 and 8.13 mg/ dL vs. 5.72 mg/dL, p = 0.015, respectively). Uric acid levels above 6.5 mg/dL showed an odds ratio of 6.910 (p = 0.027) for kidney injury. To conclude, hyperuricemia was a risk factor for acute kidney injury in these patients. Prospective studies are required to determine the role of uric acid in the pathogenesis of acute kidney injury in patients with diabetes.

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32199051 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32199051]
Status
Embase

Institution
(Garcia, Castellanos, Morales) Hospital Nino de Saltillo, Saltillo, Coahuila, Mexico
Publisher
Sociedad Argentina de Pediatria
Year of Publication
2020

858.

Acute Kidney Injury in Pediatric Inflammatory Multisystem Syndrome Temporally Associated With Severe Acute Respiratory Syndrome Coronavirus-2 Pandemic: Experience From PICUs Across United Kingdom*.
Deep A., Upadhyay G., Du Pre P., Lillie J., Pan D., Mudalige N., Kanthimathinathan H.K., Johnson M., Riphagen S., Dwarakanathan B., Raffaj D., Sundararajan S., Davies P., Mohammad Z., Shetty N., Playfor S., Jardine M., Ross O., Levin R., Waters G., Sinha R., Scholefield B.R., Boot E., Koul A., Freire-Gomez X., Ramnarayan P.
Embase
Critical Care Medicine. 48(12) (pp 1809-1818), 2020. Date of Publication: 01 Dec 2020.
[Article]
AN: 2018771543
Objectives: To study the prevalence, evolution, and clinical factors associated with acute kidney injury in children admitted to PICUs with pediatric inflammatory multisystem syndrome temporally associated with severe acute respiratory syndrome coronavirus-2.
Design(s): Multicenter observational study.
Setting(s): Fifteen PICUs across the United Kingdom.
Patient(s): Patients admitted to United Kingdom PICUs with pediatric inflammatory multisystem syndrome temporally associated with severe acute respiratory syndrome coronavirus-2 between March 14, 2020, and May 20, 2020.
Intervention(s): None.
Measurements and Main Results: Deidentified data collected as part of routine clinical care were analyzed. All children were diagnosed and staged for acute kidney injury based on the level of serum creatinine above the upper limit of reference interval values according to published guidance. Severe acute kidney injury was defined as stage 2/3 acute kidney injury. Uni- A nd multivariable analyses were performed to study the association between demographic data, clinical features, markers of inflammation and cardiac injury, and severe acute kidney injury. Over the study period, 116 patients with pediatric inflammatory multisystem syndrome temporally associated with severe acute respiratory syndrome coronavirus-2 were admitted to 15 United Kingdom PICUs. Any-stage acute kidney injury occurred in 48 of 116 patients (41.4%) and severe acute kidney injury in 32 of 116 (27.6%) patients, which was mostly evident at admission (24/32, 75%). In univariable analysis, body mass index, hyperferritinemia, high C-reactive protein, Pediatric Index of Mortality 3 score, vasoactive medication, and invasive mechanical ventilation were associated with severe acute kidney injury. In multivariable logistic regression, hyperferritinemia was associated with severe acute kidney injury (compared with nonsevere acute kidney injury; adjusted odds ratio 1.04; 95% CI, 1.01-1.08; p = 0.04). Severe acute kidney injury was associated with longer PICU stay (median 5 days [interquartile range, 4-7 d] vs 3 days [interquartile range, 1.5-5 d]; p < 0.001) and increased duration of invasive mechanical ventilation (median 4 days [interquartile range, 2-6 d] vs 2 days [interquartile range, 1-3 d]; p = 0.04).
Conclusion(s): Severe acute kidney injury occurred in just over a quarter of children admitted to United Kingdom PICUs with pediatric inflammatory multisystem syndrome temporally associated with severe acute respiratory syndrome coronavirus-2. Hyperferritinemia was significantly associated with severe acute kidney injury. Severe acute kidney injury was associated with increased duration of stay and ventilation. Although short-term outcomes for acute kidney injury in

pediatric inflammatory multisystem syndrome temporally associated with severe acute respiratory syndrome coronavirus-2 appear good, long-term outcomes are unknown.

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33044282 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33044282]
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Publisher
Lippincott Williams and Wilkins
Year of Publication
2020

859.

Ketorolac Use for Pain Management in Trauma Patients With Rib Fractures Does not Increase of Acute Kidney Injury or Incidence of Bleeding.
Torabi J., Kaban J.M., Lewis E., Laikhram D., Simon R., DeHaan S., Jureller M., Chao E., Reddy S.H., Stone M.E.
Embase
The American surgeon. (pp 3134820954835), 2020. Date of Publication: 24 Nov 2020.
[Article]
AN: 633521698

INTRODUCTION: Ketorolac is useful in acute pain management to avoid opiate-related complications; however, some surgeons fear associated acute kidney injury (AKI) and bleeding despite a paucity of literature on ketorolac use in trauma patients. We hypothesized that our institution's use of intravenous ketorolac for rib fracture pain management did not increase the incidence of bleeding or AKI.
METHOD(S): Rib fracture patients aged 15 years and above admitted between January 2016-June 2018 were identified in our trauma registry along with frequency of bleeding events. AKI was defined as >= 1.5x increase in serum creatinine from baseline measured on the second day of admission (after 24 hours of resuscitation) or an increase of >= .3 mg/dL over a 48-hour period. Patients receiving ketorolac were compared to patients with no ketorolac use.
RESULT(S): Two cohorts of 199 control and 205 ketorolac patients were found to be similar in age, gender, admission systolic blood pressure (SBP), injury severity score, intravenous radiocontrast received, and transfusion requirements. Analysis revealed no difference in frequency of AKI using both definitions (8% vs. 7.3%, P = .79) and (19.6% vs. 15.1%, P = .24), respectively, or bleeding events (2.5% vs. 0%, P = .03). Logistic regression demonstrated that ketorolac use was not an independent predictor for AKI but age and admission SBP < 90 were.
CONCLUSION(S): Use of ketorolac in this cohort of trauma patients with rib fractures did not increase the incidence of AKI or bleeding events.
PMID
33231476 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33231476]
Status
Article-in-Press
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Publisher
NLM (Medline)
Year of Publication
2020

860.

Learning Disorders, Perinatal Depression, Infants with GERD, Kidney Injury, Amblyopia.
Anonymous
Embase
American family physician. 102(8) (pp 463), 2020. Date of Publication: 15 Oct 2020.
[Article]
AN: 633191394
PMID
33064419 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33064419]
Status
Article-in-Press
Publisher
NLM (Medline)
Year of Publication
2020

861.

Modification of Pediatric Sequential Organ Failure Assessment Score Using Acute Kidney Injury Diagnostic Criteria.
Jhang W.K., Kim D.H., Ha E.J., Park S.J.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. (no pagination), 2020. Date of Publication: 08 Oct 2020.
[Article]
AN: 633139721
OBJECTIVES: To develop a modified pediatric Sequential Organ Failure Assessment score using the acute kidney injury diagnostic criteria and evaluate its performance in predicting mortality.
DESIGN: A single-center retrospective study. SETTING: Fourteen-bed PICU in a tertiary care academic children's hospital. PATIENTS: Critically ill children admitted to the PICU between January 2017 and September 2019 with at least more than two serum creatinine measurements-one for baseline and the other within the first 48 hours of PICU admission.None.
MEASUREMENTS AND MAIN RESULTS: A total of 755 patients were included. Overall, 265 patients were diagnosed with acute kidney injury using the current acute kidney injury diagnostic criteria. The overall PICU mortality was 5.8%. Patients with acute kidney injury required more vasoactive-inotropic drugs and showed higher illness severity scores, including the Pediatric Risk of Mortality III, Pediatric Logistic Organ Dysfunction 2, pediatric Sequential Organ Failure Assessment, and modified pediatric Sequential Organ Failure Assessment scores, as well as higher PICU mortality than patients without acute kidney injury ($p < 0.001$). As acute kidney injury stages increase, PICU mortality also increased ($p < 0.001$). Based on multivariable logistic regression analysis adjusted for age and sex, the modified pediatric Sequential Organ Failure Assessment score was an independent prognostic factor of PICU mortality. The modified pediatric Sequential Organ Failure Assessment score showed better performance in predicting PICU mortality (area under the receiver operating characteristic curve, 0.821; 95% CI, 0.759-0.882) than other severity scores (area under the receiver operating characteristic curve [95% CI] of Pediatric Risk of Mortality III, Pediatric Logistic Organ Dysfunction 2, and pediatric Sequential Organ Failure Assessment scores: 0.788 [0.723-0.853], 0.735 [0.663-0.807], and 0.785 [0.718-0.853], respectively).
CONCLUSION(S): Acute kidney injury is prevalent and associated with poor clinical outcomes in critically ill children. The modified pediatric Sequential Organ Failure Assessment score, based on the acute kidney injury diagnostic criteria, showed improved performance in predicting PICU mortality. The modified pediatric Sequential Organ Failure Assessment score could be a promising prognostic factor for critically ill children.
PMID
33031351 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33031351]
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Article-in-Press
Institution
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Publisher
NLM (Medline)
Year of Publication
2020

862.

Monocyte chemoattractant protein-1, macrophage colony stimulating factor, survivin, and tissue inhibitor of matrix metalloproteinases-2 in analysis of damage and repair related to pediatric chronic kidney injury.
Musial K., Zwolinska D.
Embase
Advances in clinical and experimental medicine : official organ Wroclaw Medical University. (no pagination), 2020. Date of Publication: 09 Sep 2020.
[Article]
AN: 632836323
BACKGROUND: Kidney injury in the course of chronic kidney disease (CKD) is a consequence of aggravated cell migration, inflammation, apoptosis, and fibrosis. However, the sequence of these phenomena, as well as of the reparatory mechanisms, are not fully known. Monocyte chemoattractant protein 1 (MCP-1) and macrophage colony-stimulating factor (MCSF) trigger monocyte migration to the sites of inflammation and their transition into macrophages. Tissue inhibitor of matrix metalloproteinases 2 (TIMP-2) plays a protective role against excessive matrix remodeling, whereas survivin is known for its anti-apoptotic activity.
OBJECTIVE(S): To analyze the serum, urine and fractional excretion (FE) values of MCP1, MCSF, TIMP-2, and survivin in children at subsequent stages of CKD being treated conservatively, and to analyze the potential applicability of these markers in the evaluation of CKD-related renal damage and protective mechanisms against it. MATERIAL AND METHODS: The study group consisted of 70 children with conservatively treated CKD, stages 1-5, and 12 controls. The serum and urine concentrations of MCP1, MCSF, TIMP-2, and survivin were assessed using enzyme-linked immunosorbent assay (ELISA). The FE of these parameters in the urine was also assessed.
RESULT(S): The serum values of all parameters were significantly elevated at CKD stage 1 compared to the controls. The urinary concentrations of MCP-1 and MCSF (stages 1-2) rose earlier than TIMP-2 and survivin (stage 4) concentrations. The FE values started increasing at CKD stage 3 (MCP-1) or stage 4 (other parameters).
CONCLUSION(S): The complex analysis of serum/urinary/FE values of the selected parameters revealed a sequence of multifaceted CKD-related phenomena, when the migration of cells and inflammation were followed by delayed and insufficient anti-fibrotic and anti-apoptotic activity.
PMID
32905666 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32905666]
Status
Article-in-Press
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(Musial, Zwolinska) Department and Clinic of Pediatric Nephrology, Wroclaw Medical University, Poland
Publisher
NLM (Medline)
Year of Publication
2020

863.

Association of Acute Kidney Injury With Subsequent Sepsis in Critically Ill Children.
Formeck C.L., Joyce E.L., Fuhrman D.Y., Kellum J.A.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. (no pagination), 2020. Date of Publication: 27 Aug 2020.
[Article]

AN: 632727255
OBJECTIVES: Acute kidney injury is a major cause of morbidity and mortality in critically ill children. A growing body of evidence has shown that acute kidney injury affects immune function, yet little is known about the association between acute kidney injury and subsequent infection in pediatric patients. Our objective was to examine the association of non-septic acute kidney injury with the development of subsequent sepsis in critically ill children. DESIGN: A single-center retrospective cohort study. SETTING: The pediatric and cardiac ICUs at a tertiary pediatric care center. PATIENTS: All patients 0-18 years old without a history of chronic kidney disease, who did not have sepsis prior to or within the initial 48 hours of ICU admission.None.
MEASUREMENTS AND MAIN RESULTS: We analyzed data for 5,538 children (median age, 5.3 yr; 58.2% male), and identified 255 (4.6%) with stage 2 or 3 acute kidney injury. Suspected sepsis occurred in 46 children (18%) with stage 2 or 3 acute kidney injury compared to 286 children (5.4%) with stage 1 or no acute kidney injury. On adjusted analysis, children with stage 2 or 3 acute kidney injury had 2.05 times greater odds of developing sepsis compared to those with stage 1 or no acute kidney injury (95% CI, 1.39-3.03; p < 0.001). Looking at acute kidney injury severity, children with stage 2 and 3 acute kidney injury had a 1.79-fold (95% CI, 1.15-2.79; p = 0.01) and 3.24-fold (95% CI, 1.55-6.80; p = 0.002) increased odds of developing suspected sepsis, respectively.
CONCLUSION(S): Acute kidney injury is associated with an increased risk for subsequent infection in critically ill children. These results further support the concept of acute kidney injury as a clinically relevant immunocompromised state.
PMID
32858738 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32858738]
Status
Article-in-Press
Institution
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Publisher
NLM (Medline)
Year of Publication
2020

864.

Acute Kidney Injury in Children: Being AWARE.
Dharnidharka V.R., Ciccia E.A., Goldstein S.L.
Embase
Pediatrics. (no pagination), 2020. Date of Publication: 11 Aug 2020.
[Article]
AN: 632600629
PMID
32784226 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32784226]

Status
Article-in-Press
Institution
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(Goldstein) Division of Nephrology and Center for Acute Care Nephrology, Cincinnati Children's Hospital Medical Center and University of Cincinnati, Cincinnati, OH, United States
Publisher
NLM (Medline)
Year of Publication
2020

865.

Early kidney damage in diabetic adolescents with increased blood pressure and glomerular hyperfiltration.
Soltysiak J., Ostalska-Nowicka D., Mackowiak-Lewandowicz K., Skowronska B., Fichna P., Stankiewicz W., Zaorska K., Zachwieja J.
Embase
Minerva pediatrica. (no pagination), 2020. Date of Publication: 04 Aug 2020.
[Article]
AN: 632527647
BACKGROUND: The early impact of type-1 diabetes mellitus (DM1), increased blood pressure and glomerular hyperfiltration (GHF) on kidney damage in adolescents using two urinary markers of kidney injury - neutrophil gelatinase-associated lipocalin (uNGAL) and transferrin (uTransf) was assessed.
METHOD(S): The study group consisted of 80 adolescents with DM1, of whom 42 were patients with increased blood pressure (IBP), and 38 were patients with normal blood pressure (NBP). Blood pressure was assessed by 24-hour ambulatory bloodpressure monitoring. All patients showed estimated glomerular-filtration rates (eGFRs) above 90 ml/min/1.73m2. The control group consisted of 19 healthy, age and gender-matched adolescents.
RESULT(S): All diabetic children showed a significant increase in uNGAL ($p<0.001$). This increase was not related to blood pressure. The uNGAL was elevated in all patients with normal albuminuria, normal eGFR and NBP. The concentration of uTransf was not increased in the entire studied group and was not related to blood pressure. Children with GHF had significantly higher levels of both uTransf ($p=0.010$) and uNGAL ($p<0.001$). In patients with GHF, blood pressure was normal. Patients with IBP showed a significantly higher value for triglycerides ($r=0.247$; $p=0.032$) and a longer duration of diabetes ($r=0.264$; $p=0.019$).
CONCLUSION(S): Diabetes is the leading risk factor for early kidney injury. However, increased blood pressure does not lead to kidney damage, at least in the early stage of DM1. The uNGAL is the early indicator of kidney injury and increases in patients with normal albuminuria, normal glomerular filtration and normal blood pressure. Glomerular hyperfiltration seems to be a marker of diabetic-kidney involvement.
PMID
32748608 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32748608]
Status
Article-in-Press
Institution

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Publisher
NLM (Medline)
Year of Publication
2020

866.

Evaluation of renal injury in children with uncorrected CHDs with significant shunt using urinary neutrophil gelatinase-associated lipocalin.
Monday P., Idouriyekemwen N.J., Sadoh W.E.
Embase
Cardiology in the young. (pp 1-8), 2020. Date of Publication: 03 Aug 2020.
[Article]
AN: 632508923
BACKGROUND: CHDs can be complicated by renal injury which worsens morbidity and mortality. Urinary neutrophil gelatinase-associated lipocalin, a sensitive and specific biomarker of renal tubular injury, has not been studied in children with uncorrected CHDs. This study evaluated renal injury in children with uncorrected CHDs using this biomarker.
METHOD(S): The patients were children with uncorrected CHDs with significant shunt confirmed on echocardiogram with normal renal ultrasound scan, in the paediatric cardiology clinic of a tertiary hospital. The controls were age-matched healthy children recruited from general practice clinics. Information on bio-data and socio-demographics were collected and urine was obtained for measurement of urinary neutrophil gelatinase-associated lipocalin levels.
RESULT(S): A total of 65 children with uncorrected CHDs aged 2 to 204 months were recruited. Thirty-one (47.7%) were males while 36 (55.4%) had acyanotic CHDs. The median urinary neutrophil gelatinase-associated lipocalin level of patients of 26.10 ng/ml was significantly higher than controls of 16.90 ng/ml (U = 1624.50, p = 0.023). The median urinary neutrophil gelatinase-associated lipocalin level of patients with cyanotic and acyanotic CHDs were 30.2 ng/ml and 22.60 ng/ml respectively; (Mann-Whitney U = 368.50, p = 0.116). The prevalence of renal injury using 95th percentile cut-off value of urinary neutrophil gelatinase-associated lipocalin was 16.9%. Median age of patients with renalinjury was 16 (4-44) months.
CONCLUSION(S): Children with uncorrected CHDs have renal injury detected as early as infancy. The use of urinary neutrophil gelatinase-associated lipocalin in early detection of renal injury in these children may enhance early intervention and resultant prevention of morbidity and reduction in mortality.
PMID
32741389 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32741389]
Status
Article-in-Press
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Publisher
NLM (Medline)
Year of Publication
2020

867.

Acute Kidney Injury and Outcomes in Children Undergoing Noncardiac Surgery: A Propensity-Matched Analysis.
Wingert T., Grogan T., Cannesson M., Sapru A., Ren W., Hofer I.
Embase
Anesthesia and analgesia. (no pagination), 2020. Date of Publication: 23 Jul 2020.
[Article]
AN: 632505753
BACKGROUND: Acute kidney injury (AKI) has been well documented in adults after noncardiac surgery and demonstrated to be associated with adverse outcomes. We report the prevalence of AKI after pediatric noncardiac surgery, the perioperative factors associated with postoperative AKI, and the association of AKI with postoperative outcomes in children undergoing noncardiac surgery.
METHOD(S): Patients <=18 years of age who underwent noncardiac surgery with serum creatinine during the 12 months preceding surgery and no history of end-stage renal disease were included in this retrospective observational study at a single tertiary academic hospital. Patients were evaluated during the first 7 days after surgery for development of any stage of AKI, according to Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Patients were classified into stages of KDIGO AKI for the purposes of describing prevalence. For further analyses, patients were grouped into those who developed any stage of AKI postoperatively and those who did not. Additionally, the time point at which each patient was first diagnosed with stage I AKI or greater was also assessed. Pre-, intra-, and postoperative factors were compared between the 2 groups. A multivariable Cox proportional hazards regression model was created to examine the time to first diagnosis of AKI using all nonredundant covariates. Analysis of the association of AKI with postoperative outcomes, mortality and 30-day readmission, was undertaken utilizing propensity score-matched controls and a multivariable Cox proportional hazards regression model.
RESULT(S): A total of 25,203 cases between 2013 and 2018 occurred; 8924 met inclusion criteria. Among this cohort, the observed prevalence of postoperative AKI was 3.2% (288 cases; confidence interval [CI], 2.9-3.6). The multivariable Cox model showed American Society of Anesthesiologists (ASA) status to be associated with the development of postoperative AKI. Several other factors, including intraoperative hypotension, were significantly associated with postoperative AKI in univariable models but found not to be significantly associated after adjustment. The multivariable Cox analyses with propensity-matched controls showed an estimated hazard ratio of 3.28 for mortality (CI, 1.71-6.32, P < .001) and 1.55 for 30-day readmission (CI, 1.08-2.23, P = .018) in children who developed AKI versus those who did not.
CONCLUSION(S): In children undergoing noncardiac surgery, postoperative AKI occurred in 3.2% of patients. Several factors, including intraoperative hypotension, were significantly associated with postoperative AKI in univariable models. After adjustment, only ASA status was found to be significantly associated with AKI in children after noncardiac surgery. Postoperative AKI was found to be associated with significantly higher rates of mortality and 30-day readmission in multivariable, time-varying models with propensity-matched controls.
PMID

32739953 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32739953]
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Article-in-Press
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Publisher
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Year of Publication
2020

868.

Prediction of Acute Kidney Injury on Admission to Pediatric Intensive Care.
Raman S., Tai C.W., Le Marsney R., Schibler A., Gibbons K., Schlapbach L.J.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. (no pagination), 2020. Date of Publication: 08 Jun 2020.
[Article]
AN: 632052246
OBJECTIVES: Up to 37% of children admitted to the PICU develop acute kidney injury as defined by Kidney Disease: Improving Global Outcomes criteria. We describe the prevalence of acute kidney injury in a mixed pediatric intensive care cohort using this criteria. As tools to stratify patients at risk of acute kidney injury on PICU admission are lacking, we explored the variables at admission and day 1 that might predict the development of acute kidney injury. DESIGN: Single-center retrospective observational study. SETTING: Thirty-six-bed surgical/medical tertiary PICU. PATIENTS: Children from birth to less than or equal to 16 years old admitted between 2015 and 2018.None. MEASUREMENTS AND MAIN RESULTS: Clinical data were extracted from the PICU clinical information system. Patients with baseline creatinine at admission greater than 20 micromol/L above the calculated normal creatinine level were classified as "high risk of acute kidney injury." Models were created to predict acute kidney injury at admission and on day 1. Out of the 7,505 children admitted during the study period, 738 patients (9.8%) were classified as high risk of acute kidney injury at admission and 690 (9.2%) developed acute kidney injury during PICU admission. Compared to Kidney Disease: Improving Global Outcomes criteria as the reference standard, high risk of acute kidney injury had a lower sensitivity and higher specificity compared with renal angina index greater than or equal to 8 on day 1. For the admission model, the adjusted odds ratio of developing acute kidney injury for high risk of acute kidney injury was 4.2 (95% CI, 3.3-5.2). The adjusted odds ratio in the noncardiac cohort for high risk of acute kidney injury was 7.3 (95% CI, 5.5-9.7). For the day 1 model, odds ratios for high risk of acute kidney injury and renal angina index greater than or equal to 8 were 3.3 (95% CI, 2.6-4.2) and 3.1 (95% CI, 2.4-3.8), respectively.
CONCLUSION(S): The relationship between high risk of acute kidney injury and acute kidney injury needs further evaluation. High risk of acute kidney injury performed better in the noncardiac cohort.
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32516223 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32516223]
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Publisher
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Year of Publication
2020

869.

Acute kidney injury and peritoneal dialysis in extremely low birth weight newborns.
Kaya H., Gokce IK., Turgut H., Ozdemir R., Tabel Y.
Embase
Minerva pediatrica. (no pagination), 2020. Date of Publication: 02 Jun 2020.
[Article]
AN: 631985275
BACKGROUND: In 12.5-56% of extremely low birth weight (ELBW) infants treated in newborn units, acute kidney injury (AKI) develops. Some of these infants may need renal replacement therapy for reasons including hyperkalemia, hypovolemia and resistant acidosis.
METHOD(S): All ELBW infants who were followed in our hospital between January 2015 and December 2017 and who lived longer than 48 hours were assessed. Patients were followed for AKI and peritoneal dialysis (PD).
RESULT(S): AKI developed in 25 of 201 ELBW infants. PD was administered to nine patients. PD was initiated at a median of 11 days (2-22 days) for all patients due to hyperkalemia which did not respond to medical treatment. Three of the nine infants who received PD died while dialysis was ongoing. The remaining six patients completed PD successfully. In these patients, the serum potassium value returned to normal in three days, and dialysis was continued for a median of 93 hours (40-172 hours). Dialysis leakage occurred in two patients, and hyperglycemia developed in two patients. On average, diuresis started at the 25th hour (8-40th hour).
CONCLUSION(S): In the renal failure treatment of ELBW infants, PD is the only option which can be used for many units. It was found that in ELBW infants who had wider peritoneal surface when compared to their body weight, biochemical values recovered rapidly with PD, and diuresis started a short while later in most patients.
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32493001 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32493001]
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Publisher
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2020

870.

Acute kidney injury following intravenous acyclovir in children.
Sandery B.J., Erlich J.H., Kennedy S.E.
Embase
Archives of disease in childhood. (no pagination), 2020. Date of Publication: 13 May 2020.
[Article]
AN: 631762243
OBJECTIVE: The objective of this study was to describe the incidence of acute kidney injury (AKI) in children receiving intravenous acyclovir and determine risk factors that may be associated with it. DESIGN: This was a retrospective cohort study, conducted by chart review. SETTING: The study was conducted across two paediatric hospitals. PATIENTS: All inpatients that received intravenous acyclovir in records from January 2015 to December 2015 were reviewed. Only patients with creatinine measurements taken before and after starting acyclovir were included in the study. MAIN OUTCOME MEASURES: The main outcome measure was the development of AKI following intravenous acyclovir administration, with AKI defined according to change in serum creatinine.
RESULT(S): 150 patients were included in the analysis. Patients' ages ranged from 2 days to 18.6 years. 27 children (18%) developed at least stage 1 AKI. Children receiving cancer treatment developed AKI more frequently than children with other diagnoses; 29.3% vs 10.9% (OR 3.4, 95%CI 1.5 to 8.2, p=0.008). The baseline estimated glomerular filtration rate (eGFR) was higher in those children who developed AKI. 34% of children had an eGFR >120mL/min/1.73m2 prior to acyclovir use. 31% of these children developed AKI compared with only 11% of those with a normal baseline eGFR (OR 3.6, 95CI 1.3 to 10.1, p=0.02). Baseline eGFR was a significant predictor of AKI in a multivariable analysis that included cumulative dose and treatment duration (OR 1.02, p=0.013).
CONCLUSION(S): AKI following intravenous acyclovir exposure is common in children. This study raises the possibility that glomerular hyperfiltration is a previously unrecognised risk factor for acyclovir-induced AKI.

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32404442 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32404442]
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Article-in-Press
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Publisher
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Year of Publication
2020

871.

Concurrent Imatinib Dosing With High-dose Methotrexate Leads to Acute Kidney Injury and Delayed Methotrexate Clearance in Pediatric Patients With Philadelphia Chromosome-positive B-Cell Acute Lymphoblastic Leukemia.
Pommert L., Liberio N., Ng J.S., Egelund T.A., Siver M.J., Katzenstein H.M., Burke M.J.
Embase
Journal of pediatric hematology/oncology. (no pagination), 2020. Date of Publication: 08 May 2020.
[Article]
AN: 631754363
Imatinib, a tyrosine kinase inhibitor has improved survival in pediatric patients with Philadelphia chromosome-positive B-cell acute lymphoblastic leukemia. There are no formal drug interactions listed between methotrexate and tyrosine kinase inhibitors. Four pediatric patients with Philadelphia chromosome-positive B-cell acute lymphoblastic leukemia had delayed methotrexate clearance during their first cycle of high-dose methotrexate while receiving imatinib, resulting in acute kidney injury. For subsequent high-dose methotrexate cycles, imatinib was withheld resulting in decreased acute kidney injury, shorter time to methotrexate clearance, less toxicity, and shorter hospitalizations. For pediatric patients with acute lymphoblastic leukemia receiving imatinib, we recommend escalated supportive care measures including increased hyperhydration and leucovoruin frequency. For patients with toxicities secondary to delayed clearance or need for glucarpidase, we recommend holding imatinib with subsequent high-dose methotrexate courses.
PMID
32398599 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32398599]
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Article-in-Press
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Publisher
NLM (Medline)
Year of Publication
2020

872.

Age-Related Biomarkers to Predict Acute Kidney Injury in Children Undergoing Cardiac Surgery.
Guariento A., Vida V.
Embase
The Annals of thoracic surgery. (no pagination), 2020. Date of Publication: 07 May 2020.
[Article]
AN: 631717178
PMID
32389566 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32389566]
Status
Article-in-Press
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Surgery Unit, Department of Cardiac, Thoracic and Vascular Sciences and Public Health, University of Padua, Padua, Italy
Publisher
NLM (Medline)
Year of Publication
2020

873.

Forniceal Rupture in Neonate Masquerading as a Cystic Renal Mass.
Nassiri N., Asanad K., Vasquez E.
Embase
Urology. (no pagination), 2020. Date of Publication: 21 Apr 2020.
[Article]
AN: 631633386
A 5 week-old full-term female with high-risk right hydronephrosis was transferred to the emergency department (ED) for tachypnea. A contrast-enhanced computed tomography (CT) study demonstrated a 9.0 cm cystic lesion in the region of the previously seen hydronephrosis (Figure 1). Urology was consulted to rule out a cystic neoplasm, which on review of imaging was more suggestive of a contained forniceal rupture. An ultrasound-guided percutaneous nephrostomy tube drained 200 cc of urine. Culture and cytology were negative. Respiratory status markedly improved. The patient was discharged with outpatient follow to evaluate for ureteropelvic junction obstruction.

PMID
32330532 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32330532]
Status
Article-in-Press
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Publisher
NLM (Medline)
Year of Publication
2020

874.

A riddle wrapped in an enigma: acute kidney injury in a girl with Crohn's disease: Answers.
Regev L.C., Bouts A.H.M., Groothoff J.W., van Wijk J.A.E., van Wijk M., van der Valk P., Bokenkamp A.
Embase
Pediatric nephrology (Berlin, Germany). (no pagination), 2020. Date of Publication: 30 Mar 2020.
[Article]
AN: 631417707
PMID
32232639 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32232639]

Status
Article-in-Press
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Publisher
NLM (Medline)
Year of Publication
2020

875.

Plasma Biomarkers of Tubular Injury and Inflammation Are Associated with Chronic Kidney Disease Progression in Children.
Greenberg J.H., Abraham A.G., Xu Y., Schelling J.R., Feldman H.I., Sabbisetti V.S., Gonzalez M.C., Coca S., Schrauben S.J., Waikar S.S., Ramachandran V.S., Shlipak M.G., Warady B., Kimmel P.L., Bonventre J.V., Denburg M., Parikh C.R., Furth S.
Embase
Journal of the American Society of Nephrology : JASN. (no pagination), 2020. Date of Publication: 31 Mar 2020.
[Article]
AN: 631416057
BACKGROUND: After accounting for known risk factors for CKD progression in children, clinical outcomes among children with CKD still vary substantially. Biomarkers of tubular injury (such as KIM-1), repair (such as YKL-40), or inflammation (such as MCP-1, suPAR, TNF receptor-1 [TNFR-1], and TNFR-2) may identify children with CKD at risk for GFR decline.
METHOD(S): We investigated whether plasma KIM-1, YKL-40, MCP-1, suPAR, TNFR-1, and TNFR-2 are associated with GFR decline in children with CKD and in subgroups defined by glomerular versus nonglomerular cause of CKD. We studied participants of the prospective CKiD Cohort Study which enrolled children with an eGFR of 30-90 ml/min per 1.73 m2 and then assessed eGFR annually. Biomarkers were measured in plasma collected 5 months after study enrollment. The primary endpoint was CKD progression, defined as a composite of a 50% decline in eGFR or incident ESKD.
RESULT(S): Of the 651 children evaluated (median age 11 years; median baseline eGFR of 53 ml/min per 1.73 m2), 195 (30%) had a glomerular cause of CKD. Over a median follow-up of 5.7 years, 223 children (34%) experienced CKD progression to the composite endpoint. After multivariable adjustment, children with a plasma KIM-1, TNFR-1, or TNFR-2 concentration in the highest quartile were at significantly higher risk of CKD progression compared with children with a concentration for the respective biomarker in the lowest quartile (a 4-fold higher risk for KIM-1 and TNFR-1 and a 2-fold higher risk for TNFR-2). Plasma MCP-1, suPAR, and YKL-40 were not independently associated with progression. When stratified by glomerular versus nonglomerular etiology of CKD, effect estimates did not differ significantly.

CONCLUSION(S): Higher plasma KIM-1, TNFR-1, and TNFR-2 are independently associated with CKD progression in children.

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Status
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Publisher
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Year of Publication
2020

876.

Utilization of Donor Kidneys With Acute Kidney Injury in Pediatric Kidney Transplant Recipients.
Solomon S., Hayde N.
Embase
Transplantation. 104(3) (pp 597-602), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 631404539

BACKGROUND: An elevated terminal creatinine is frequently used as a reason for organ refusal in pediatric kidney transplantation. There is increasing evidence that adults who receive kidneys from donors with moderate to severe acute kidney injury (AKI) have similar outcomes to recipients who receive kidneys from donors with none to mild AKI.
METHOD(S): We used the Scientific Registry of Transplant Recipients to determine how many pediatric kidney transplant recipients developed delayed graft function (DGF) between 2000 and 2010.
RESULT(S): When stratified by the donor terminal creatinine, there was no significant difference in the recipient discharge creatinine or the likelihood of developing DGF. In a logistic regression model, older donor age, male donors, and a longer cold ischemia time but not donor terminal creatinine were independent predictors of DGF. There were very few graft loss events documented in this study.
CONCLUSION(S): Our results are in agreement with previously published data; a high donor terminal creatinine is not significantly associated with DGF in pediatric renal transplant recipients. Additional studies investigating the risk of rejection and long-term graft function are needed before adopting the practice of accepting kidneys with moderate to severe AKI in pediatric kidney transplant recipients.
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32238780 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32238780]
Status
Article-in-Press
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Publisher
NLM (Medline)
Year of Publication
2020

877.

Post-operative acute kidney injury is associated with a biomarker of acute brain injury after paediatric cardiac surgery.
Parsons M., Greenberg J., Parikh C., Brown J., Parker D., Zhu J., Vricella L., Everett A.D.
Embase
Cardiology in the young. (pp 1-6), 2020. Date of Publication: 30 Mar 2020.
[Article]
AN: 631377501
INTRODUCTION: Children with CHD who undergo cardiopulmonary bypass are at an increased risk of acute kidney injury. This study evaluated the association of end-organ specific injury plasma biomarkers for brain: glial fibrillary acidic protein and heart: Galectin 3, soluble suppression of tumorgenicity 2, and N-terminal pro b-type natriuretic peptide with acute kidney injury in children undergoing cardiopulmonary bypass. MATERIALS AND METHODS: We enrolled consecutive children undergoing cardiac surgery with cardiopulmonary bypass. Blood samples were collected pre-bypass in the operating room and in the immediate post-operative period. Acute kidney injury was defined as a rise of serum creatinine >=50% from pre-operative baseline within 7 days after surgery.
RESULT(S): Overall, 162 children (mean age 4.05 years, sd 5.28 years) were enrolled. Post-operative acute kidney injury developed in 55 (34%) children. Post-operative plasma glial fibrillary acidic protein levels were significantly higher in patients with acute kidney injury (median 0.154 (inter-quartile range 0.059-0.31) ng/ml) compared to those without acute kidney injury (median 0.056 (inter-quartile range 0.001-0.125) ng/ml) (p = 0.043). After adjustment for age, weight, and The Society of Thoracic Surgeons-European Association for Cardio-Thoracic Surgery category,

each natural log increase in post-operative glial fibrillary acidic protein was significantly associated with a higher risk for subsequent acute kidney injury (adjusted odds ratio glial fibrillary acidic protein 1.25; 95% confidence interval 1.01-1.59). Pre/post-operative levels of galectin 3, soluble suppression of tumorgenicity 2, and N-terminal pro b-type natriuretic peptide did not significantly differ between patients with and without acute kidney injury.
CONCLUSION(S): Higher plasma glial fibrillary acidic protein levels measured in the immediate post-operative period were independently associated with subsequent acute kidney injury in children after cardiopulmonary bypass. Elevated glial fibrillary acidic protein likely reflects intraoperative brain injury which may occur in the context of acute kidney injury-associated end-organ dysfunction.
PMID
32223775 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32223775]
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Publisher
NLM (Medline)
Year of Publication
2020

878.

Short- and Long-term Outcomes of Kidney Transplants From Very Small (<=15 kg) Pediatric Donors With Acute Kidney Injury.
Troppmann C., Santhanakrishnan C., Fananapazir G., Sageshima J., Troppmann K.M., Perez R.V.
Embase
Transplantation. (no pagination), 2020. Date of Publication: 23 Mar 2020.
[Article]
AN: 631358771
BACKGROUND: Kidneys from small deceased pediatric donors with acute kidney injury (AKI) are commonly discarded owing to transplant centers' concerns regarding inferior short- and long-term posttransplant outcomes.
METHOD(S): We retrospectively analyzed our center's en bloc kidney transplants (EBK) performed 11/2007-01/2015 from donors <=15kg into adult recipients (>=18 years). We pair-matched grafts from 27 consecutive donors with AKI vs. 27 without AKI for donor weight, DCD status, and preservation time.
RESULT(S): For AKI vs. non-AKI donors, median weight was 7.5 vs. 7.1kg; terminal creatinine was 1.7 (range, 1.1-3.3) vs. 0.3mg/dL (0.1-0.9). Early graft loss rate from thrombosis or primary nonfunction was 11% for both groups. DGF rate was higher for AKI (52%) vs. non-AKI (15%) grafts (p=0.004). Median eGFR was lower for AKI recipients only at 1 and 3 months (p<0.03). Graft survival (death-censored) at 8 years was 78% for AKI vs. 77% for non-AKI grafts. Late

proteinuria rates for AKI vs. non-AKI recipients with >4 years follow-up were not significantly different.
CONCLUSION(S): Small pediatric donor AKI impacted early posttransplant kidney graft function but did not increase risk for early graft loss and decreased long-term function. The presently high nonutilization rates for en bloc kidney grafts from very small pediatric donors with AKI appear therefore unjustified. Based on the outcomes of the present study, we infer that the reluctance to transplant single kidneys from larger pediatric donors with AKI lacks a rational basis as well. Our findings warrant further prospective study and confirmation in larger study cohorts.
PMID
32217942 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32217942]
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Article-in-Press
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Publisher
NLM (Medline)
Year of Publication
2020

879.

Acute kidney injury in sick neonates: a comparative study of diagnostic criteria, assessment of risk factors and outcomes.
V H., Nesargi S.V., Prashantha Y.N., John M.A., Iyengar A.
Embase
The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians. (pp 1-7), 2020. Date of Publication: 22 Mar 2020.
[Article]
AN: 631309077
Introduction: Neonatal acute kidney injury (nAKI) poses unique challenges with diagnostic criteria specific to neonates evolving over time. Urine output (UOP) criterion has a special place in the diagnosis of nAKI although significant clarity on the ideal diagnostic threshold for UOP is not established. Risk factors peculiar to the tropical region for acute kidney injury (AKI) in neonates needs attention. It would be interesting to assess for kidney function in neonates who survived AKI during the dynamic phase of infancy.
Objective(s): To compare criteria of modified kidney disease improving global outcome (mKDIGO) and neonatal risk, injury, failure, loss, and end-stage criteria (nRIFLE) in diagnosing AKI in sick neonates; to study the risk factors for AKI and clinical outcomes at the end of neonatal ICU stay and during infancy.
Method(s): This prospective study was conducted at a tertiary neonatal ICU that screened and staged sick neonates by applying mKDIGO and nRIFLE criteria. Risk factors were assessed and glomerular filtration rate was calculated by cystatin C in survivors of nAKI for 12 months post conception age.
Result(s): nAKI was observed in 30% (49/163) of sick neonates. The mKDIGO (94%) detected a higher number of neonates with AKI compared to nRIFLE (49%). Based on only UOP, nRIFLE diagnosed a higher proportion of neonates with mild AKI compared to mKDIGO (29% versus 16%), respectively. Besides known risk factors, hypernatremic dehydration (18%) was an important risk factor for AKI. With 20% mortality, the risk of developing AKI was comparable using

either mKDIGO or nRIFLE diagnostic criteria. At the end of infancy, mean cystatin C eGFR of neonates was 101.3+/-29.2ml/1.73 m2/min.
Conclusion(s): In sick neonates, mKDIGO criteria performed better than nRIFLE in detecting AKI. However, the risk of mortality was comparable using either diagnostic criterion. Hypernatremic dehydration was an important risk factor for AKI and renal function of neonates following complete recovery of AKI was normal at the end of infancy.
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Article-in-Press
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Publisher
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880.

Incidence and Outcome of Community-Acquired Acute Kidney Injury in Pediatric Patients Seen at an Emergency Department: A Retrospective Cohort Study.
Safdar O., Alaydarous S.A., Arafsha Y., Arafsha L., Almaimani N., Bahomeed R., Al Beiruty M., Norah A., Kari J.A., Shalaby M.
Embase
Pediatric emergency care. (no pagination), 2020. Date of Publication: 28 Feb 2020.
[Article]
AN: 631130219
OBJECTIVES: Acute kidney injury (AKI) has significant morbidity and mortality rates among young patients. This study aimed to determine the incidence and outcome of community-acquired AKI among pediatric patients seen in the emergency department of King Abdulaziz University Hospital for more than 3 years.
METHOD(S): This retrospective study reviewed electronic medical records for all pediatric patients aged 1 month to 18 years who visited the emergency department of King Abdulaziz University Hospital from January 1, 2015, until December 31, 2017. Acute kidney injury was diagnosed and classified according to the Kidney Disease: Improving Global Outcomes criteria.
RESULT(S): Of 6038 patients, 1581 were included. Acute kidney injury occurred in 135 patients (8.5%), of which 77 (57%) were in stage 1, 42 (31.1%) were in stage 2, and 16 (11.9%) were in stage 3. Mortality was higher in the AKI group (4.4%) than in the non-AKI group (0.2%; P < 0.01). On long-term observation, 14.8% did not return for follow-up, 58.5% of survivors recovered completely, and 22.2% progressed to chronic kidney disease. The most affected age group was 1 month to 2 years (26%). Common admission causes were chemotherapy-induced AKI (31.9%) and pneumonia (10.4%). There was a significant inverse relationship between AKI and age group (P < 0.001) and a positive association between AKI and death (P < 0.001). However, no association was found between AKI stages and outcomes.
CONCLUSION(S): Community-acquired AKI remains a common condition affecting the pediatric population. It is associated with a higher mortality rate. Infants were more susceptible to AKI, and a significant number of patients with AKI progressed to chronic kidney disease.
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Publisher
NLM (Medline)
Year of Publication
2020

881.

Bilateral Ureteropelvic Junction Disruptions in a 17-Year-Old with Bilateral Ureteral Duplications: Impact of Unrecognized Duplications and Unique Management of Nephrocutaneous Fistula.
Schlomer B.J., Secrest C.L.
Embase
Urology. (no pagination), 2020. Date of Publication: 17 Jan 2020.
[Article]
AN: 630671353
A case of bilateral ureteropelvic junction (UPJ) disruptions in a patient with bilateral duplication anomalies is presented. A UPJ disruption with a duplication anomaly has not been reported let alone bilateral duplication anomalies. The unrecognized duplication anomalies led to isolated and obstructed upper pole segments that were managed by bilateral heminephrectomies. A nephrocutaneous fistula developed after one of the heminephrectomies that was successfully managed using a method of percutaneous fulguration and fibrin sealant. In UPJ disruption cases, the possibility of a duplicated collecting system should be considered as an unrecognized duplication may complicate management and prolong recovery.

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882.

Septic arthritis and acute kidney injury: questions.
Becerir T., Yilmaz N., Girisgen I., Yalcin N., Yuksel S.
Embase
Pediatric nephrology (Berlin, Germany). (no pagination), 2020. Date of Publication: 02 Jan 2020.
[Article]
AN: 630507466

PMID
31897712 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31897712]
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883.

Assessment of the Independent and Synergistic Effects of Fluid Overload and Acute Kidney Injury on Outcomes of Critically Ill Children.
Gist K.M., Selewski D.T., Brinton J., Menon S., Goldstein S.L., Basu R.K.
Embase
Pediatric Critical Care Medicine. 21(2) (pp 170-177), 2020. Date of Publication: 01 Feb 2020. [Article]
AN: 631606445
Objectives: Evaluate the independent and synergistic associations of fluid overload and acute kidney injury with outcome in critically ill pediatric patients.
Design(s): Secondary analysis of the Acute Kidney Injury in Children Expected by Renal Angina and Urinary Biomarkers (NCT01735162) prospective observational study.
Setting(s): Single-center quaternary level PICU.
Patient(s): One-hundred forty-nine children 3 months to 25 years old with predicted PICU length of stay greater than 48 hours, and an indwelling urinary catheter enrolled (September 2012 to March 2014). Acute kidney injury (defined by creatinine or urine output on day 3) and fluid overload (>= 20% on day 3) were used as outcome variables and risk factors for ICU endpoints assessed at 28 days.
Intervention(s): None.
Measurements and Main Results: Acute kidney injury and fluid overload occurred in 19.4% and 24.2% respectively. Both acute kidney injury and fluid overload were associated with longer ICU length of stay but neither maintained significance after multivariate regression. Delineation into unique fluid overload/acute kidney injury classifications demonstrated that fluid overload+patients experienced a longer ICU and hospital length of stay and higher rate of mortality compared with fluid overload-patients, regardless of acute kidney injury status. Fluid overload+/acute kidney injury-patients had increased odds of death (p = 0.013). After correction for severity of illness, ICU length of stay remained significantly longer in fluid overload+/acute kidney injury+patients compared with patients without both classifications (17.4; 95% CI, 11.0-23.7 vs 8.8; 95% CI, 7.3-10.9; p = 0.05). Correction of acute kidney injury classification for net fluid balance led to acute kidney injury class switching in 29 patients and strengthened the association with increased mechanical ventilation and ICU length of stay on bivariate analysis, but reduced the increased risk conferred by fluid overload for mortality.
Conclusion(s): The current study suggests the effects of significant fluid accumulation may be delineable from the effects of acute kidney injury. Concurrent fluid overload and acute kidney injury significantly worsen outcome. Correction of acute kidney injury assessment for net fluid balance may refine diagnosis and unmask acute kidney injury associated with deleterious

downstream sequelae. The unique effects of fluid overload and acute kidney injury on outcome in critically ill patients warrant further study.

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Publisher
Lippincott Williams and Wilkins
Year of Publication
2020

884.

Population-Based Epidemiology and Outcomes of Acute Kidney Injury in Critically Ill Children.
Alobaidi R., Morgan C., Goldstein S.L., Bagshaw S.M.
Embase
Pediatric Critical Care Medicine. 21(1) (pp 82-91), 2020. Date of Publication: 01 Jan 2020.
[Article]
AN: 631607091
Objectives: We describe the epidemiology, characteristics, risk factors, and incremental risks associated with acute kidney injury in critically ill children at a population-level.
Design(s): Population-based retrospective cohort study.
Setting(s): PICUs in Alberta, Canada.
Patient(s): All children admitted to PICUs in Alberta, Canada between January 1, 2015, and December 31, 2015.
Intervention(s): None.
Measurements and Main Results: A total of 1,017 patients were included. Acute kidney injury developed in 308 patients (30.3%; 95% CI, 28.1-33.8%) and severe acute kidney injury (Kidney Disease: Improving Global Outcomes stage 2 and 3) developed in 124 patients (12.2%; 95% CI, 10.3-14.4%). Incidence rates for critical illness-associated acute kidney injury and severe acute kidney injury were 34 (95% CI, 30.3-38.0) and 14 (95% CI, 11.38-16.38) per 100,000 children-year, respectively. Severe acute kidney injury incidence rates were greater in males (incidence rate ratio, 1.55; 95% CI, 1.08-2.33) and infants younger than 1 year old (incidence rate ratio, 14.77; 95% CI, 10.36-21.07). Thirty-two patients (3.1%) did not survive to PICU discharge. The acute kidney injury-associated PICU mortality rate was 2.3 (95% CI, 1.4-3.5) per 100,000 children-year. In multivariate analysis, severe acute kidney injury was associated with greater PICU mortality (odds ratio, 11.93; 95% CI, 4.68-30.42) and 1-year mortality (odds ratio, 5.50; 95%

CI, 2.76-10.96). Severe acute kidney injury was further associated with greater duration of mechanical ventilation, duration of vasoactive support, and lengths of PICU and hospital stay. Conclusion(s): The population-level burden of acute kidney injury and its attributable risks are considerable among critically ill children. These findings emphasize the need for enhanced surveillance for acute kidney injury, identification of modifiable risks, and evaluation of interventional strategies.

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Publisher
Lippincott Williams and Wilkins
Year of Publication
2020

885.

Accuracy of Urine Kidney Injury Molecule-1 in Predicting Acute Kidney Injury in Children; a Systematic Review and Meta-Analysis.
Fazel M., Sarveazad A., Ali K.M., Yousefifard M., Hosseini M.
Embase
Archives of Academic Emergency Medicine. 8(1) (pp e44), 2020. Date of Publication: January 2020.
[Article]
AN: 2010586149
There is considerable controversy on the accuracy of Kidney Injury Molecule-1 (KIM-1) in prediction of acute kidney injury (AKI) in children. Therefore, the present study intends to provide a systematic review and meta-analysis of the value of this biomarker in predicting AKI in children. Method(s): An extensive search was performed on the Medline, Embase, Scopus and Web of Science databases by the end of 2019. Cohort and case-control studies on children were included. Urinary KIM-1 levels were compared between AKI and non-AKI groups. Findings were reported as an overall standardized mean difference (SMD) with a 95% confidence interval (CI). Also, the overall area under the receiver operating characteristic (ROC) curve (AUC) of KIM-1 in predicting AKI in children was calculated.
Result(s): Data from 13 articles were included. Urinary KIM-1 levels in children with stage 1 AKI were higher than the non-AKI group only when assessed within the first 12 hours after admission (SMD = 0.95; 95% CI: 0.07 to 1.84; p = 0.034). However, urinary KIM-1 levels in children with stage 2-3 AKI were significantly higher than non-AKI children (p <0.01) at all times. The AUC of urinary KIM-1 in predicting AKI in children was 0.69 (95% CI: 0.62 to 0.77).
Conclusion(s): Based on the available evidence, KIM-1 seems to have moderate value in predicting AKI in children. Since previous meta-analyses have provided other urinary and serum

biomarkers that have better discriminatory accuracy than KIM-1, so it had better not to use KIM-1 in predicting AKI in children

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Embase
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Publisher
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Year of Publication
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886.

Discriminatory Precision of Renal Angina Index in Predicting Acute Kidney Injury in Children; a Systematic Review and Meta-Analysis.
Abbasi A., Rabori P.M., Farajollahi R., Ali K.M., Ataei N., Yousefifard M., Hosseini M.
Embase
Archives of Academic Emergency Medicine. 8(1) (pp e39), 2020. Date of Publication: January 2020.
[Article]
AN: 2010586148
There is still controversy over the value of renal angina index (RAI) in predicting acute renal failure (AKI) in children. Therefore, the present study aims to provide evidence by conducting a systematic review and meta-analysis on the value of RAI in this regard.
Method(s): An extensive search of Medline, Embase, Scopus and Web of Science databases was conducted by the end of January 2020 using words related to RAI and AKI. Two independent reviewers screened and summarized the related studies. Data were analysed using STATA 14.0 statistical program and discriminatory precision of RAI was assessed.
Result(s): Data from 11 studies were included. These studies included data from 3701 children (60.41% boys). There were 752 children with AKI and 2949 non-AKI children. Pooled analysis showed that the area under the ROC curve of RAI in prediction of AKI was 0.88 [95% confidence interval (CI): 0.85 to 0.91]. Sensitivity and specificity of this tool in predicting AKI were 0.85%

(95% CI: 0.74% to 0.92%) and 0.79% (95% CI: 0.69% to 0.89%), respectively. The diagnostic odds ratio of RAI was 20.40 (95% CI: 9.62 to 43.25).
Conclusion(s): The findings of the present meta-analysis showed that RAI is a reliable tool in predicting AKI in children.

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Year of Publication
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887.

Frequency and risk factors of acute kidney injury during diabetic ketoacidosis in children and association with neurocognitive outcomes.
Quayle K.S., Kuppermann N., Glaser N.S., Ghetti S., Tzimenatos L., Perry C.S., Marcin J.P., Schunk J.E., Murray M., Henricksen J., Poss B., Olsen C.S., Charles Casper T., Michael Dean J., Stoner M.J., Bonsu B., Maa T., Indyk J., Rewers A., Rewers M., Mourani P., McManemy J.K., Kushner J.A., Loftis L.L., Myers S.R., Goyal M., Mistry R., Srinivasan V., Palladino A., Hawkes C., Nigrovic L.E., Wolfsdorf J.I., Agus M.S., Garro A., Snelling L., Boney C., Brown K.M., Cogen F.R., Basu S., White N.H., Kolovos N.S., Trainor J.L., Zimmerman D., Goodman D., DePiero A.D., Bennett J.E., Doyle D.A., Frizzola M.A., Kwok M.Y., Baird S., Schnadower D.
Embase
JAMA Network Open. 3(12) (no pagination), 2020. Article Number: e20225481. Date of Publication: 02 Dec 2020.
[Article]
AN: 633687706
IMPORTANCE Acute kidney injury (AKI) occurs commonly during diabetic ketoacidosis (DKA) in children, but the underlying mechanisms and associations are unclear. OBJECTIVE To investigate risk factors for AKI and its association with neurocognitive outcomes in pediatric DKA. DESIGN, SETTING, AND PARTICIPANTS This cohort study was a secondary analysis of data from the Pediatric Emergency Care Applied Research Network Fluid Therapies Under

Investigation in DKA Study, a prospective, multicenter, randomized clinical trial comparing fluid protocols for pediatric DKA in 13 US hospitals. Included DKA episodes occurred among children age younger than 18 years with blood glucose 300 mg/dL or greater and venous pH less than 7.25 or serum bicarbonate level less than 15 mEq/L. EXPOSURES DKA requiring intravenous insulin therapy. MAIN OUTCOMES AND MEASURES AKI occurrence and stage were assessed using serum creatinine measurements using Kidney Disease: Improving Global Outcomes criteria. DKA episodes with and without AKI were compared using univariable and multivariable methods, exploring associated factors. RESULTS Among 1359 DKA episodes (mean [SD] patient age, 11.6 [4.1] years; 727 [53.5%] girls; 651 patients [47.9%] with new-onset diabetes), AKI occurred in 584 episodes (43%; 95% CI, 40%-46%). A total of 252 AKI events (43%; 95% CI, 39%-47%) were stage 2 or 3. Multivariable analyses identified older age (adjusted odds ratio [AOR] per 1 year, 1.05; 95% CI, 1.00-1.09; P =.03), higher initial serum urea nitrogen (AOR per 1 mg/dL increase, 1.14; 95% CI, 1.11-1.18; P <.001), higher heart rate (AOR for 1-SD increase in z-score, 1.20; 95% CI, 1.09-1.32; P <.001), higher glucose-corrected sodium (AOR per 1 mEq/L increase, 1.03; 95% CI, 1.00-1.06; P =.001) and glucose concentrations (AOR per 100 mg/dL increase, 1.19; 95% CI, 1.07-1.32; P =.001), and lower pH (AOR per 0.1 increase, 0.63; 95% CI, 0.51-0.78; P <.001) as variables associated with AKI. Children with AKI, compared with those without, had lower scores on tests of short-term memory during DKA (mean [SD] digit span recall: 6.8 [2.4] vs 7.6 [2.2]; P =.02) and lower mean (SD) IQ scores 3 to 6 months after recovery from DKA (100.0 [12.2] vs 103.5 [13.2]; P =.005). Differences persisted after adjusting for DKA severity and demographic factors, including socioeconomic status. CONCLUSIONS AND RELEVANCE These findings suggest that AKI may occur more frequently in children with greater acidosis and circulatory volume depletion during DKA and may be part of a pattern of multiple organ injury involving the kidneys and brain.

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888.

Endothelial Activation, Acute Kidney Injury, and Cognitive Impairment in Pediatric Severe Malaria.
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Embase
Critical Care Medicine. 48(9) (pp E734-E743), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 632926532
Objectives: Evaluate the relationship between endothelial activation, malaria complications, and long-term cognitive outcomes in severe malaria survivors.
Design(s): Prospectively cohort study of children with cerebral malaria, severe malarial anemia, or community children.
Setting(s): Mulago National Referral Hospital in Kampala, Uganda. Subjects: Children 18 months to 12 years old with severe malaria (cerebral malaria, n = 253 or severe malarial anemia, n = 211) or community children (n = 206) were followed for 24 months.
Intervention(s): None.
Measurements and Main Results: Children underwent neurocognitive evaluation at enrollment (community children) or a week following hospital discharge (severe malaria) and 6, 12, and 24 months follow-up. Endothelial activation was assessed at admission on plasma samples (von Willebrand factor, angiopoietin-1 and angiopoietin-2, soluble intercellular adhesion molecule-1, soluble vascular cell adhesion molecule-1, soluble E-Selectin, and P-Selectin). False discovery rate was used to adjust for multiple comparisons. Severe malaria was associated with widespread endothelial activation compared with community children ($p < 0.0001$ for all markers). Acute kidney injury was independently associated with changes in von Willebrand factor, soluble intercellular adhesion molecule-1, soluble E-Selectin, P-Selectin, and angiopoietin-2 ($p < 0.0001$ for all). A log10 increase in angiopoietin-2 was associated with lower cognitive z scores across age groups (children < 5, beta-0.42, 95% CI,-0.69 to-0.15, $p = 0.002$; children >= 5, beta-0.39, 95% CI,-0.67 to-0.11, $p = 0.007$) independent of disease severity (coma, number of seizures, acute kidney injury) and sociodemographic factors. Angiopoietin-2 was associated with hemolysis (lactate dehydrogenase, total bilirubin) and inflammation (tumor necrosis factor-alpha, interleukin-10). In children with cerebral malaria who had a lumbar puncture performed, angiopoietin-2 was associated with blood-brain barrier dysfunction, and markers of neuroinflammation and injury in the cerebrospinal fluid (tumor necrosis factor-alpha, kynurenic acid, tau).
Conclusion(s): These data support angiopoietin-2 as a measure of disease severity and a risk factor for long-term cognitive injury in children with severe malaria.

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In-Process
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(Kain) Department Of Medicine, University Of Toronto, University Health Network, Toronto, ON, Canada
Publisher
Lippincott Williams and Wilkins
Year of Publication
2020

889.

Acute Kidney Injury Guidelines Are Associated With Improved Recognition and Follow-up for Neonatal Patients.
Vincent K., Murphy H.J., Ross J.R., Twombley K.E.
Embase
Advances in neonatal care : official journal of the National Association of Neonatal Nurses. 20(4) (pp 269-275), 2020. Date of Publication: 01 Aug 2020.
[Article]
AN: 629466800
BACKGROUND: Studies demonstrate that neonatal acute kidney injury (AKI) is associated with increased morbidity and mortality. Acute kidney injury survivors are at risk for renal dysfunction and chronic kidney disease and require long-term follow-up. PURPOSE: To maximize identification of AKI and ensure referral, we created guidelines for diagnosis, evaluation, and management of AKI. METHODS/SEARCH STRATEGY: Retrospective cohort study of neonatal intensive care unit patients treated before guideline implementation (cohort 1; n = 175) and after (cohort 2; n = 52). Outcome measures included AKI incidence, documented diagnosis, and pediatric nephrology consultation. Statistical methods included t tests, Fisher exact tests, and Wilcoxon rank sum tests. FINDINGS/RESULTS: We found 68 AKI episodes in 52 patients in cohort 1 and 15 episodes in 12 patients in cohort 2. Diagnosis and documentation of AKI improved after guideline implementation (C1:24/68 [35%], C2: 12/15 [80%]; P = .003) as did pediatric nephrology consultation (C1:12/68 [18%]; C2: 12/15 [80%]; P < .001) and outpatient referral (C1: 3/47 [6%], C2:5/8 [63%]; P < .01). IMPLICATIONS FOR PRACTICE: Neonatal AKI guideline implementation was associated with improvements in recognition, diagnosis, and inpatient and outpatient nephrology consultation. Early recognition and diagnosis along with specialist referral may improve outcomes among neonatal AKI survivors, ensuring appropriate future monitoring and long-term follow-up. IMPLICATIONS FOR RESEARCH: Future research should continue to determine the long-term implications of early diagnosis of AKI and appropriate subspecialty care with follow-up.
PMID
31567184 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31567184]
Institution
(Vincent) Department of Pediatrics, Division of Neonatology and Division of Pediatric Nephrology, Medical University of South Carolina, Charleston, United States
Publisher
NLM (Medline)
Year of Publication
2020

890.

Early discharge in selected patients with low-grade renal trauma.
Freton L., Scailteux L.-M., Hutin M., Olivier J., Langouet Q., Ruggiero M., Dominique I., Millet C., Bergerat S., Panayatopoulos P., Betari R., Matillon X., Chebbi A., Caes T., Patard P.-M., Szabla N., Brichart N., Boehm A., Sabourin L., Guleryuz K., Dariane C., Lebacle C., Rizk J., Gryn A., Madec F.-X., Nouhaud F.-X., Rod X., Oger E., Fiard G., Bensalah K., Pradere B., Peyronnet B.
Embase
World journal of urology. 38(4) (pp 1009-1015), 2020. Date of Publication: 01 Apr 2020.
[Article]
AN: 628542849
INTRODUCTION: The aim of this study was to assess whether early discharge could be non-inferior to inpatient management in selected patients with low-grade renal trauma (AAST grades 1-3). MATERIALS AND METHODS: A retrospective national multicenter study was conducted including all patients who presented with renal trauma at 17 hospitals between 2005 and 2015. Exclusion criteria were iatrogenic and AAST grades 4 and 5 trauma, non-conservative initial management, Hb <10 g/dl or transfusion within the first 24 h, and patients with concomitant injuries. Patients were divided into two groups according to the length of hospital stay: <=48 h (early discharge), and >48 h (inpatient). The primary outcome was "Intervention" defined as any interventional procedure needed within the first 30 days. A Stabilized Inverse Probability of Treatment Weighting (SIPTW) propensity score based binary response model was used to estimate risk difference.
RESULT(S): Out of 1764 patients with renal trauma, 311 were included in the analysis (44 in the early discharge and 267 in the inpatient group). In the early discharge group, only one patient required an intervention within the first 30 days vs. 10 in the inpatient group (3.7% vs. 5.2%; p=0.99). Adjusted analysis using SIPTW propensity score showed a risk difference of -2.8% [-9.3% to +3.7%] of "interventions" between the two groups meeting the non-inferiority criteria.
CONCLUSION(S): In a highly selected cohort, early discharge management of low-grade renal trauma was not associated with an increased risk of early "intervention" compared to inpatient management. Further prospective randomized controlled trials are needed to confirm these findings.
PMID
31254097 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31254097]
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Publisher
NLM (Medline)
Year of Publication
2020

891.

Validation of acute kidney injury prediction scores in critically ill patients.
Zahran A.M., Fathy Y.I., Salama A.E., Alebsawi M.E.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 31(6) (pp 1273-1280), 2020. Date of Publication: 01 Nov 2020.
[Article]
AN: 634259937
Prediction of acute kidney injury (AKI) in critically ill patients allows prompt intervention that improves outcome. We aimed for external validation of two AKI prediction scores that can be bedside calculated. A prospective observational study included patients admitted to medical and surgical critical care units. Performance of two AKI prediction scores, Malhotra score and acute kidney injury prediction score (APS), was assessed for their ability to predict AKI. The best cutoff point for each score was determined by Youden index. Area under the receiving operation characteristic curve, sensitivity, specificity, positive predictive value, negative predictive value, and accuracy were used to assess performance of each score. Univariate and multivariate regression analyses were done to detect the predictability of AKI. Goodness-of-fit and kappa Cohen agreement tests were done to show whether the expected score results fit well and agree with the observed results. AKI prevalence was 37.6%. The best cutoff values were 5 and 4 for Malhotra score and APS, respectively. Area under the curve for Malhotra 5 was 0.712 and for APS 4 was 0.652 with nearly similar sensitivity and specificity. Regression analysis demonstrated that Malhotra 5 was the independent predictor of AKI. Goodness-of-fit test showed significant results denoting lack of fit between the scores and the actual results. Kappa test showed moderate agreement for Malhotra 5 and fair agreement for APS 4. Both scores showed moderate performance for AKI prediction. Malhotra 5 showed better performance compared to APS 4. Multicenter international study is warranted to develop a universal model that can predict AKI in critically ill patients.
PMID
33565439 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33565439]
Institution
(Zahran) Department of Internal Medicine, Nephrology Unit, Faculty of Medicine, Menoufia University, Egypt (Fathy, Salama, Alebsawi) Department of Critical Care, Faculty of Medicine, Menoufia University, Egypt
Publisher
NLM (Medline)
Year of Publication
2020

892.

Acute Kidney Injuries in Children with Severe Malaria: A comparative study of diagnostic criteria based on serum cystatin C and creatinine levels.
Afolayan F.M., Adedoyin O.T., Abdulkadir M.B., Ibrahim O.R., Biliaminu S.A., Mokuolu O.A., Ojuawo A.
Embase
Sultan Qaboos University medical journal. 20(4) (pp e312-e317), 2020. Date of Publication: 01 Nov 2020.
[Article]
AN: 634073728
Objectives: Serum creatinine levels are often used to diagnose acute kidney injury (AKI), but may not necessarily accurately reflect changes in glomerular filtration rate (GFR). This study aimed to compare the prevalence of AKI in children with severe malaria using diagnostic criteria based on creatinine values in contrast to cystatin C.
Method(s): This prospective cross-sectional study was performed between June 2016 and May 2017 at the University of Ilorin Teaching Hospital, Ilorin, Nigeria. A total of 170 children aged 0.5-14 years old with severe malaria were included. Serum cystatin C levels were determined using a particle-enhanced immunoturbidmetric assay method, while creatinine levels were measured using the Jaffe reaction. Renal function assessed using cystatin C-derived estimated GFR (eGFR) was compared to that measured using three sets of criteria based on creatinine values including the Kidney Disease: Improved Global Outcomes (KDIGO) and World Health Organization (WHO) criteria as well as an absolute creatinine cut-off value of >1.5 mg/dL.
Result(s): Mean serum cystatin C and creatinine levels were 1.77 +/- 1.37 mg/L and 1.23 +/- 1.80 mg/dL, respectively (P = 0.002). According to the KDIGO, WHO and absolute creatinine criteria, the frequency of AKI was 32.4%, 7.6% and 16.5%, respectively. In contrast, the incidence of AKI based on cystatin C-derived eGFR was 51.8%. Overall, the rate of detection of AKI was significantly higher using cystatin C compared to the KDIGO, WHO and absolute creatinine criteria (P = 0.003, <0.001 and <0.001, respectively).
Conclusion(s): Diagnostic criteria for AKI based on creatinine values may not indicate the actual burden of disease in children with severe malaria.

PMID
33414935 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33414935]
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Publisher
NLM (Medline)
Year of Publication
2020

893.

Clinical predictors of immediate intervention for isolated renal trauma.
Lucas J., Barlotta R., Brennan M., Leung P., Patel A.S., Uzzo R.G., Simhan J.
Embase

The Canadian journal of urology. 27(6) (pp 10456-10460), 2020. Date of Publication: 01 Dec 2020.
[Article]
AN: 633818689
INTRODUCTION Evidence suggests overutilization of procedural intervention for renal traumas. The objective of this study was to assess clinical factors associated with procedural intervention for patients presenting to the emergency department (ED) with isolated renal trauma.
MATERIALS AND METHODS: A United States statewide trauma registry was queried for trauma patients presenting to level I or II trauma centers with isolated renal injuries (Grades I-V) from 2000-2013. Patient demographics, mechanism, American Association for the Surgery of Trauma (AAST) grade, trauma center level designation, presenting ED vital signs, Glasgow Coma Scale (GCS), intubation status, and blood product transfusion were assessed.
RESULT(S): Of 449,422 patients, 1383 patients (78% male, median age 29 years [range 2-92]) with isolated renal injuries had data available for analysis. Controlling for demographics, presenting vitals, GCS, trauma center level, mechanism and intubation status, level I status (OR 2.1 [1.3-3.4], p = 0.0021), white race (OR 2.5 [1.3-4.7], p < 0.005), AAST IV/V injury (OR 4.79 [3.1-6.5], p < 0.0001) and blood product administration (OR 2.7 [1.5-4.9], p = 0.0009) were independently associated with an immediate interventional radiology procedure. Independent predictors of immediate surgical intervention include level I status (OR 2.2 [1.2-4.0], p = 0.0075), penetrating mechanism of injury (OR 15.6 [8.4-28.9], p < 0.0001, AAST IV/V injury (OR 13.6 [8.7-21.1], p < 0.0001), and clinical hypotension (SBP < 95 mmHg, OR 2.1 [1.1 4.2], p = 0.03).
CONCVLUSION: Level 1 trauma center designation, white race, penetrating mechanism of injury, high-grade injury, transfusion of blood products, and hypotension were all independent predictors of immediate procedural intervention following ED presentation with isolated renal trauma.
PMID
33325348 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33325348]
Institution
(Lucas) Department of Urology, Einstein Healthcare Network/Fox Chase Cancer Center, Philadelphia, PA, United States
Publisher
NLM (Medline)
Year of Publication
2020

894.

Acute Kidney Injury in Hospitalized Pediatric Patients: A Review of Research.
Sexton E.M., Fadrowski J.J., Pandian V., Sloand E., Brown K.M.
Embase
Journal of pediatric health care : official publication of National Association of Pediatric Nurse Associates & Practitioners. 34(2) (pp 145-160), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 630202704
INTRODUCTION: Pediatric patients who develop acute kidney injury (AKI) while hospitalized have longer hospital stays, increased morbidity and mortality, and are at an increased risk for developing chronic kidney disease. Early recognition of AKI is becoming a major clinical focus. There is little research focusing on nursing interventions that may affect a pediatric patient's risk for developing AKI. The purpose of this review is to summarize reported predictors of AKI to improve its early recognition and treatment among hospitalized pediatric patients.
METHOD(S): A review of research was conducted to further identify risk factors of AKI among noncritically ill hospitalized pediatric patients.

RESULT(S): The current literature demonstrated inconsistent findings in early recognition of AKI among hospitalized pediatric patients. DISCUSSION: Interventions for early recognition and treatment of AKI should consider other variables, such as previous history of AKI and fluid status as risk factors, warranting additional research.

PMID
31836355 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31836355]
Publisher
NLM (Medline)
Year of Publication
2020

895.

The changing face of pregnancy-related acute kidney injury from eastern part of India: A hospital-based, prospective, observational study.
Saini S., Chaudhury A.R., Divyaveer S., Maurya P., Sircar D., Dasgupta S., Sen D., Bandyopadhyay S., Pandey R.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 31(2) (pp 493-502), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 631737359
This study was initiated to look into the etiologies, prevalence, and outcome of pregnancy-related acute kidney injury (PRAKI) in a tertiary care hospital. Women admitted with PRAKI from January 2015 to December 2016 were included in the study. All patients were investigated and treated and followed up for the next six months.. For statistical analysis, Chi- square test and analysis of variance were performed to analyze the data. Multivariate analysis was applied to compare the risk of nonrecovery of renal function in different etiologies of PRAKI. During the study period, 81 patients were admitted with PRAKI, of whom 68 (84%) received hemodialysis (HD). A total of 449 patients including all cases of AKI underwent HD from January 2015 to June 2016. The incidence of dialysis requiring PRAKI was 68 out of the 449 patients (15%). Sixty-eight (84%) patients required dialysis support while the most common cause was sepsis (49%), with the second being pregnancy-associated atypical hemolytic-uremic syndrome (P-aHUS) (17%) followed by obstetric hemorrhages (16%). There was a significant reduction of first-trimester AKI (8.6%) compared to a previous study published from this institute (19.3%). The maternal mortality (25%) and fetal mortality (23.5%) were high. Nearly 39% of the patients had complete recovery of renal function. This study revealed significant PRAKI burden due to a largely preventable cause, puerperal sepsis. Renal survival was poor in P- aHUS. The gaps in the obstetric care may be identified for the improvement of fetomaternal outcome.
PMID
32394923 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32394923]
Institution
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(Bandyopadhyay) Department of Obstetrics and Gynaecology, Institute of Post-Graduate Medical Education and Research and Seth Sukhlal Karnani Memorial Hospital, Kolkata, West Bengal, India

Publisher
NLM (Medline)
Year of Publication
2020

896.

Acute kidney injury in dengue among hospitalized children: A prospective view.
Poddar S., Sharma S., Kaur C., Chellani H.K.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 31(2) (pp 407-414), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 631736951
Dengue viral infection (DVI) has emerged as one of the most common arthropod borne diseases and is more prevalent in the tropical countries. It has varied clinical spectrum ranging from undifferentiated fever to severe hemorrhagic fever and shock with multi-organ dysfunction. Acute kidney injury (AKI) is lesser known complication in DVI. Although studies report varying reports of AKI in DVI among children, exact incidence is not known as most of the studies are retrospective. Hospital-based observational study in 105 children with DVI requiring admission was studied for the occurrence of AKI along with clinical course and outcome. AKI Network (AKIN) criteria were used to define AKI. The IBM SPSS Statistics software version 21.0 was used for the statistical analysis. Of 105 children with dengue, six (5.71%) cases developed AKI. All six cases had urine output <0.5 mL/kg/h for >=12 h. Out of six cases with AKI, four had raised serum creatinine (SCr) >=0.3 mg/dL at admission. One child had normal SCr level at admission which got deranged over the next 12 h, one child had oliguria (<0.5 mL/kg/h) for about 24 h though the renal function was not deranged. Out of six children with AKI, three (50%) in Stage III and three had AKI Stage II as per the AKIN criteria. Children with AKI (Group A) differed significantly from those without AKI (Group B) in having blood pressure <3rd centile (P = 0.0023), tachycardia P = 0.008), hyponatremia and hypokalemia (P <0.001 and P = 0.029, respectively) and poor outcome 6% mortality in Group B compared to 66.67% in Group A) with P = 0.001. AKI is not a common complication of DVI but if develops it may lead to significant morbidity and mortality among pediatric age group.
PMID
32394913 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32394913]
Institution
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Publisher
NLM (Medline)
Year of Publication
2020

897.

Augmented transcripts of kidney injury markers and renin angiotensin system in urine samples of overweight young adults.
Rivera P., Miranda C., Roldan N., Guerrero A., Olave J., Cardenas P., Nguyen Q.M., Kassan M., Gonzalez A.A.
Embase
Scientific reports. 10(1) (pp 21154), 2020. Date of Publication: 03 Dec 2020.
[Article]
AN: 633597886
Obesity has been firmly established as a major risk factor for common disease states including hypertension, type 2 diabetes mellitus, and chronic kidney disease. Increased body mass index (BMI) contributes to the activation of both the systemic and intra-tubular renin angiotensin systems (RAS), which are in turn associated with increased blood pressure (BP) and kidney damage. In this cross-sectional study, 43 subjects of normal or increased body weight were examined in order to determine the correlation of BMI or body fat mass (BFM) with blood pressure, fasting blood glucose (FBG), and urinary kidney injury markers such as interleukin-18 (IL-18), connective tissue growth factor (CTGF), neutrophil gelatinase-associated lipocalin, and kidney injury molecule-1 (KIM-1). Our results showed that: (1) subjects with increased body weight showed significantly higher BP, BFM, total body water and metabolic age; (2) BMI was positively correlated to both systolic (R2=0.1384, P=0.01) and diastolic BP (R2=0.2437, P=0.0008); (3) BFM was positively correlated to DBP (R2=0.1232, P=0.02) and partially correlated to urine protein (R2=0.047, P=0.12) and FBG (R2=0.07, P=0.06); (4) overweight young adults had higher urinary mRNA levels of renin, angiotensinogen, IL-18 and CTGF. These suggest that BMI directly affects BP, kidney injury markers, and the activation of the intra-tubular RAS even in normotensive young adults. Given that BMI measurements and urine analyses are non-invasive, our findings may pave the way to developing a new and simple method of screening for the risk of chronic kidney disease in adults.
PMID
33273645 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33273645]
Institution
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Publisher
NLM (Medline)
Year of Publication
2020

898.

Acute kidney injury in pediatric patients with malaria: A prospective cross-sectional study in the shai-osudoku district of Ghana.
D Ephraim R.K., Adoba P., Sakyi S.A., Aporeigah J., Fondjo L.A., Botchway F.A., Storph R.P., Toboh E.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 31(1) (pp 235-244), 2020. Date of Publication: 01 Jan 2020.
[Article]
AN: 631155655

Acute kidney injury (AKI) is a highly fatal complication of malaria. We used the Kidney Disease Improving Global Outcomes (KDIGO) and Pediatric Risk, Injury, Failure, Loss, End-Stage Kidney Disease (pRIFLE) guidelines to assess AKI among children. One hundred children with Plasmodium falciparum malaria were recruited from the St. Andrew's Catholic Hospital. Admission and 48-h serum creatinine were estimated. Weight and height of the participants were measured, and AKI status determined with the KDIGO and pRIFLE guidelines. A questionnaire was used to collect the socio-demographic and clinical data of participants. Two percent and 5% of the participants had AKI according to the KDIGO and pRIFLE criteria, respectively. Per the KDIGO guidelines, 1% of the participants had Stage 2 and 1% also had Stage 3 AKI. Four percent had Stage 1 (risk) and 1% had Stage 2 (injury) AKI per the pRIFLE criteria. Participants with AKI were dehydrated, and neither had sepsis or on antibiotics when the KDIGO guideline was used. Participants who had AKI were dehydrated, with 80% having sepsis and 40% on antibiotics when the pRIFLE criteria were used. There was no association between the KDIGO and pRIFLE criteria with respect to AKI status of participants (k = -0.029, P = 0.743). Two percent and 5% of the study participants had AKI when the KDIGO and pRIFLE guidelines were used respectively. One percent of the participants had Stage 2 and 1% also had Stage 3 AKI per KDIGO; 4% had Stage 1 (risk) and 1% had Stage 2 (injury) AKI per the pRIFLE.
PMID
32129218 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32129218]
Institution
(D Ephraim, Adoba, Aporeigah, Storph) Department of Medical Laboratory Science, School of Allied Health Sciences, University of Cape Coast, Cape Coast, Ghana (Sakyi, Fondjo) Department of Molecular Medicine, School Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
(Botchway) Department of Chemical Pathology, School of Basic and Allied Health Sciences, University of Ghana, Accra, Ghana
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Publisher
NLM (Medline)
Year of Publication
2020

899.

A retrospective study on the incidence of acute kidney injury and its early prediction using troponin-I in cooled asphyxiated neonates.
Mok T.Y.D., Tseng M.-H., Lee J.-C., Chou Y.-C., Lien R., Lai M.-Y., Lee C.-C., Lin J.-J., Chou I.-J., Lin K.-L., Chiang M.-C.
Embase
Scientific reports. 10(1) (pp 15682), 2020. Date of Publication: 24 Sep 2020.
[Article]
AN: 632984505
Acute kidney injury (AKI) is a common complication of perinatal asphyxia and is associated with poorer short-term and long-term outcomes. This retrospective study describes the incidence of AKI in asphyxiated neonates who have received therapeutic hypothermia using the proposed modified Kidney Diseases: Improving Global Outcomes (KDIGO) definition and investigates clinical markers that would allow earlier recognition of at-risk neonates. We included asphyxiated neonates who underwent therapeutic hypothermia between the period of January 2011 and May 2018 in our study. The serum creatinine levels within a week of birth were used in establishing AKI according to the modified KDIGO definition. Demographic data, resuscitation details, laboratory results and use of medications were collected and compared between the AKI and non-AKI groups to identify variables that differed significantly. A total of 66 neonates were

included and 23 out of them (35%) were found to have AKI. The neonates with AKI had a lower gestational age (p=0.006), lower hemoglobin level (p=0.012), higher lactate level before and after therapeutic hypothermia (p=0.013 and 0.03 respectively) and higher troponin-I level after therapeutic hypothermia (p<0.001). After logistic regression analysis, elevated troponin-I after therapeutic hypothermia was independently associated with risk of AKI (OR 1.69, 95% CI 1.067-2.699, p=0.025). The receiver operating curve showed that troponin-I after therapeutic hypothermia had an area under curve of 0.858 at the level 0.288 ng/ml. Our study concludes that the incidence of AKI among asphyxiated newborns who received therapeutic hypothermia is 35% and an elevated troponin-I level after therapeutic hypothermia is independently associated with an increased risk of AKI in asphyxiated newborns.
PMID
32973292 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32973292]
Institution
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Publisher
NLM (Medline)
Year of Publication
2020

900.

Long-term complications of acute kidney injury in children.

Lebel A., Teoh C.W., Zappitelli M.
Embase
Current opinion in pediatrics. 32(3) (pp 367-375), 2020. Date of Publication: 01 Jun 2020.
[Review]
AN: 631693779
PURPOSE OF REVIEW: The current review will describe the current evidence and mechanisms of acute kidney injury (AKI) as a risk factor for long-term kidney complications, summarize the rationale for AKI follow-up and present an approach to monitoring children with AKI. Despite emerging evidence linking AKI with risk for long-term kidney and cardiovascular outcomes, many children who develop AKI are not followed for kidney disease development after hospital discharge. Better understanding of long-term complications after AKI and practical algorithms for follow-up will hopefully increase the rate and quality of post-AKI monitoring. RECENT FINDINGS: Recent evidence shows that pediatric AKI is associated with long-term renal outcomes such as chronic kidney disease (CKD) and hypertension, both known to increase cardiovascular risk. The mechanism of AKI progression to CKD involves maladaptive regeneration of tubular epithelial and endothelial cells, inflammation, fibrosis and glomerulosclerosis. Many AKI survivors are not followed, and no guidelines for pediatric AKI follow-up have been published. SUMMARY: Children who had AKI are at increased risk of long-term renal complications but many of them are not monitored for these complications. Recognizing long-term outcomes post-AKI and integration of follow-up programs may have a long-lasting positive impact on patient health.
PMID
32371839 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32371839]
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Publisher
NLM (Medline)
Year of Publication
2020

901.

Changes in serum creatinine levels and natural evolution of acute kidney injury with conservative management of hemodynamically significant patent ductus arteriosus in extremely preterm infants at 23-26 weeks of gestation.
Seo E.S., Sung S.I., Ahn S.Y., Chang Y.S., Park W.S.
Embase
Journal of Clinical Medicine. 9(3) (no pagination), 2020. Article Number: 699. Date of Publication: March 2020.
[Article]
AN: 2003949279
Changes in kidney function in extremely preterm infants (EPT) with conservatively managed hemodynamically significant (HS) patent ductus arteriosus (PDA) are not known well. We aimed to present the postnatal course in serum creatinine levels (sCr), prevalence of acute kidney injury (AKI), then relevance between AKI and adverse outcomes in EPT with conservatively managed HS PDA. By review of medical records, we analyzed the postnatal course of sCr and prevalence of stage 3 AKI defined by the modified Kidney Disease Improving Global Outcome (KDIGO) in EPT at gestational age of 23 to 26 weeks with conservatively treated HS PDA. We investigated if the presence and/or prolonged duration of stage 3 AKI elevated the risk of adverse outcomes. The results showed that, neither factor was associated with adverse outcomes. While the average PDA closure date was at postnatal day (P) 41 and 53, sCr peaked at P 10 and 14 and the cumulative prevalence of stage 3 AKI was 57% and 72% in the EPT of 25-26 and 23-24

weeks' gestation, respectively. The high prevalence of stage 3 AKI without adverse outcomes in EPT with conservatively managed HS PDA suggests that it might reflect renal immaturity rather than pathologic conditions.

Status
Embase
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Publisher
MDPI
Year of Publication
2020

902.

Clusterin as a new marker of kidney injury in children undergoing allogeneic hematopoietic stem cell transplantation-a pilot study.
Musial K., Augustynowicz M., Miskiewicz-Migon I., Kalwak K., Ussowicz M., Zwolinska D.
Embase
Journal of Clinical Medicine. 9(8) (pp 1-11), 2020. Article Number: 2599. Date of Publication: August 2020.
[Article]
AN: 2004899410
Background and aims: The markers of renal damage defining subclinical AKI are not widely used in children undergoing allogeneic hematopoietic stem cell transplantation (alloHSCT). The aim of the study was to evaluate serum and urinary clusterin as indices of kidney injury after alloHSCT in relation to damage (kidney injury molecule (KIM)-1) and functional (cystatin C) markers.
Material(s) and Method(s): Serum and urinary clusterin, KIM-1 and cystatin C concentrations were assessed by ELISA in 27 children before alloHSCT, 24 h, 1, 2, 3 and 4 weeks after alloHSCT and in controls.
Result(s): All parameters were significantly higher in HSCT patients compared to controls even before the transplantation. The serum concentrations increased after HSCT and this rising trend was kept until the third (clusterin) or 4th (KIM-1, cystatin C) week. Urinary clusterin and KIM-1 were elevated until the third week and then decreased yet remained higher than before HSCT. Urinary cystatin C has risen from the second week after HSCT and decreased after the third week but was still higher than before alloHSCT.
Conclusion(s): The features of kidney injury are present even before alloHSCT. Clusterin seems useful in the assessment of subclinical AKI and may become a new early marker of sublethal kidney injury in children.

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Publisher
MDPI
Year of Publication
2020

903.

Targeted urine metabolomics for monitoring renal allograft injury and immunosuppression in pediatric patients.
Sigdel T.K., Schroeder A.W., Yang J.Y.C., Sarwal R.D., Liberto J.M., Sarwal M.M.
Embase
Journal of Clinical Medicine. 9(8) (pp 1-14), 2020. Article Number: 2341. Date of Publication: August 2020.
[Article]
AN: 2004751495
Despite new advancements in surgical tools and therapies, exposure to immunosuppressive drugs related to non-immune and immune injuries can cause slow deterioration and premature failure of organ transplants. Diagnosis of these injuries by non-invasive urine monitoring would be a significant clinical advancement for patient management, especially in pediatric cohorts. We investigated the metabolomic profiles of biopsy matched urine samples from 310 unique kidney transplant recipients using gas chromatography-mass spectrometry (GC-MS). Focused metabolite panels were identified that could detect biopsy confirmed acute rejection with 92.9% sensitivity and 96.3% specificity (11 metabolites) and could differentiate BK viral nephritis (BKVN) from acute rejection with 88.9% sensitivity and 94.8% specificity (4 metabolites). Overall, targeted metabolomic analyses of biopsy-matched urine samples enabled the generation of refined metabolite panels that non-invasively detect graft injury phenotypes with high confidence. These urine biomarkers can be rapidly assessed for non-invasive diagnosis of specific transplant injuries, opening the window for precision transplant medicine.

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Publisher
MDPI
Year of Publication
2020

904.

Clinical and laboratory characteristics of acute kidney injury in infants with diarrhea: a cross-sectional study in Bangladesh.
Shahrin L., Sarmin M., Rahman A.S.M.M.H., Hasnat W., Mamun G.M.S., Shaima S.N., Shahid A.S.M.S.B., Ahmed T., Chisti M.J.
Embase
Journal of International Medical Research. 48(1) (no pagination), 2020. Date of Publication: January 2020.
[Article]
AN: 2004718405
Objective: We described the clinical and laboratory characteristics of acute kidney injury (AKI) in infants with diarrhea.

Method(s): This medical record analysis was conducted in Dhaka Hospital of the International Centre for Diarrheal Disease Research Bangladesh from January to December 2015. Infants with elevated serum creatinine (>50 micromol/L) constituted cases (n = 146). We randomly selected 150 infants with normal creatinine levels as the controls. Both groups had diarrhea. Events occurring from admission to discharge were analyzed and compared to assess differences in characteristics of the groups.
Result(s): Among the 146 patients with AKI, 130 (89%) were discharged after recovery. Logistic regression analysis, adjusting for potential confounders (such as oral rehydration salt intake at home, convulsions, abnormal mentation, and hypoxemia) showed that infants with AKI were independently associated with hypernatremia (odds ratio (OR) = 8.66, 95% confidence interval (CI) = 3.88-19.22), sepsis (OR = 4.71, 95% CI = 2.07-10.73), and severe dehydration (OR = 3.76, 95% CI = 1.78-7.95). Persistently elevated creatinine was associated with radiological pneumonia (OR = 2.16, 95% CI = 1.09-4.31) and sepsis (OR = 2.24, 95% CI = 1.14-4.40).
Conclusion(s): Dehydration, sepsis, and hypernatremia were found to be associated with AKI in diarrheal infants. After proper correction of dehydration, persistently elevated creatinine could be associated with sepsis and pneumonia.

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31937164 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31937164]
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Publisher
SAGE Publications Ltd
Year of Publication
2020

905.

Identifying the patient at risk for acute kidney injury: Pediatric sepsis biomarker risk model study.
Gien J., Soranno D.
Embase
American Journal of Respiratory and Critical Care Medicine. 201(7) (pp 764-766), 2020. Date of Publication: 01 Apr 2020.
[Article]
AN: 2006982321
PMID
32032496 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32032496]
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Publisher
American Thoracic Society
Year of Publication
2020

906.

Correlation between the incidence and attributable mortality fraction of acute kidney injury: A systematic review.
Komaru Y., Inokuchi R., Iwagami M., Matsuura R., Hamasaki Y., Nangaku M., Doi K.
Embase
Blood Purification. 49(4) (pp 386-393), 2020. Date of Publication: 01 Jul 2020.
[Review]
AN: 630821606
Introduction: The incidence of acute kidney injury (AKI) as diagnosed by international standardized criteria as well as its mortality has undergone extreme variations. Although AKI is a significant worsening mortality factor, a higher prevalence may lead to better patient management, thereby lowering mortality. We investigated the correlation between AKI incidence and its associated mortality.
Method(s): We conducted a systematic review of studies on AKI reporting its incidence and mortality. Literature searches were performed in-MEDLINE, EMBASE, and Cochrane Library, within the time frame of 2004-2018. Studies with small number of participants (<500 for adult cohorts, 50 for pediatric cohorts) were excluded. The correlation among AKI incidence, mortality, and AKI-Attributable fraction of mortality was evaluated using a regression model. The trend test was used to analyze the effect of publication year and country gross domestic product (GDP).
Result(s): A total of 4,694 manuscripts were screened, from which 287 cohorts were eligible (adults: 203 cohorts comprising 7,076,459 patients; children: 84 comprising 69,677 patients). Within adult cohorts, AKI patients' mortality increased ($R^2 = 0.023$, beta = 0.12, $p = 0.03$) but the attributable fraction of mortality decreased ($R^2 = 0.27$, beta =-0.43, $p < 0.001$) with the increasing AKI incidence. Both more recent publications and higher GDP countries had a lower crude AKI patients' mortality, although AKI-Attributable fraction did not decrease.
Conclusion(s): Cohorts with high AKI incidence had a relatively low AKI-Attributable mortality fraction, which suggests an advantage of more experienced AKI management. Further study is needed, however, to address the heterogeneity of included cohorts and to confirm the causality. (Registered in prospective register of systematic reviews database; CRD 42019129322.)

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31968336 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31968336]
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Publisher
S. Karger AG
Year of Publication
2020

907.

Early prediction of acute kidney injury in neonates with cardiac surgery.
Shi S., Fan J., Shu Q.
Embase
World Journal of Pediatric Surgery. 3(2) (no pagination), 2020. Article Number: e000107. Date of Publication: 25 Jun 2020.
[Review]
AN: 632466012
Background Acute kidney injury (AKI) occurs in 42-64 of the neonatal patients experiencing cardiac surgery, contributing to postoperative morbidity and mortality. Current diagnostic criteria, which are mainly based on serum creatinine and hourly urine output, are not sufficiently sensitive and precise to diagnose neonatal AKI promptly. The purpose of this review is to screen the recent literature, to summarize the novel and cost-effective biomarkers and approaches for neonatal AKI after cardiac surgery (CS-AKI), and to provide a possible research direction for future work. Data sources We searched PubMed for articles published before November 2019 with pertinent terms. Sixty-seven articles were found and screened. After excluding 48 records, 19 articles were enrolled for final analysis. Results Nineteen articles were enrolled, and 18 possible urinary biomarkers were identified and evaluated for their ability to diagnose CS-AKI. Urinary neutrophil gelatinase-associated lipocalin (uNGAL), serum cystatin C (sCys), urinary human kidney injury molecule-1 (uKIM-1), urinary liver fatty acid-binding protein (uL-FABP) and interleukin-18 (uIL-18) were the most frequently described as the early predictors of neonatal CS-AKI. Conclusions Neonates are vulnerable to CS-AKI. UNGAL, sCys, uL-FABP, uKIM-1 and uIL-18 are potential biomarkers for early prediction of neonatal CS-AKI. Renal regional oxygen saturation by near-infrared spectroscopy is a non-invasive approach for early identification of neonatal AKI. Further work should focus on exploring a sensitive and specific combined diagnostic model that includes novel biomarkers and other complementary methods.

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Publisher
BMJ Publishing Group
Year of Publication
2020

908.

Biomarkers of kidney injury in very-low-birth-weight preterm infants: Influence of maternal and neonatal factors.
Capelli I., Vitali F., Zappulo F., Martini S., Donadei C., Cappuccilli M., Leonardi L., Girardi A., Aiello V., Galletti S., Faldella G., Poluzzi E., De Ponti F., Gaetano L.M.
Embase

In Vivo. 34(3) (pp 1333-1339), 2020. Date of Publication: June 2020.
[Article]
AN: 2006805376
Background/Aim: Acute kidney injury is an important cause of mortality in very-low-birth-weight (VLBW) preterm infants. As in the general population, the detection of renal damage cannot rely on the measurement of serum creatinine, since it has been demonstrated to be a weak predictor and a delayed indicator of kidney function deterioration. However, several candidate biomarkers have failed to prove sufficient specificity and sensitivity for a routine clinical use because of the poor awareness of their biological role. This study was aimed to investigate the impact of different maternal and neonatal conditions on several renal biomarkers in VLBW preterm infants during the first week of life.
Patients and Methods: Preterm infants<32 weeks' gestation and <1500g were enrolled. We measured urinary biomarkers kidney injury molecule 1 (KIM-1), neutrophil gelatinase-associated lipocalin (NGAL), cystatin C, epidermal growth factor (EGF) and osteopontin (OPN) on the 1st, 3rd, and 7th day after birth.
Result(s): Thirty-tree infants were included. The multivariate analysis showed a significant association between gestational age, the presence of patent ductus arteriosus, antenatal maternal hypertension and the levels of urinary biomarkers.
Conclusion(s): There is a possible relation between early biomarkers of renal injury and antenatal, perinatal and post-natal characteristics in VLBW preterm infants during the first week of life.

PMID
32354927 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32354927]
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Publisher
International Institute of Anticancer Research
Year of Publication
2020

909.

Monocyte chemoattractant protein-1, macrophage colony stimulating factor, survivin, and tissue inhibitor of matrix metalloproteinases-2 in analysis of damage and repair related to pediatric chronic kidney injury.
Musial K., Zwolinska D.
Embase
Advances in Clinical and Experimental Medicine. 29(9) (pp 1-8), 2020. Date of Publication: September 2020.
[Article]
AN: 2007995099

Background. Kidney injury in the course of chronic kidney disease (CKD) is a consequence of aggravated cell migration, inflammation, apoptosis, and fibrosis. However, the sequence of these phenomena, as well as of the reparatory mechanisms, are not fully known. Monocyte chemoattractant protein 1 (MCP-1) and macrophage colony-stimulating factor (MCSF) trigger monocyte migration to the sites of inflammation and their transition into macrophages. Tissue inhibitor of matrix metalloproteinases 2 (TIMP-2) plays a protective role against excessive matrix remodeling, whereas survivin is known for its anti-apoptotic activity. Objectives. To analyze the serum, urine and fractional excretion (FE) values of MCP1, MCSF, TIMP-2, and survivin in children at subsequent stages of CKD being treated conservatively, and to analyze the potential applicability of these markers in the evaluation of CKD-related renal damage and protective mechanisms against it. Material and methods. The study group consisted of 70 children with conservatively treated CKD, stages 1-5, and 12 controls. The serum and urine concentrations of MCP1, MCSF, TIMP-2, and survivin were assessed using enzyme-linked immunosorbent assay (ELISA). The FE of these parameters in the urine was also assessed. Results. The serum values of all parameters were significantly elevated at CKD stage 1 compared to the controls. The urinary concentrations of MCP-1 and MCSF (stages 1-2) rose earlier than TIMP-2 and survivin (stage 4) concentrations. The FE values started increasing at CKD stage 3 (MCP-1) or stage 4 (other parameters). Conclusions. The complex analysis of serum/urinary/FE values of the selected parameters revealed a sequence of multifaceted CKD-related phenomena, when the migration of cells and inflammation were followed by delayed and insufficient anti-fibrotic and anti-apoptotic activity.

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32905666 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32905666]
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Publisher
Wroclaw University of Medicine
Year of Publication
2020

910.

Fetal and maternal outcome in patients with pregnancy related acute kidney injury.
El Minshawy O., Khedr M.H.S., Habeeb H.K., Youssuf A.M., Elela M.A., Kamel F.M.M.
Embase
Indian Journal of Public Health Research and Development. 11(4) (pp 746-749), 2020. Date of Publication: April 2020.
[Article]
AN: 2004498350
Background: Pregnancy related acute kidney injury (PR-AKI) is a serious problem occurring during pregnancy it may lead to feto-maternal morbidity and mortality. Aim of the Work: To study the feto-maternal outcome in patients with PRAKI.

Method(s): 80 pregnant diagnosed with Pr-AKI according to American College of Obstetricians and Gynecologists, 2013 were studied and analyzed.
Result(s): Higher ranges of systolic and diastolic blood pressure. 56% fetal mortality and 23% of the babies need admission in neonatal intensive care unit with 80% recovery rate of renal function and about 15% became a CKD patients and 5% of cases died.
Conclusion(s): AKI complicating pregnancies is a common and serious problem. If recognized and treated promptly recovery is assured in majority of cases. Early identification and prompt management of preeclampsia and can prevent majority ofARF cases.

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Publisher
Institute of Medico-Legal Publications
Year of Publication
2020

911.

Value of urinary kidney injury molecule-1 levels in predicting acute kidney injury in very low birth weight preterm infants.
Unal E.T., Ozer E.A., Kahramaner Z., Erdemir A., Cosar H., Sutcuoglu S.
Embase
Journal of International Medical Research. 48(12) (no pagination), 2020. Date of Publication: 2020.
[Article]
AN: 2007695797
Objective: This study aimed to evaluate the significance of urinary kidney injury molecule-1 (uKIM-1) levels in predicting acute kidney injury (AKI) and mortality in very low birth weight (VLBW) preterm infants.
Method(s): This prospective, observational cohort study was conducted on 39 VLBW preterm infants. Serum creatinine (SCr) and uKIM-1 levels were measured in the first 24 and 48 to 72 hours of life. The estimated glomerular filtration rate (eGFR) was calculated. Levels of uKIM-1 were measured with an enzyme-linked immunosorbent assay.
Result(s): Among 39 VLBW infants, 9 (23%) developed AKI. The mortality rate was 17.9% (n = 7 neonates). There was no significant difference in SCr levels, uKIM-1 levels, or the eGFR obtained in the first 24 hours in the AKI group compared with controls. However, significant differences were found in SCr and uKIM-1 levels, and the eGFR rate at 48 to 72 hours between the groups. Levels of uKIM-1 were significantly higher in non-survivors than in survivors in the first 24 and 48 to 72 hours of life.
Conclusion(s): The level of uKIM-1 can be used as a simple noninvasive diagnostic method for predicting AKI and mortality, especially within 48 to 72 hours of life. Clinical trial registration: We do not have a clinical trial registration ID. In Turkey, clinical trial registration is not required for non-drug, noninvasive, clinical studies.

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Publisher
SAGE Publications Ltd
Year of Publication
2020

912.

Prognostic impact of parameters of metabolic acidosis in critically ill children with acute kidney injury: A retrospective observational analysis using the pic database.
Morooka H., Kasugai D., Tanaka A., Ozaki M., Numaguchi A., Maruyama S.
Embase
Diagnostics. 10(11) (no pagination), 2020. Article Number: 937. Date of Publication: November 2020.
[Article]
AN: 2007324266
Acute kidney injury (AKI) is a major complication of sepsis that induces acid-base imbalances. While creatinine levels are the only indicator for assessing the prognosis of AKI, prognostic importance of metabolic acidosis is unknown. We conducted a retrospective observational study by analyzing a large China-based pediatric critical care database from 2010 to 2018. Participants were critically ill children with AKI admitted to intensive care units (ICUs). The study included 1505 children admitted to ICUs with AKI, including 827 males and 678 females. The median age at ICU admission was 22 months (interquartile range 7-65). After a median follow-up of 10.87 days, 4.3% (65 patients) died. After adjusting for confounding factors, hyperlactatemia, low pH, and low bicarbonate levels were independently associated with 28-day mortality (respective odds ratio: 3.06, 2.77, 2.09; p values: <0.01, <0.01, <0.01). The infection had no interaction with the three parameters. The AKI stage negatively interacted with bicarbonate and pH but not lactate. The current study shows that among children with AKI, hyperlactatemia, low pH, and hypobicarbonatemia are associated with 28-day mortality.

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Publisher
MDPI AG
Year of Publication
2020

913.

Evaluation of the risk factors for acute kidney injury in neonates exposed to antenatal indomethacin.
Pham J.T., Jacobson J.L., Ohler K.H., Kraus D.M., Calip G.S.
Embase
Journal of Pediatric Pharmacology and Therapeutics. 25(7) (pp 606-616), 2020. Date of Publication: 2020.
[Article]
AN: 2005167533
OBJECTIVE Evidence is limited about important maternal and neonatal risk factors that affect neonatal renal function. The incidence of acute kidney injury (AKI) and identification of associated risk factors in neonates exposed to antenatal indomethacin was studied. METHODS A retrospective cohort of neonates exposed to antenatal indomethacin within 1 week of delivery was analyzed for development of AKI up to 15 days of life. Adjusted hazard ratios (HRs) and 95% CIs for AKI risk were calculated in time-dependent Cox proportional hazards models. RESULTS Among 143 neonates with mean gestational age of 28.3 +/- 2.4 weeks, AKI occurred in 62 (43.3%), lasting a median duration of 144 hours (IQR, 72-216 hours). Neonates with AKI had greater exposure to postnatal NSAIDs (48.4% vs 9.9%, p < 0.001) and inotropes (37.1% vs 3.7%, p < 0.001) compared with neonates without AKI. In multivariable-adjusted models, increased AKI risk was observed with antenatal indomethacin doses received within 24 to 48 hours (HR, 1.6; 95% CI, 1.28-1.94; p = 0.036) and <24 hours (HR, 2.33; 95% CI, 1.17-4.64; p = 0.016) prior to delivery. Further, postnatal NSAIDs (HR, 2.8; 95% CI, 1.03- 7.61; p = 0.044), patent ductus arteriosus (HR, 4.04; 95% CI, 1.27-12.89; p = 0.018), and bloodstream infection (HR, 3.01; 95% CI, 1.37-6.60; p = 0.006) were associated significantly with increased risk of AKI following antenatal indomethacin. Neonates with AKI experienced more bloodstream infection, severe intraventricular hemorrhage, patent ductus arteriosus, respiratory distress syndrome, and longer hospitalization. CONCLUSIONS Extended risk of AKI with antenatal indomethacin deserves clinical attention among this population at an already increased AKI risk.

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Publisher
Pediatric Pharmacy Advocacy Group, Inc.
Year of Publication
2020

914.

Short-term mortality in patients with cirrhosis of the liver and acute kidney injury: A prospective observational study.

Kumar U., Kumar R., Jha S.K., Jha A.K., Dayal V.M., Kumar A.
Embase
Indian Journal of Gastroenterology. 39(5) (pp 457-464), 2020. Date of Publication: October 2020.
[Article]
AN: 2007249755
Introduction: Renal failure is a common and severe complication of cirrhosis and confers poor prognosis. Serum creatinine is the most practical biomarker of renal function. Serum creatinine estimation in cirrhosis of the liver is affected by decreased formation, increased tubular secretion, increased volume of distribution, and interference by elevated bilirubin. Studies on the prognosis of cirrhotic patients using creatinine kinetics as a definition of acute kidney injury (AKI) proposed by the International Ascites Club are limited.
Method(s): In this single-center prospective observational study, decompensated cirrhotics with AKI defined by the International Ascites Club as the rise of serum creatinine >= 0.3 mg/dL within 48 h of admission or increase of serum creatinine >= 50% from stable baseline creatinine over the previous 3 months were followed and assessed for the development of complications during hospital course and in-hospital and 30-day mortality.
Result(s): AKI developed in 142 out of 499 (28.45%) patients with cirrhosis. Twenty patients were excluded. The most common etiology of cirrhosis was alcohol (n = 64, 52%), and ascites was present in 115 (94%) patients. Eighty-two (67.21%) patients presented with AKI at the time of admission. Thirty-day mortality was 46.72% (57/122 patients). Hepatorenal syndrome had the highest mortality followed by AKI related to infection. Presence of jaundice and hepatic encephalopathy (HE) was associated with poor survival with adjusted hazard ratio of 3.54 and 2.17, respectively. On bivariate logistic regression analysis, jaundice, HE, type of AKI, AKI stage at maximum creatinine, bilirubin, serum glutamic oxaloacetic transaminase (SGOT), international normalized ratio (INR), and Child-Turcotte-Pugh (CTP) and model for end-stage liver disease (MELD) scores were predictors of mortality ($p < 0.05$). Sensitivity, specificity, and accuracy of MELD > 29 and CTP score > 11 were 75.44%, 82%, and 78.70% and 66.67%, 81.54%, and 74.60%, respectively for predicting 30-day mortality.
Conclusion(s): Development of AKI as defined by the International Ascites Club in cirrhosis confers high short-term mortality. Jaundice, HE, AKI stage, creatinine at enrollment, bilirubin, CTP, and MELD score were the predictors of mortality.Bullet points of the study highlightsWhat is already known?What is new in this study?What are the future clinical and research implications of study findings?

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33175368 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33175368]
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Publisher
Springer
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2020

915.

Acute Kidney Injury and Pediatric Bone Health.

Hegde A., Denburg M.R., Glenn D.A.
Embase
Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 635628. Date of Publication: 09 Feb 2021.
[Review]
AN: 634268180
Acute kidney injury (AKI) has been associated with deleterious impacts on a variety of body systems. While AKI is often accompanied by dysregulation of mineral metabolism-including alterations in calcium, phosphate, vitamin D, parathyroid hormone, fibroblast growth factor 23, and klotho-its direct effects on the skeletal system of children and adolescents remain largely unexplored. In this review, the pathophysiology of dysregulated mineral metabolism in AKI and its potential effects on skeletal health are discussed, including data associating AKI with fracture risk.

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Publisher
Frontiers Media S.A.
Year of Publication
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916.

Acute kidney injury: Causes, laboratory findings and impact of conservative management on its outcome.
Shah S.S.H., Raza M.A., Najeeb S., Alia B., Muhammad K., Hussain E.
Embase
Medical Forum Monthly. 31(10) (pp 148-151), 2020. Date of Publication: October 2020.
[Article]
AN: 2011085300
Objective: To know the major causes, changes in laboratory findings and impact of conservative treatment on outcome in patients with AKI.
Study Design: Retrospective study Place and Duration of Study: This study was conducted at the High Dependency Unit (HDU) of Paediatric B Ward, Ayub Teaching Hospital, Abbottabad from January, 2018 to December, 2019.
Material(s) and Method(s): Young children of both gender and age between 1 month to 2 year diagnosed with AKI were included while patients with other and chronic co-morbid were excluded. A predesigned proforma was used to extract the data regarding demographics, investigations, diagnosis, and outcome. Data was analyzed using SPSS v.20.0.
Result(s): In total of 50 patients the means age of the sample was recorded as 6.82 +/- 5.95 years, in which 29 (58%) were males and 21 (42%) were females. The serum creatinine of had a mean value of 2.06 +/- 1.23 mg/dl, while blood urea recorded a mean of 137.75 +/- 62.80 mg/dl. Majority 45 (90%) of patients were admitted with diagnosis of septicemia leading to AKI. In total, 30(60%) patients got discharged, 18(36%) patients expired and 2(4%) patients were referred to other centers.

Conclusion(s): Septicemia is leading cause of AKI in young children and high mortality was recorded for conservative management.

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Medical Forum Monthly
Year of Publication
2020

917.

Early primary endoscopic realignment in children with posterior urethral and bladder neck injury.
Wani S.A., Para S.A., Kumar V., Murty K.
Embase
Journal of Pediatric Endoscopic Surgery. 2(4) (pp 201-207), 2020. Date of Publication: December 2020.
[Article]
AN: 2005572817
Introduction: The management of bladder neck and posterior urethral injuries is controversial and debate continues in regarding the advisability of immediate versus delayed management.
Aim(s): The aim of present study is to present our experience of immediate endoscopic realignment of posterior urethral and bladder neck injuries in children.
Material(s) and Method(s): From June 2016 to July 2019, immediate primary endoscopic realignment was done in children with bladder neck and posterior urethral injuries. Injuries were classified according to Goldman classification of urethral injury. After stabilization, retrograde cystourethrography was performed and endoscopic realignment was done within first 10 h of presentation. Per urethral catheter was left in for 4 weeks. Peri-catheter retrograde urethrocystogram and micturating cystourethrography (MCU) was done 4 weeks after primary realignment.
Result(s): Two patients with type-II injury are continent and have good urinary stream. One patient with type-III injury had stricture at the injury site. Dilatation was done once and child is voiding with good urinary stream. All the three patients with type-IVa injury healed well without any complication and are voiding with good urine flow. One patient with type IV injury is continent and is voiding with good urine flow.
Conclusion(s): Early primary realignment in children with posterior urethral injury and bladder neck injury is safe and effective.

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Springer
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2020

918.

A clinical predictive model of renal injury in children with isolated antenatal hydronephrosis.
Costa F.P., Simoes e Silva A.C., Mak R.H., Ix J.H., Vasconcelos M.A., Dias C.S., Fonseca C.C., Oliveira M.C.L., Oliveira E.A.
Embase
Clinical Kidney Journal. 13(5) (pp 831-841), 2020. Date of Publication: 2020.
[Article]
AN: 2011048559
Background. Antenatal hydronephrosis (ANH) affects ~1-5% of pregnancies. The aim of this study was to develop a clinical prediction model of renal injury in a large cohort of infants with isolated ANH. Methods. This is a longitudinal cohort study of 447 infants with ANH admitted since birth between 1989 and 2015 at a tertiary care center. The primary endpoint was time until the occurrence of a composite event of renal injury, which includes proteinuria, hypertension and chronic kidney disease (CKD). A predictive model was developed using a Cox proportional hazards model and evaluated by C-statistics. Results. Renal pelvic dilatation (RPD) was classified into two groups [Grades 1-2 (n 1/4 255) versus Grades 3-4 (n 1/4 192)]. The median follow-up time was 6.4 years (interquartile range 2.8-12.5). Thirteen patients (2.9%) developed proteinuria, 6 (1.3%) hypertension and 14 (3.1%) CKD Stage 2. All events occurred in patients with RPD Grades 3-4. After adjustment, three covariables remained as predictors of the composite event: creatinine {hazard ratio [HR] 1.27, [95% confidence interval (CI) 1.05-1.56]}, renal parenchyma thickness at birth [HR 0.78(95% CI 0.625-0.991)] and recurrent urinary tract infections [HR 4.52 (95% CI 1.49-13.6)]. The probability of renal injury at 15 years of age was estimated as 0, 15 and 24% for patients assigned to the low-risk, medium-risk and high-risk groups, respectively (P < 0.001). Conclusion. Our findings indicate an uneventful clinical course for patients with Society for Fetal Urology (SFU) Grades 1-2 ANH. Conversely, for infants with SFU Grades 3-4 ANH, our prediction model enabled the identification of a subgroup of patients with increased risk of renal injury over time.

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Publisher
Oxford University Press
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2020

919.

The value of urine NAG, NGAL combined with serum Cys-C in early diagnosis of neonatal hyperbilirubinemia-related acute kidney injury.
Wang Z., Jin L., Shen T., Zhan S.
Embase
Signa Vitae. 16(2) (pp 109-113), 2020. Date of Publication: October 2020.
[Article]
AN: 2005287760
Objective: To explore the early diagnostic value of urinary NAG, NGAL and serum Cys-C detection for neonatal hyperbilirubinemia-related acute kidney injury (AKI) in full-term neonates with hyperbilirubinemia. Methodology: One hundred and ninety-six full-term jaundiced newborns were categorized as mild (n = 65), moderate (n = 69) or severe hyperbilirubinemia (n = 62). The severe group was divided into a non-AKI group (n = 35) and an AKI group (n = 27). Sixty-five full-term newborns with normal serum bilirubin and renal function were analyzed as a normal control group. Urine NAG, urine NGAL and serum Cys-C weremeasured. The value of urinary NAG, NGAL combined with serum Cys-C in early diagnosis of neonatal hyperbilirubinemia-related AKI was evaluated by Receiver Operating Characteristic Curve (ROC).
Result(s): Levels of urine NAG, NGAL and serum Cys-C in the mild, moderateand severe groups were higher than those in the normal control group ($p < 0.001$), the above indexes levels in the severe group were higher than those in the mildand moderate groups ($p < 0.001$), and the above indexes levels in the moderate group were higher than those in the mild group ($p < 0.001$). Pearson correlation analysis showed that serum Cys-C was positively correlated with urinary NAG and urinary NGAL in AKI group ($r = 0.805$, $p < 0.001$; $r = 0.864$, $p < 0.001$); there was a positive correlation between urinary NAG and urinary NGAL in AKI group ($r = 0.948$, $p < 0.001$). AUC of urinary NAG, urinary NGAL combined with serum Cys-C in diagnosing neonatal hyperbilirubinemia-related AKI is 0.900 (95% CI: 0.824-0.976), which is higher than that of urinary NAG, urinary NGAL and serum Cys-C alone.
Conclusion(s): Combined measurement of urine NAG, NGAL and serum Cys-C is helpful for early diagnosis of neonatal hyperbilirubinemia-related AKI.

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2020

920.

PERSEVERE Biomarkers predict severe acute kidney injury and renal recovery in pediatric septic shock.
Stanski N.L., Stenson E.K., Cvijanovich N.Z., Weiss S.L., Fitzgerald J.C., Bigham M.T., Jain P.N., Schwarz A., Lutfi R., Nowak J., Allen G.L., Thomas N.J., Grunwell J.R., Baines T., Quasney M., Haileselassie B., Wong H.R.
Embase
American Journal of Respiratory and Critical Care Medicine. 201(7) (pp 848-855), 2020. Date of Publication: 2020.

[Article]
AN: 2010355210
Rationale: Acute kidney injury (AKI), a common complication of sepsis, is associated with substantial morbidity and mortality and lacks definitive disease-modifying therapy. Early, reliable identification of at-risk patients is important for targeted implementation of renal protective measures. The updated Pediatric Sepsis Biomarker Risk Model (PERSEVERE-II) is a validated, multibiomarker prognostic enrichment strategy to estimate baseline mortality risk in pediatric septic shock.
Objective(s): To assess the association between PERSEVERE-II mortality probability and the development of severe, sepsis-associated AKI on Day 3 (D3 SA-AKI) in pediatric septic shock.
Method(s): We performed secondary analysis of a prospective observational study of children with septic shock in whom the PERSEVERE biomarkers were measured to assign a PERSEVERE-II baseline mortality risk.
Measurements and Main Results: Among 379 patients, 65 (17%) developed severe D3 SA-AKI. The proportion of patients developing severe D3 SA-AKI increased directly with increasing PERSEVERE-II risk category, and increasing PERSEVERE-II mortality probability was independently associated with increased odds of severe D3 SA-AKI after adjustment for age and illness severity (odds ratio, 1.4; 95% confidence interval, 1.2-1.7; P, 0.001). Similar associations were found between increasing PERSEVERE-II mortality probability and the need for renal replacement therapy. Lower PERSEVERE-II mortality probability was independently associated with increased odds of renal recovery among patients with early AKI. A newly derived model incorporating the PERSEVERE biomarkers and Day 1 AKI status predicted severe D3 SA-AKI with an area under the received operating characteristic curve of 0.95 (95% confidence interval, 0.92-0.98).
Conclusion(s): Among children with septic shock, the PERSEVERE biomarkers predict severe D3 SA-AKI and identify patients with early AKI who are likely to recover.

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American Thoracic Society
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2020

921.

Urine biomarkers for monitoring acute kidney injury in premature infants.
Ahn Y.H., Lee J., Chun J., Jun Y.H., Sung T.-J.
Embase
Kidney Research and Clinical Practice. 39(3) (pp 284-294), 2020. Date of Publication: 2020.
[Article]
AN: 2005153220
Background: Premature infants are at high risk for acute kidney injury (AKI). Serum creatinine (Cr) has limitations for evaluating kidney function in premature infants. We evaluated whether urine biomarkers could be used to monitor AKI in premature infants.
Method(s): A prospective cohort study was conducted among infants born at < 37 weeks. Urine biomarkers and serum Cr were measured on postnatal days 1, 3, 5, 7, 10, and 14. Infants were divided into 3 groups according to gestational age (GA); < 28, 28 to < 32 and 32 to < 37 weeks.
Result(s): AKI occurred in 17 of 83 (20.5%) recruited infants at a median age of 7 (interquartile range 5-10) days. While the most common cause of AKI was hemodynamically significant patent ductus arteriosus (53.8%) in infants of GA < 28 weeks, necrotizing enterocolitis was the leading cause (50.0%) in infants of GA 28 to < 32 weeks. Urinary levels of neutrophil-gelatinase-associated lipocalin/Cr were higher and epidermal growth factor/Cr were lower in AKI group before the onset of AKI in infants of GA < 28 weeks. In infants of GA 28 to < 32 weeks, urinary interleukin-8/Cr levels were higher in AKI group at approximately the time of AKI onset.
Conclusion(s): Several urine biomarkers were significantly different between AKI and no AKI groups, and some had changed before the onset of AKI. These groups were distinct according to causative factors of AKI and GA. Urine biomarkers could be useful for monitoring the development of AKI in premature infants.

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Publisher
The Korean Society of Nephrology
Year of Publication
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922.

Kidney injury molecule-1/creatinine as a urinary biomarker of acute kidney injury in critically ill neonates.
ElSadek A.E., El gafar E.A., Behiry E.G., Nazem S.A., Abdel haie O.M.
Embase
Journal of Pediatric Urology. 16(5) (pp 688.e1-688.e9), 2020. Date of Publication: October 2020.
[Article]
AN: 2007522829

Introduction: Acute kidney injury (AKI) is a complex disorder, means acute deterioration of renal function generally occurring over hours to days. Serum creatinine (SCr) is a suboptimal biomarker in neonates as the creatinine concentration reflects the maternal level for up to 72 h after birth, to improve the ability for early prediction of AKI and improve clinical outcomes, there has been a significant amount of research to identify novel biomarkers of damage to allow for the earlier identification of neonates with AKI.
Objective(s): This study aimed to study the effectiveness of urinary kidney injury molecule-1/creatinine (uKIM-1/cr) in the diagnosis of AKI in critically ill neonates. Study design: The patients' group included 50 critically ill full-term septic neonates (39 of them developed AKI according to guidelines of AKI diagnosis), and control group including 50 healthy neonates. Full history taking, clinical assessment and laboratory testing of the renal functions (urea & creatinine), eGFR, uKIM-1 by ELISA technique and uKIM-1/cr ratio on admission, and on day 3 of admission.
Result(s): Urea, serum creatinine increased, whereas, eGFR decreased significantly in the second sample when compared to the first sample of the AKI group. uKIM-1 and uKIM-1/cr were high in the first sample, uKIM-1 concentration and uKIM-1/creatinine were higher in second sample (2.2 +/- 0.6 ng/ml & 7.1 +/- 2.1 ng/mg) when compared to first sample (0.6 +/- 0.1 ng/ml & 2.6 +/- 0.9 ng/mg) in critically ill neonates with AKI. Serum creatinine, uKIM-1 and uKIM-1/cr ratio were significantly associated with higher KDIGO stages. Applying the ROC curve at the first sample for discrimination between critically ill neonatal patients with and without AKI, uKIM-1/cr AUC was significantly higher when compared to AUCs of creatinine, eGFR, uKIM-1. Regression analysis revealed that high uKIM-1 & uKIM-1/cr are independent predictors for AKI within critically ill neonates. So, uKIM-1 & uKIM-1/cr are early biomarkers as their level increased before creatinine increases.
Conclusion(s): uKIM-1 and uKIM-1/cr are good early indicators for AKI in neonates suffering from a critical illness. [Table presented]

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32828685 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32828685]
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Publisher
Elsevier Ltd
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923.

Renal artery angiography in pediatric trauma using a national data set.
Edwards A., Passoni N.M., Chen C.J., Schlomer B.J., Jacobs M.
Embase
Journal of Pediatric Urology. 16(5) (pp 559.e1-559.e6), 2020. Date of Publication: October 2020.
[Article]
AN: 2006892593
Introduction: With limited pediatric renal trauma management literature, treatment pathways for children have been extrapolated from the adult population. A shift to non-operative management

has led to higher renal preservation rates; however, characterization of endovascular intervention in the pediatric trauma population is lacking.
Objective(s): This study uses the National Trauma Data Bank (NTDB), to evaluate renal outcomes after use of renal artery angiography. We hypothesized that patients undergoing renal artery angiography for renal trauma are unlikely to require additional surgical interventions. Study design: All children <=18 years old treated for traumatic renal injuries from 2012 to 2015 were identified by the Abbreviated Injury Scaled Score (AISS) codes in the NTDB. AISS codes were converted to American Association for Surgery of Trauma (AAST) grades. ICD-9 codes were used to identify patients that had renal artery angiography, and additional renal interventions such as nephrectomy, partial nephrectomy, percutaneous nephrostomy tube or ureteral stent placement.
Result(s): 536,379 pediatric trauma cases were in the NTDB from 2012 to 2015, with 4506 renal injury cases identified. A total of 88 patients had renal artery angiography (ICD-9 88.45). Only 10% (n = 9) of patients who received renal artery angiography underwent an additional urological intervention. Of those nine, two patients were excluded due to renal angiography taking place after nephrectomy was performed. The remaining seven patients had high grade laceration (AAST grade 4-5). Overall, two patients underwent post angiography nephrectomies, two patients had partial nephrectomies, one percutaneous nephrostomy tube was placed (prior to partial nephrectomy), one aspiration of a kidney (prior to ureteral stent placement), and three had ureteral stent placements.
Discussion(s): The limitations of this study include: the NTDB is a national dataset that is not population based, inclusion is limited to the first hospitalization, inaccuracies exist in encounter coding, and the database is lacking laterality of the renal injury. Based on nonspecific nature of ICD-9 coding for angioembolization, we are unable to discern the number of cases that subsequently had angioembolization after or at the time of angiography.
Conclusion(s): Renal artery angiography in children remains a rare procedure, 88/4,506, in children with renal trauma. In pediatric trauma cases that undergo renal artery angiography additional procedures are more common with higher grade injuries. Further studies are needed to create pediatric specific trauma management algorithms. [Table presented]

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32611488 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32611488]
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Elsevier Ltd
Year of Publication
2020

924.

Renal ultrasound to evaluate for blunt renal trauma in children: A retrospective comparison to contrast enhanced CT imaging.
Edwards A., Hammer M., Artunduaga M., Peters C., Jacobs M., Schlomer B.
Embase
Journal of Pediatric Urology. 16(5) (pp 557.e1-557.e7), 2020. Date of Publication: October 2020.
[Article]
AN: 2005950151

Introduction: The standard imaging modality for hemodynamically stable blunt abdominal trauma patients is a contrast enhanced CT scan, which is reflected in the current AUA urotrauma guidelines. This comes, however, with radiation exposure and the potential sequalae of IV contrast administration in the pediatric patient.
Objective(s): We hypothesize that ultrasound imaging would be able to diagnose and rule out clinically significant renal injuries when compared to the gold standard of CT scan in the setting of pediatric blunt abdominal trauma. Study design: All children <18 years of age who were evaluated for blunt abdominal trauma who had a CT scan and ultrasound imaging of kidneys were identified. The ultrasound images were reviewed by four reviewers who were blinded to CT results and all clinical information. The ability of ultrasound to diagnose and rule out clinically significant renal injury was evaluated by diagnostic test performance characteristics including sensitivity, specificity, negative predictive value and positive predictive value.
Result(s): There were 76 patients identified, 24 of which had a renal injury (1 bilateral) diagnosed by CT scan for a total of 25 injuries in 152 renal units. There were six grade I-II injuries and 19 grade III-V injuries. The sensitivity of the four blinded reviewers by ultrasound alone to detect the 19 grade III-V injuries ranged from 79 to 100% with NPV between 97 and 100%. Three of the four reviewers identified all 19 grade III-V injuries by ultrasound. When combined with significant hematuria, all 19 grade III-IV injuries were identified. Of note, all patients with a grade III-V injury of the kidney had significant hematuria. Of the grade I-II renal injuries, all reviewers identified 1/5 or 2/5 by ultrasound alone.
Discussion(s): The limitations of this study include: its retrospective nature, limited number of patients and reviewers, quality of the ultrasound machine. and experience of technologist, radiologist and urologist. A major limitation is the inability to assess other solid organ injuries during this initial study.
Conclusion(s): When compared to a CT scan as the gold standard, kidney ultrasound images had a sensitivity of 79-100% to detect grade III-V injuries and NPV of 97-100% by four blinded reviewers. All grade III-V injuries had either an episode of gross hematuria or microscopic hematuria >50 RBC/hpf. A prospective study that includes full abdominal imaging is needed to confirm that ultrasound can safely be used in place of CT scan for evaluation of hemodynamically stable blunt trauma patients. [Table presented]

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Publisher
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925.

Contemporary management of pediatric high grade renal trauma: 10 year experience at a level 1 trauma centre.
Redmond E.J., Kiddoo D.A., Metcalfe P.D.
Embase

Journal of Pediatric Urology. 16(5) (pp 656.e1-656.e5), 2020. Date of Publication: October 2020.
[Article]
AN: 2007453385
Background: Current guidelines advocating the conservative management of renal injuries in children are primarily extrapolated from adult series due to a dearth of evidence in the pediatric population.
Objective(s): The aim of this study was to review our experience in the management of pediatric high-grade renal trauma and to clarify the role of conservative management in this cohort of patients. Study design: The Alberta Trauma Registry (ATR) is a comprehensive web-based registry which functions to prospectively collect data on all trauma patients in the province who sustain a severe injury (i.e. Injury Severity Score (ISS) >=12). The ATR was used to identify all pediatric patients who attended hospitals within the Edmonton region with high grade renal injuries (grade III-V) between January 2006 and December 2018. Hospital records and imaging were reviewed to identify patient demographics, mechanism of injury, AAST grade, haemodynamic stability, associated injuries, management, length of hospital stay (LOS), complications, and follow-up outcomes.
Result(s): A total of 53 children (38 boys, 15 girls) were identified with a mean age of 13 years (1-16). The mechanism of injury was blunt trauma in 92.5% (49/53) of cases (Supplementary Table). AAST grade distribution was 37.8% Grade III (20/53), 49% Grade IV (26/53) and 13.2% Grade V (7/53). All Grade III injuries were successfully managed conservatively. Overall 11 patients with Grade IV/V injuries required urological intervention (ureteral stenting (5 patients), angioembolization (4 patients), bladder washout with clot evacuation (1 patient), emergency nephrectomy (3 patients)). The overall renal salvage rate was 92.4% (49/53).
Discussion(s): Our series confirms the safety of expectant management in high grade pediatric renal trauma. All grade III injuries in our study were managed conservatively without the need for intervention. This suggests that these injuries may be managed safely outside of designated trauma centres. One third of children with grade IV/V injuries required intervention. Therefore we recommend that patients with these injuries are transferred to specialized units with the capacity to provide such procedures if required.
Conclusion(s): This study supports the conservative management of pediatric renal trauma in the setting of high-grade injury. Expectant management was associated with acceptable rates of intervention and excellent renal salvage rates. [Table presented]

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Publisher
Elsevier Ltd
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926.

Impact of trauma center designation in pediatric renal trauma: National Trauma Data Bank analysis.
Mahran A., Fernstrum A., Swindle M., Mishra K., Bukavina L., Raina R., Narayanamurthy V., Ross J., Woo L.

Embase
Journal of Pediatric Urology. 16(5) (pp 658.e1-658.e9), 2020. Date of Publication: October 2020.
[Article]
AN: 2007388211
Introduction: The pediatric kidney is the most common urinary tract organ injured in blunt abdominal trauma. Trauma care in the United States has been established into a hierarchical system verified by the American College of Surgeons (ACS). Literature evaluating management of pediatric renal trauma across trauma tier designations is scarce.
Objective(s): To examine the differences in the management and outcomes of renal trauma in the pediatric population based on trauma level designation across the United States. Study design: We performed a review of the ACS - National Trauma Data Bank database. Pediatric patients (age 0-18 years) who were treated for renal injury between years 2011-2016 were identified. Our primary outcome was the difference in any complication rate amongst Level I versus Non-Level I trauma centers. Management strategies were evaluated as secondary outcomes. Propensity score matching (PSM) was utilized to adjust for baseline differences between cohorts. Multivariable regression analysis was performed to determine the independent effects of individual factors on complications, operative intervention, minimally invasive procedure, and blood transfusions.
Result(s): Overall, 12,097 pediatric patients were diagnosed with renal trauma between 2011 and 2016 using target ICD-9 and AAST codes. After PSM, there was a total of 1623 subjects withing each group. No difference was identified between groups for occurrence on any complication [105 (6.5%) vs 114 (7.0%), p = 0.576. There were no differences in the rate of minimally invasive interventions [67 (4.1%) vs 48 (3.0%), p = 0.087], operative intervention [58 (3.6%) vs 68 (4.2%), p = 0.413], or nephrectomy [42 (2.6%) vs 47 (2.9%), p = 0.667] between Level I and Non-Level I trauma designations, respectively. Length of stay was longer in the Level I cohort compared to Non-Level I (days (SD)) [6.9 (8.8) vs 6.2 (7.9), p = 0.024. When specifically looking at risk factors associated with operative intervention, higher renal injury grade and injury severity score were highly correlated, whereas, trauma level designation was not found to be predictive for more aggressive management. Discussion & conclusion: Our results corroborate with previous literature that renal injury grade and injury severity score are strong predictors of morbidity, invasive management, and complications. Pediatric renal trauma was managed similarly across trauma center designations, with the rate of complication and intervention more prevalent in patients with high grade renal injuries and concomitant injuries. Further studies are necessary to identify patients who will benefit most from transfer to a level I center. [Table presented]

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927.

Acute kidney injury in children with severe malaria is common and associated with adverse hospital outcomes.
Oshomah-Bello E.O., Esezobor C.I., Solarin A.U., Njokanma F.O.
Embase
Journal of Tropical Pediatrics. 66(2) (pp 218-225), 2020. Date of Publication: 01 Apr 2020.
[Article]
AN: 2010099484
Background: The prevalence of acute kidney injury (AKI) in children with severe malaria in sub-Saharan African may have been underestimated. The study aimed to determine the prevalence of AKI in children with severe malaria and its association with adverse hospital outcomes.
Method(s): At presentation, we measured complete blood count, serum bilirubin, and serum electrolytes, urea and creatinine in children with severe malaria. At 24 h after hospitalization, we repeated serum creatinine measurement. Urine passed in the first 24 h of hospitalization was also measured. We defined AKI and its severity using the Kidney Disease: Improving Global Outcome AKI guidelines.
Result(s): The study involved 244 children (53.3% males) with a median age of 3.5 (1.9-7.0) years. One hundred and forty-four (59%) children had AKI, and it reached maximum Stages 1, 2 and 3 in 56 (23%), 45 (18.4%) and 43 (17.6%) children, respectively. The majority (86.1%) with AKI had only elevated serum creatinine. Mortality increased with increasing severity of AKI on univariate analysis but weakened on multiple logistic regression. Mortality was also higher in those with both oliguria and elevated serum creatinine than in those with elevated serum creatinine only (50% vs. 4.8%, p<0.001). Furthermore, children with AKI spent three days more in hospital than those without AKI (p<0.001).
Conclusion(s): Acute kidney injury complicates severe malaria in 6 out of every 10 children and is commonly identified using elevated serum creatinine. It is also associated with adverse hospital outcome.

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928.

Incidence of acute kidney injury among infants in the neonatal intensive care unit receiving vancomycin with either piperacillin/tazobactam or cefepime.
Bartlett J.W., Gillon J., Hale J., Jimenez-Truque N., Banerjee R.
Embase
Journal of Pediatric Pharmacology and Therapeutics. 25(6) (pp 521-527), 2020. Date of Publication: 2020.
[Article]
AN: 2004986157
OBJECTIVES To determine whether combination therapy with vancomycin and TZP is associated with a higher incidence of acute kidney injury (AKI) compared with vancomycin with cefepime in infants admitted to the NICU. METHODS This retrospective cohort study included infants in the NICU who received vancomycin/cefepime or vancomycin/TZP for at least 48 hours. The primary outcome was incidence of AKI, which was defined by the neonatal modified Kidney Disease Improving Global Outcomes AKI criteria. RESULTS Forty-two infants who received vancomycin with cefepime and 58 infants who received vancomycin with TZP were included in the analysis. The median gestational age at birth, birth weight, and dosing weight were lower in the TZP group, but other baseline characteristics were comparable, including corrected gestational age. Two patients (3%) receiving vancomycin/TZP versus 2 patients (5%) receiving vancomycin/cefepime met criteria for AKI during their antibiotic course (p = 1.00). There were no clinically significant changes in serum creatinine or urine output from baseline to the end of combination antibiotic treatment in either group. CONCLUSIONS Among infants admitted to our NICU, AKI incidence associated with vancomycin and either TZP or cefepime therapy was low and did not differ by antibiotic combination.

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Publisher
Pediatric Pharmacy Advocacy Group, Inc.
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929.

Cardiovascular complications in children with chronic kidney injury.
Meo F., Salpietro A., Ceravolo G., Concolino D., De Sarro R., Gitto E., Viola I., Sestito S., Cucinotta U., Giannitto N., Cuppari C., Corso M., Ceravolo M.D., Calabro M.P., Chimenz R.
Embase
Journal of Biological Regulators and Homeostatic Agents. 34(4 Supplement 2) (pp 43-46), 2020. Date of Publication: July-August 2020.
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930.

Salvianolic Acid B Protects Against Fatty Acid-Induced Renal Tubular Injury via Inhibition of Endoplasmic Reticulum Stress.
Mai X., Yin X., Chen P., Zhang M.
Embase
Frontiers in Pharmacology. 11 (no pagination), 2020. Article Number: 574229. Date of Publication: 15 Dec 2020.
[Article]
AN: 633772941
Background/Aims: Obesity-related kidney disease is associated with elevated levels of saturated free fatty acids (SFA). SFA lipotoxicity in tubular cells contributes to significant cellular apoptosis and injury. Salvianolic acid B (SalB) is the most abundant bioactive molecule from Radix Salviae Miltiorrhizae. In this study, we investigated the effect of SalB on SFA-induced renal tubular injury and endoplasmic reticulum (ER) stress, in vivo and in vitro.
Method(s): C57BL/6 mice were assigned to five groups: a control group with normal diet (Nor), high-fat diet group (HFD), and HFD with three different SalB treatment doses, low (SalBL; 3 mg/kg), medium (SalBM; 6.25 mg/kg), and high (SalBH; 12.5 mg/kg) doses. SalB was intraperitoneally injected daily for 4 weeks after 8 weeks of HFD. After 12 weeks, mice were sacrificed and kidneys and sera were collected. Apoptosis and ER stress were induced in human proximal tubule epitelial (HK2) cells by palmitic acid (PA, 0.6 mM), tunicamycin (TM, 1 mug/ml), or thapsigargin (TG, 200 nM) in vitro.
Result(s): C57BL/6 mice fed a high-fat diet (HFD) for 12 weeks exhibited increased apoptosis (Bax and cleaved caspase-3) and ER stress (BIP, P-eIF2alpha, ATF4, CHOP, ATF6, IRE1alpha, and XBP1s) markers expression in the kidney, compared with control mice, which were remarkably suppressed by SalB treatment. In vitro studies showed that PA (0.6 mM) induced apoptosis and ER stress in cultured HK2 cells. SalB treatment attenuated all the adverse effects of PA. However, SalB failed to inhibit TM or TG-induced ER stress in HK2 cells.
Conclusion(s): The study indicated that SalB may play an important role in obesity-related kidney injury via mediating SFA-induced ER stress.

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931.

"Functional outcome in pediatric grade IV renal injuries following blunt abdominal trauma salvaged with minimally invasive interventions".
Shekar P.A., Ansari M.S., Yadav P., Srivastava A.
Embase
Journal of Pediatric Urology. 16(5) (pp 657.e1-657.e9), 2020. Date of Publication: October 2020.
[Article]
AN: 2007328663
Background: Non-operative management of higher-grade renal injuries has gradually become accepted in pediatric circles following multiple studies over the past decade which showed good renal salvage rates. However, some children do fail this conservative approach and need interventions which are mostly minimally invasive. There is still paucity of studies on the functional outcomes in this unique subgroup of patients. In this study, we review our management and functional outcome of children with grade IV renal injury due to blunt trauma of abdomen managed with minimally invasive interventions (MII) in a tertiary referral center.
Aim(s): The present study seeks to summarize contemporary management of pediatric grade IV renal injury due to blunt trauma at our tertiary care center and to assess the functional outcomes in the subgroup who needed MII.
Material(s) and Method(s): A retrospective review was performed on children<=18 years with abdominal blunt trauma managed at our tertiary care facility over the past 10 years (January 2008-January 2018) to identify those with grade IV renal injuries. Data collected included demographic data like age, sex, mechanism of injury, incidence of hematuria, incidence of pre-existing urologic conditions, associated non-renal injuries, transfusion requirements, imaging findings, type of interventions, length of hospital stay, complications and outcomes on follow up.
Result(s): Review of our institutional database identified 10 children with grade IV renal injury. Mean age was 11.7 +/- 3.6 years (range, 6-18) and majority (6/10) were male. Motor vehicle collision and fall from heights were the commonest mechanisms of injury. While one patient responded to non-operative management, one girl needed emergency renal exploration and later nephrectomy. Eight needed minimally invasive interventions following initial non-operative management. One patient needed nephrectomy due to delayed hemorrhage while three patients needed delayed open reconstruction. The salvage rate in the group which needed interventions was 87.5% (7 of 8) however, the functional outcome was good only in 50% (4 of 8) of patients. The outcomes were better in those who were managed with MII earlier (3/4) compared to those who underwent delayed intervention (1/4). The median hospital stay was 11.5 days (range 7-34 days).
Conclusion(s): Pediatric patients with non-exsanguinating grade IV renal injuries due to blunt trauma who fail non-operative management and need minimal invasive interventions have good renal salvage rates however, the functional outcomes are poorer. Judicious and early use of these minimally invasive interventions, instead of persisting with non-operative management can possibly improve these functional outcomes.[Formula presented]

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Publisher
Elsevier Ltd
Year of Publication
2020

932.

Myositis and acute kidney injury in bacterial atypical pneumonia: Systematic literature review.
Simoni C., Camozzi P., Fare P.B., Bianchetti M.G., Kottanattu L., Lava S.A.G., Milani G.P.
Embase
Journal of Infection and Public Health. 13(12) (pp 2020-2024), 2020. Date of Publication: December 2020.
[Article]
AN: 2008449590
Background: Bacterial community-acquired atypical pneumonia is sometimes complicated by a myositis or by a renal parenchymal disease. Available reviews do not mention the concurrent occurrence of both myositis and acute kidney injury.
Method(s): In order to characterize the link between bacterial community-acquired atypical pneumonia and both myositis and a renal parenchymal disease, we reviewed the literature (United States National Library of Medicine and Excerpta Medica databases).
Result(s): We identified 42 previously healthy subjects (35 males and 7 females aged from 2 to 76, median 42 years) with a bacterial atypical pneumonia associated both with myositis (muscle pain and creatine kinase >=5 times the upper limit of normal) and acute kidney injury (increase in creatinine to >=1.5 times baseline or increase by >=27 mumol/L above the upper limit of normal). Thirty-six cases were caused by Legionella species (N = 27) and by Mycoplasma pneumoniae (N = 9). Further germs accounted for the remaining 6 cases. The vast majority of cases (N = 36) presented a diffuse myalgia. Only a minority of cases (N = 3) were affected by a calf myositis. The diagnosis of rhabdomyolysis-associated kidney injury was retained in 37 and that of acute interstitial nephritis in the remaining 5 cases.
Conclusion(s): Bacterial atypical pneumonia may occasionally induce myositis and secondary kidney damage.

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Publisher
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933.

A Prediction Nomogram for Acute Kidney Injury in Very-Low-Birth-Weight Infants: A Retrospective Study.
Hu Q., Shi Y., Hua Z.-Y., Bao L., Li F., Wei H., Song P., Ou-Yang H.-J., Li Q., Wang M.
Embase
Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 575097. Date of Publication: 15 Jan 2021.
[Article]
AN: 634041903
Background and objective: Acute kidney injury (AKI) is recognized as an independent predictor for mortality in very-low-birth-weight (VLBW) infants and is reported to have a high incidence. In this study, we sought to identify the predictors for AKI in VLBW infants and thereby develop a prediction nomogram for the early detection and management of VLBW infants at high risk of developing AKI.
Method(s): We designed a retrospective study wherein we investigated the baseline hospitalization data of VLBW infants treated at our hospital between January 2012 and October 2018. Independent predictors of AKI in VLBW infants, as identified by multivariate logistic regression, were incorporated into a model. Hosmer-Lemeshow test was used to test the goodness of fit of the model, and a receiver operating characteristic (ROC) curve was plotted to assess the discriminative ability of the model. The model was internally validated using the 10-fold cross-validation method. A nomogram was plotted to predict the risk of AKI in VLBW infants on the basis of the results of multivariate logistic regression analysis.
Result(s): We investigated the data of 604 VLBW infants, of which 144 (23.8%) developed AKI; in 111 (77.1%) of these infants, AKI occurred within 7 days of birth. Multivariate logistic regression analysis identified the following as predictive factors for AKI in VLBW infants: gestational age, red blood cell count within 3 days of birth, serum calcium concentration within 3 days of birth, maternal age of >=35 years, and pulmonary arterial hypertension or myocardial injury. Furthermore, the nomogram was found to be effective in estimating the risk of AKI in VLBW infants, with an area under the curve (AUC) of 0.794 [95% confidence interval (CI): 0.754-0.834; P < 0.001]. Internal validation done by cross-validation showed that the average AUC was 0.788.
Conclusion(s): The nomogram developed in this study was found to be sensitive and specific for the preoperative prediction of AKI in VLBW infants, as per the Kidney Disease: Improving Global Outcomes (KDIGO) criteria modified for neonates.

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Embase
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Publisher
Frontiers Media S.A.
Year of Publication
2020

934.

Higher Flow on Cardiopulmonary Bypass in Pediatrics Is Associated With a Lower Incidence of Acute Kidney Injury.
Reagor J.A., Clingan S., Gao Z., Morales D.L.S., Tweddell J.S., Bryant R., Young W., Cavanaugh J., Cooper D.S.
Embase
Seminars in Thoracic and Cardiovascular Surgery. 32(4) (pp 1015-1020), 2020. Date of Publication: Winter 2020.
[Article]
AN: 2002841804
Adequate perfusion is of paramount concern during cardiopulmonary bypass (CPB) and different methodologies are employed to optimize oxygen delivery. Temperature, hematocrit, and cardiac index (CI) are all modulated during CPB to ensure appropriate support. This study examines 2 different perfusion strategies and their impact on various outcome measures including acute kidney injury (AKI), urine output on CPB, ICU length of stay, time to extubation, and mortality. Predicated upon surgeon preference, the study institution employs 2 different perfusion strategies (PS) during congenital cardiac surgery requiring CPB. One method utilizes a targeted 2.4 L/min/m2 CI and nadir hematocrit of 28% (PS1), the other a 3.0 L/min/m2 CI with a nadir hematocrit of 25% (PS2). This study retrospectively examines CPB cases during which the 2 perfusion strategies were applied to determine potential differences in packed red blood cell administration, urine output during CPB, AKI post-CPB as defined by the KDIGO criteria, and operative survival as defined by the Society of Thoracic Surgeons. Significant differences were found in urine output while on CPB ($P < 0.01$) and all combined stages of postoperative AKI ($P = 0.01$) with the PS2 group faring better in both measures. No significant difference was found between the 2 groups for packed red blood cell administration, mortality, time to extubation, or ICU length of stay. Avoiding a nadir hematocrit less than 25% has been well established but maintaining anything greater than that may not be necessary to achieve adequate oxygen delivery on CPB. Our results indicate that higher CI and oxygen delivery on CPB are associated with a lower rate of AKI and this may be achieved with increased flow rather than increasing the hematocrit thus avoiding unnecessary transfusion.

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Publisher
W.B. Saunders
Year of Publication
2020

935.

Discovery and validation of miR-452 as an effective biomarker for acute kidney injury in sepsis.
Liu Z., Yang D., Gao J., Xiang X., Hu X., Li S., Wu W., Cai J., Tang C., Zhang D., Dong Z.
Embase
Theranostics. 10(26) (pp 11963-11975), 2020. Date of Publication: 2020.
[Article]
AN: 2010033124
Rationale: Sepsis is the cause of nearly half of acute kidney injury (AKI) and, unfortunately, AKI in sepsis is associated with unacceptably high rates of mortality. Early detection of AKI would guide the timely intervention and care of sepsis patients. Currently, NephroCheck, based on urinary [TIMP2]*[IGFBP7], is the only FDA approved test for early detection of AKI, which has a relatively low sensitivity for sepsis patients.
Method(s): In vitro, BUMPT (Boston University mouse proximal tubular cell line) cells were treated with lipopolysaccharides (LPS). In vivo, sepsis was induced in mice by LPS injection or cecal ligation and puncture (CLP). To validate the biomarker potential of miR-452, serum and urinary samples were collected from 47 sepsis patients with AKI, 50 patients without AKI, and 10 healthy subjects.
Result(s): miR-452 was induced in renal tubular cells in septic AKI, and the induction was shown to be mediated by NF-kappaB. Notably, serum and urinary miR-452 increased early in septic mice following LPS or CLP treatment, prior to detectable renal dysfunction or tissue damage. Sepsis patients with AKI had significantly higher levels of serum and urinary miR-452 than the patients without AKI. Spearman's test demonstrated a remarkable positive correlation between urinary miR-452 and serum creatinine in sepsis patients (r=0.8269). The area under the receiver operating characteristic curve (AUC) was 0.8985 for urinary miR-452. Logistic regression analysis showed a striking 72.48-fold increase of AKI risk for every 1-fold increase of urinary miR-452 in sepsis patients. The sensitivity of urinary miR-452 for AKI detection in sepsis patients reached 87.23%, which was notably higher than the 61.54% achieved by urinary [TIMP2]*[IGFBP7], while the specificity of urinary miR-452 (78.00%) was slightly lower than that of [TIMP2]*[IGFBP7] (87.18%).
Conclusion(s): miR-452 is induced via NF-kappaB in renal tubular cells in septic AKI. The increase of miR-452, especially that in urine, may be an effective biomarker for early detection of AKI in sepsis patients.

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Publisher
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936.

Assessment of urinary kidney injury molecule-1 as an indicator of early renal insult in children with cystic fibrosis.
Shahin W., Badr A., Ahmed R., Alattar M., Alfalaki M., Rabie W.
Embase
Open Access Macedonian Journal of Medical Sciences. 8(B) (pp 262-267), 2020. Date of Publication: 20 Apr 2020.
[Article]
AN: 2005866699
BACKGROUND: The risk of acute kidney injury in cystic fibrosis (CF) patients is due to renal tubular affection by CFTR gene. AIM: Our study aimed at early detection of renal impairment in CF patients, to enable careful monitoring and adjustment of nephrotoxic medications.
METHOD(S): Fifty patients with CF were enrolled in our study; they were age-and sex-matched to 40 healthy control children. All subjects were screened by urine analysis, measurements of kidney function tests, fractional excretion of sodium, beta2-microglobulin (beta-2-M) excretion, and renal ultrasound examination. Urinary kidney injury molecule-1 (KIM-1) was assayed using ELISA technique.
RESULT(S): Both urinary beta-2-M and KIM-1 concentrations were significantly higher in CF patients compared to the control group ($p < 0.001$). The duration of the disease was significantly positively correlated with the urinary beta-2-M and KIM-1 levels ($r = 0.6$ and 0.7, respectively; $p < 0.01$).
CONCLUSION(S): Our results showed that urinary KIM-1 can be considered as a sensitive early indicator of acute renal injury.

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Publisher
Open Access Macedonian Journal of Medical Sciences
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937.

Effect of acute kidney injury on the patients with hepatocellular carcinoma undergoing transarterial chemoembolization.
Sohn W., Ham C.B., Kim N.H., Kim H.J., Cho Y.K., Jeon W.K., Kim B.I.
Embase
PLoS ONE. 15(12 December) (no pagination), 2020. Article Number: e0243780. Date of Publication: December 2020.
[Article]
AN: 2010476388
The purpose of this study was to investigate the effect of acute kidney injury (AKI) on the prognosis of patients with hepatocellular carcinoma (HCC) undergoing transarterial chemoembolization (TACE). A total of 347 HCC patients with Child-Pugh class A and pre- TACE serum creatinine (SCr) <=1.5 mg/dL undergoing TACE as an initial therapy 2000- 2014 were analyzed. Overall survival with related risk factors including AKI was investigated. We assessed AKI based on the International Club of Ascites (ICA)-AKI criteria. The mean age was 60.9 years. Of 347 patients, death was observed in 109 patients (31.4%). The mean SCr levels at pre-TACE, one day, two months, and four months after TACE were 0.9, 0.9, 0.9, and 1.1 mg/dL, respectively. The AKI within four months after TACE developed in 37 patients (11%). The AKI stages were non-AKI in 310 (89%), stage 1 in 10 (3%), stage 2 in 10 (3%), and stage 3 in 17 patients (5%). Multivariable analysis showed that the risk factors for overall survival were serum albumin <=3.5 g/dL (hazard ratio [HR] 1.58, p = 0.027), BCLC stage B (HR 2.07, p = 0.008), BCLC stage C (HR 3.96, p<0.001), bilobar tumor location (HR 1.66, p = 0.022), AKI stage 1 (HR 6.09, p<0.001), AKI stage 2 (HR 8.51, p<0.001), and AKI stage 3 (HR 17.64, p<0.001). AKI is a crucial prognostic factor for overall survival in HCC patients undergoing TACE. The assessment of AKI based on the ICA-AKI criteria can facilitate evaluation of the prognosis of HCC patients undergoing TACE.

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Publisher
Public Library of Science
Year of Publication
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938.

Bladder neck reconstruction in girls' pelvic fracture bladder neck avulsion and urethral rupture.
Lv R., Jin C., Shu H., Wang L., Sa Y.
Embase
BMC Urology. 20(1) (no pagination), 2020. Article Number: 179. Date of Publication: 01 Dec 2020.
[Article]
AN: 2007160491
Background: Girls' pelvic fracture bladder neck avulsion and urethral rupture is rare however it causes great morbidity. The management is complex and not standard yet. We report our experience and a technique of bladder neck reconstruction with anterior bladder wall flap.

Method(s): We retrospectively analysed data of 5 girls with pelvic fracture bladder neck avulsion and urethral rupture admitted to our institution from July 2017 to October 2019. They all came to our institution with a suprapubic tube. Patients' trauma was all initially treated at other hospitals, 4 had suprapubic cystotomy and 1 had urethral realignment. One girl also had three other urethroplasties at other hospitals. We took pubectomy, posterior urethroplasty and bladder neck reconstruction with anterior bladder wall flap in these 5 girls. Post-operative assessments included voiding cystourethrography, uroflowmetry and urethroscopy after urethral catheter removal. Verbal consent to participate was obtained from the parent or legal guardian of the children.
Result(s): Operation time ranged from 120 to 180 min. Follow-up time is 12 to 27 months. Uroflowmetry showed that maximum urine flow rate improved significantly. Cystourethrography indicated good continuity of the urethra. Two girls had urinary incontinence postoperatively but were continent 3 months later. One patient developed vesical-abdominal fistula and got repaired by surgery 6 months later. She was continent ever since. Other complications were not observed during the follow-up period.
Conclusion(s): Our method of bladder neck reconstruction using bladder flap as a patch is feasible and provides good continence, especially for those with serious bladder neck avulsion and urethral rupture caused by extensive trauma and those who had posttraumatic urethral distraction needed second repair.

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Publisher
BioMed Central Ltd
Year of Publication
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939.

Vancomycin plus piperacillin/tazobactam and acute kidney injury risk: A review of the literature.
Covert K.L., Knoetze D., Cole M., Lewis P.
Embase
Journal of Clinical Pharmacy and Therapeutics. 45(6) (pp 1253-1263), 2020. Date of Publication: 01 Dec 2020.
[Review]
AN: 2005891554
What is known and objective: Acute kidney injury is a devastating consequence observed with antibiotic therapy. The objective of this review was to summarize available data regarding the rates of acute kidney injury with vancomycin plus piperacillin/tazobactam compared to other beta-lactam combinations.
Method(s): A PubMed search from 2011 to May 2020 was conducted using the following search terms: vancomycin AND piperacillin/tazobactam AND acute kidney injury. Additional references were identified from a review of citations. Articles evaluating exclusively paediatric patients and

articles evaluating vancomycin monotherapy as the comparator group were excluded. Case reports and case series were also excluded. Results and discussion: There were 18 studies included. Ten studies adjusted for potential confounders of acute kidney injury. Fourteen retrospective studies, one prospective study and three meta-analyses found the combination of vancomycin/piperacillin/tazobactam to be associated with a higher rate of acute kidney injury than the comparator group(s). What is new and conclusion: Although there are data to support that the combination of vancomycin plus piperacillin-tazobactam increases the risk of acute kidney, much of the data come from small retrospective studies with variable adjustment for confounders. Furthermore, study heterogeneity on inclusion criteria and evaluation of long-term outcomes should be cautiously interpreted. Finally, additional data suggest that the risk of acute kidney injury seems to be minimized with shorter courses of therapy. Without prospective studies available, antimicrobial stewardship efforts should continue to target reducing broad-spectrum regimens, often limiting the need for long-term vancomycin/piperacillin/tazobactam combination.

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32810312 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32810312]
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Blackwell Publishing Ltd
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940.

Identifying critically ill children at high risk of acute kidney injury and renal replacement therapy.
McGalliard R.J., McWilliam S.J., Maguire S., Jones C.A., Jennings R.J., Siner S., Newland P., Peak M., Chesters C., Jeffers G., Broughton C., McColl L., Lane S., Paulus S., Cunliffe N.A., Baines P., Carrol E.D.
Embase
PLoS ONE. 15(10 October) (no pagination), 2020. Article Number: e0240360. Date of Publication: October 2020.
[Article]
AN: 2008445652
Acute kidney injury (AKI), a common complication in paediatric intensive care units (PICU), is associated with increased morbidity and mortality. In this single centre, prospective, observational cohort study, neutrophil gelatinase-associated lipocalin in urine (uNGAL) and plasma (pNGAL) and renal angina index (RAI), and combinations of these markers, were assessed for their ability to predict severe (stage 2 or 3) AKI in children and young people admitted to PICU. In PICU children and young people had initial and serial uNGAL and pNGAL measurements, RAI calculation on day 1, and collection of clinical data, including serum creatinine measurements. Primary outcomes were severe AKI and renal replacement therapy (RRT). Secondary outcomes were length of stay, hospital acquired infection and mortality. The area under the Receiver Operating Characteristic (ROC) curves and Youden index was used to determine biomarker performance and identify optimum cut-off values. Of 657 children recruited, 104 met criteria for

severe AKI (15*8%) and 47 (7*2%) required RRT. Severe AKI was associated with increased length of stay, hospital acquired infection, and mortality. The area under the curve (AUC) for severe AKI prediction for Day 1 uNGAL, Day 1 pNGAL and RAI were 0.75 (95% Confidence Interval [CI] 0*69, 0*81), 0*64 (95% CI 0*56, 0*72), and 0.73 (95% CI 0*65, 0*80) respectively. The optimal combination of measures was RAI and day 1 uNGAL, giving an AUC of 0*80 for severe AKI prediction (95% CI 0*71, 0*88). In this heterogenous PICU cohort, urine or plasma NGAL in isolation had poorer prediction accuracy for severe AKI than in previously reported homogeneous populations. However, when combined together with RAI, they produced good prediction for severe AKI.

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Publisher
Public Library of Science
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941.

Effect of HELLP syndrome on acute kidney injury in pregnancy and pregnancy outcomes: a systematic review and meta-analysis.
Liu Q., Ling G.-J., Zhang S.-Q., Zhai W.-Q., Chen Y.-J.
Embase
BMC Pregnancy and Childbirth. 20(1) (no pagination), 2020. Article Number: 657. Date of Publication: 01 Dec 2020.
[Article]
AN: 2007120021
Background: HELLP syndrome may increase adverse pregnancy outcomes, though the incidence of it is not high. At present, the impact of HELLP syndrome on P-AKI (acute kidney injury during pregnancy) and maternal and infant outcomes is controversial. Thus, we conducted a meta-analysis to find out more about the relationship between HELLP syndrome and P-AKI and pregnancy outcomes.

Method(s): We systematically searched PubMed, Embassy and Cochrane Databases for cohort studies and RCT to assess the effect of HELLP syndrome on P-AKI and maternal and infant outcomes. Study-specific risk estimates were combined by using fixed-effect or random-effect models.
Result(s): This meta-analysis included 11 cohort studies with a total of 6333 Participants, including 355 cases of pregnant women with HELLP syndrome and 5979 cases that without. HELLP syndrome was associated with relatively higher risk of P-AKI (OR4.87 95% CI 3.31 ~ 7.17, P<0.001), fetal mortality (OR1.56 95% CI 1.45 ~ 2.11, P<0.001) and Maternal death (OR3.70 95% CI 1.72 ~ 7.99, P<0.001).
Conclusion(s): HELLP syndrome is associated with relatively higher risk of P-AKI, fetal mortality and maternal death.

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Publisher
BioMed Central Ltd
Year of Publication
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942.

Goal-directed perfusion to reduce acute kidney injury after paediatric cardiac surgery (GDP-AKIp): Study protocol for a prospective randomised controlled trial.
Zhang Y., Zhou X., Wang B., Guo L., Zhou R.
Embase
BMJ Open. 10(12) (no pagination), 2020. Article Number: 039385. Date of Publication: 10 Dec 2020.
[Review]
AN: 633653081
Introduction Cardiac surgery-associated acute kidney injury (CS-AKI) occurs in up to 40%~60% of paediatric patients and increases postoperative morbidity and mortality. A goal-directed perfusion (GDP) strategy aimed at maintaining indexed oxygen delivery (DO 2 i) above the critical threshold (reported to be 260~300 mL/min/m 2 in adults) during cardiopulmonary bypass (CPB), is effective in reducing the incidence of CS-AKI. However, no clear standards of paediatric critical DO 2 i exist. Our prior prospective cohort study exploring the critical DO 2 i threshold during paediatric CPB has found the nadir DO 2 i <353 mL/min/m 2 was an independent risk predictor of CS-AKI. Based on this background, this trial is designed to further determine whether the implementation of the GDP initiative aimed at maintaining DO 2 i >=360 mL/min/m 2 would reduce the rate of CS-AKI in paediatrics and improve clinical outcome. Methods and analysis This is a prospective, single-centre, randomised controlled trial. In total, 166 paediatric patients undergoing cardiac surgery will be randomly allocated to the GDP group or control group. Patients in the GDP arm will be treated with a GDP strategy during CPB aimed to maintain DO 2 i at >=360 mL/min/m 2 (to ensure safely above the risk DO 2 i threshold we found). The perfusion strategy for patients in the control arm will be factored on body surface area and temperature. The primary outcome is the rate of postoperative CS-AKI (it is defined according to paediatric

Risk, Injury, Failure, Loss of renal function and End-stage renal disease criteria). The secondary end points include: (1) the other oxygen metabolism parameters during CPB; (2) major complication and all-cause mortality (in-hospital or within 30 days postoperatively); (3) short-term clinical outcomes (ie, time to extubation, mechanical ventilation time, hospital stay). Ethics and dissemination The study has been approved by the Biomedical Research Ethics committee of West China Hospital of Sichuan University (approval number: 2019(863)). Results will be disseminated through peer-reviewed publications and conferences. Trial registration number ChiCTR2000029232.

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33303444 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33303444]
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Embase
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Publisher
BMJ Publishing Group
Year of Publication
2020

943.

Acute Kidney Injury Associated With Urinary Stone Disease in Children and Young Adults Presenting to a Pediatric Emergency Department.
Farris N., Raina R., Tibrewal A., Brown M., Colvis M., Schwaderer A., Kusumi K.
Embase
Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 591520. Date of Publication: 30 Nov 2020.
[Article]
AN: 633654366
Background: Acute kidney injury (AKI) due to urinary stone disease (USD) is rare in adults; AKI rates in children with USD may be higher, and emerging data links stones to chronic kidney disease (CKD) development in adults.
Method(s): This study is a retrospective analysis of USD patients at a single pediatric hospital system's emergency department (ED). Patients were initially identified by USD ICD codes; USD was then confirmed by imaging or physician documentation; patients had to have baseline creatinine (Cr) and Cr in the ED for comparison to be included. AKI was defined by Kidney Disease: Improving Global Outcomes (KDIGO), Acute Kidney Injury Network (AKIN), and Pediatric Risk, Injury, Failure, Loss, End Stage (pRIFLE).
Result(s): Of the 589 total visits, 264/589 (45%) had data to evaluate for AKI, 23% were AKI(+) and 77% were AKI(-). pRIFLE was most common (82%) and 18% were only positive by AKIN/KDIGO. AKI(+) were more likely to be younger (16.7 vs. 17.4 years, p = 0.046) and more likely to present with vomiting {odds ratio [OR] [95% confidence interval (CI)]: 2.4 [1.4-4.3], p = 0.002}; also, the proportion of AKI(+) was significantly higher in <18 vs. >=18 years [26.9 vs. 15.5%, p = 0.032, OR (95% CI): 2.0 (1.1-3.9)]. Urinary tract infection (UTI) and obstruction rates were similar between groups. AKI(+) patients had a significant OR <1 suggesting less risk of receiving non-steroidal anti-inflammatory drugs (NSAIDs); however, 51% of them did receive NSAIDs during their ED encounter. AKI(+) patients were more likely to require admission to the hospital (53 vs. 32%, p = 0.001).
Conclusion(s): We have demonstrated a novel association between USD-induced renal colic and AKI in a group of young adults and children. AKI(+) patients were younger and were more likely

to present with vomiting. AKI(+) patients did not have higher rates of obstruction or UTI, and 51% of AKI(+) received NSAIDs.

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Publisher
Frontiers Media S.A.
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944.

Outcomes of Dog Bite Avulsion Injury Reconstruction With Urinary Bladder Matrix.
Ong A.A., Nagy R., Fincham M.R., Nagy M.L.
Embase
Otolaryngology - Head and Neck Surgery (United States). 163(6) (pp 1166-1168), 2020. Date of Publication: December 2020.
[Article]
AN: 2005188736
Dog bite avulsion injuries of the head and neck are difficult to manage in pediatric patients. This study assesses the outcomes of using porcine urinary bladder extracellular matrix (UBM) for reconstruction of these complete avulsion injuries. Five male pediatric patients underwent reconstruction using UBM. Two (40%) patients underwent reconstruction of the nose; the other 3 patients underwent reconstruction of the forehead, forehead/glabella, and auricle. The average size of the avulsion defect was 7.0 +/- 2.4 cm2. No patient developed wound dehiscence, graft loss, or wound infection. Four (80%) patients received pulsed dye laser treatment to improve wound cosmesis. Use of UBM is a safe and effective reconstructive option after dog bite avulsion injuries of the head and neck. Given the advantages of convenient availability and avoidance of donor site morbidity, UBM can be considered for reconstruction of posttraumatic avulsion injuries or Mohs defects.

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32513056 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32513056]
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SAGE Publications Inc.
Year of Publication
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945.

Utility of Urine Interleukines in Children with Vesicoureteral Reflux and Renal Parenchymal Damage.
Nickavar A., Safaeian B., Valavi E., Davoodi H.
Embase
Urology journal. 18(2) (pp 199-202), 2020. Date of Publication: 04 Aug 2020.
[Article]
AN: 632618810
PURPOSE: Vesicoureteral reflux (VUR) is the most common risk factor of urinary tract infection in children. Currently, diagnosis of VUR depends on invasive imaging studies, with a high radiologic burden. Therefore, different biomarkers have been introduced for the evaluation of these patients. The objective of this study was to identify alteration of urinary interleukins (ILs) excretion in children with primary VUR and renal parenchymal damage, for further clinical application.
MATERIALS AND METHODS: Urinary concentrations of IL-1alpha, IL-1beta, IL-6, and IL-8 were evaluated in 34 children with VUR (cases) and 36 without VUR (control), during 2018-2019. Urinary concentrations of IL-1, IL-1, IL-6 and IL-8 were measured, using polyclonal antibody ELISA kit, and standardized to urine creatinine (Cr). Patients with infectious or inflammatory disorders, urolithiasis, immune deficiency, acute or chronic kidney disease, and secondary VUR were excluded from the study.
RESULT(S): Mean age of cases (36.00 +/- 27.66) had no significant difference with the control (32.86+/-29.31) group (p=0.44). The majority of patients had moderate VUR (58.8%), followed by severe (35.3%) and mild (5.9%) grades. Urinary concentration of all ILs/Cr were significantly higher in patients with VUR, compared with those without VUR. There was no significant correlation between urine ILs/Cr with age, gender, serum electrolytes, urine specific gravity, renal ultrasound, laterality or severity of VUR, and DMSA renal scan. All urine ILs/Cr had acceptable sensitivity and accuracy for workup of children with primary VUR.
CONCLUSION(S): Urine IL-1alpha, IL-1beta, IL-6 and IL-8/Cr were sensitive and accurate additionary screening biomarkers in children with primary VUR.
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32798229 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32798229]
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Publisher
NLM (Medline)
Year of Publication
2020

946.

Management of pelvic fracture urethral injuries in the developing world.
Joshi P.M., Kulkarni S.B.
Embase
World journal of urology. 38(12) (pp 3027-3034), 2020. Date of Publication: 01 Dec 2020.
[Article]
AN: 629198827
INTRODUCTION: Pelvic fracture causes urethral injury in about 10% of patients. The etiology of injury is different in developing and developed world. While high-velocity automobile accidents are common in developed countries, where patients are in the car and there is usually a side impact, in the developing world, significant number of injuries are caused by two-wheeler accidents, pedestrians, farming accidents, fall from height, fall from tractor, fall from tree, and other causes like earthquake. We share our experience which is the largest in the reported literature. MATERIALS AND METHODS: In our tertiary referral center, we get referrals from all across the globe. Since 1995 till 2018 we have performed 1307 surgeries for Pelvic fracture urethral injury. Our referrals are for complex urethroplasty. Our data from 1995-2018 was analyzed. Data after June 2018 was not included so as to have a minimum follow up of 6 months. RESULT(S): 1296 patients were males and 11 were females. In the group of 1296 males, mean age was 32.4 years (range 1-79 years). The minimum follow-up was 6 months, and the median follow-up was 56.7 months (range 6.2-233.7). The overall success rate was 88.79% for primary cases while re-do urethroplasty patients had a success rate of 83.70%. The majority of our patients (more than 61.40%) needed inferior pubectomy: Of the total 1307 cases of urethroplasty for pelvic fracture urethral injury data was available for 1042 patients. Data were available for 1042 patients. The data from 2012 onwards were prospectively analyzed while the previous data were retrospectively analyzed.
CONCLUSION(S): PFUI are common in the developing world. They tend to be more complex and have longer gaps as compared to developed world. This could be related to the anthropometric differences between races as well as nature of injury. They are best managed with delayed transperineal repair with excellent outcomes. Ancillary maneuvers are more frequently required. Re-do urethroplasty can achieve good results.
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31468131 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31468131]
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Publisher
NLM (Medline)
Year of Publication
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947.

Outcome of angioembolization for blunt renal trauma in haemodynamically unstable patients: 10-year analysis of Queensland public hospitals.
Desai D., Ong M., Lah K., Clouston J., Pearch B., Gianduzzo T.
Embase
ANZ journal of surgery. 90(9) (pp 1705-1709), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 632590366
BACKGROUND: The aim of the study was to evaluate whether angioembolization is an appropriate alternative method for the management of blunt renal trauma in haemodynamically unstable patients.

METHOD(S): A retrospective analysis was conducted from 2002 to 2012 at three tertiary trauma hospitals in the state of Queensland. Patients who had blunt renal trauma and underwent renal angioembolization or had a trauma nephrectomy were identified using patient records and operating theatre and interventional radiology databases. The inclusion criteria were - haemodynamically unstable patients with blunt renal trauma treated with angioembolization, above the age of 16years. Patients who underwent angioembolization for other causes such as: penetrating renal trauma, post-procedure, renal tumours, renal angiomyolipomas or arteriovenous malformations were excluded. Patients below the age of 16 were also excluded. Post-embolization renal function, blood pressure, morbidity and mortality were analysed using the paired t2 test.
RESULT(S): A total of 668 renal trauma patients were identified during this period. Sixteen patients underwent angioembolization for blunt renal trauma. Post-procedure renal function normalized without any hypertension with the median follow up being 4 months. Four patients had post-embolization complications including a urinoma, two devascularized kidneys and one ureteric stricture requiring nephrectomy. There was no mortality.
CONCLUSION(S): Selective angioembolization, where feasible, is an alternative method in the management of haemodynamically stable patients with blunt renal trauma maximizing nephron sparing and producing acceptable long-term outcomes with avoidance of the morbidity of trauma nephrectomy. This is the first study that we know of in Australia analysing the outcome of angioembolization for blunt renal trauma.

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Publisher
NLM (Medline)
Year of Publication
2020

948.

Acute kidney injury and workload in a sample of California agricultural workers.
Moyce S., Armitage T., Mitchell D., Schenker M.
Embase
American journal of industrial medicine. 63(3) (pp 258-268), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 629991125
BACKGROUND: Kidney damage is associated with an increased workload in high ambient temperatures and may represent a pathway to chronic kidney disease of unknown origin in agricultural workers. We tested the associations of workload and heat with acute kidney dysfunction in California agricultural workers.
METHOD(S): We recruited a convenience sample of 471 agricultural workers from 29 farms in California during two summer harvest seasons. The sustained 3-minute maximum workload was

estimated using accelerometer data collected from Actical monitors and individual heat load through elevations in core body temperature. Acute kidney injury (AKI) was defined by a change in serum creatinine of >=0.3mg/dL or >=1.5 times the preshift creatinine over the course of the work shift. Associations between AKI and workload were modeled using logistic regression, controlling for demographic, physiologic, and occupational variables.
RESULT(S): Of the total, 357 workers (75.8%) had accelerometer readings in the moderate workload category, 93 (19.7%) had readings in the vigorous category. 177 (36%) had elevations of core body temperature >=1degreeC; 72 workers (14.9%) demonstrated evidence of AKI after a single day of agricultural work. The workload category was associated with an increased adjusted odds of AKI (1.92; 95% confidence interval, 1.05-3.51). Piece-rate work was also associated with increased adjusted odds of AKI (3.02; 95% CI, 1.44-6.34).
CONCLUSION(S): Heavy occupational workload and piece-rate work were associated with acute effects on the renal health of agricultural workers. This indicates that occupations requiring high physical effort put workers at risk for AKI, possibly independent of ambient and core body temperature. Changes to agricultural practices may reduce the risk of renal disorders for these workers.

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Publisher
NLM (Medline)
Year of Publication
2020

949.

Hydration Choices, Sugary Beverages, and Kidney Injury in Agricultural Workers in California.
Moyce S., Mitchell D., Vega A., Schenker M.
Embase
Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing. 52(4) (pp 369-378), 2020. Date of Publication: 01 Jul 2020.
[Article]
AN: 631717577
PURPOSE: Agricultural workers working in high ambient temperatures are at risk for acute kidney injury. Despite recommendations to maintain hydration, workers likely do not drink enough to protect their renal function. Additionally, new research suggests that rehydration with sugary beverages adds additional risk to kidneys already stressed by high heat and workload. We assessed hydration choices during a work shift and tested associations of rehydration using sugary beverages with acute kidney injury.
METHOD(S): We recruited a convenience sample of workers on farms over two summers. We estimated acute kidney injury via pre- and post-shift serum creatinine readings from capillary blood samples. We used self-reported measures of the volume and type of fluids workers consumed during their shifts. We also measured changes in core body temperature, ambient temperature, and workload. We used logistic regression to estimate associations of sugary drinks with acute kidney injury, while controlling for physiologic and occupational variables. FINDINGS: In our sample of 445 participants, we found that men drink more than women do overall, including

more than a liter of water than women (2.9 L compared to 1.9 L, respectively). The total volume workers drank was associated with increased odds of acute kidney injury (adjusted odds ratio 1.47, 95% confidence interval 1.09-1.99). We found no association of sugary drinks with acute kidney injury.
CONCLUSION(S): These findings provide important information about what men and women use to hydrate during the work day and suggest that they do not drink enough to maintain adequate hydration. Increased fluid intake during the work day may be a result of vigorous workload, which could explain the increased risk for acute kidney injury. Nurses play an important role in educating agricultural workers about the importance of maintaining hydration at work. CLINICAL RELEVANCE: This study advances current knowledge of occupational risk factors for acute kidney injury in agricultural workers. Nurses may be the only point of care for this vulnerable population and are therefore in a unique position to educate on the importance of proper hydration during work.

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Publisher
NLM (Medline)
Year of Publication
2020

950.

Epidemiologic Characteristics of Acute Kidney Injury during Cisplatin Infusions in Children Treated for Cancer.
McMahon K.R., Rassekh S.R., Schultz K.R., Blydt-Hansen T., Cuvelier G.D.E., Mammen C., Pinsk M., Carleton B.C., Tsuyuki R.T., Ross C.J.D., Palijan A., Huynh L., Yordanova M., Crepeau-Hubert F., Wang S., Boyko D., Zappitelli M.
Embase
JAMA Network Open. (no pagination), 2020. Article Number: e3639. Date of Publication: 2020. [Article]
AN: 631783612
Importance: Few multicenter pediatric studies have comprehensively described the epidemiologic characteristics of cisplatin-associated acute kidney injury using standardized definitions.
Objective(s): To examine the rate of and risk factors associated with acute kidney injury among children receiving cisplatin infusions.
Design, Setting, and Participant(s): This prospective cohort study examined children (aged <18 years) recruited from May 23, 2013, to March 31, 2017, at 12 Canadian pediatric academic health centers who were receiving 1 or more cisplatin infusion. Children whose estimated or measured glomerular filtration rate (GFR) was less than 30 mL/min/1.73 m2 or who had received a kidney transplant were excluded. Data analysis was performed from January 3, 2018, to September 20, 2019. Exposures: Cisplatin infusions.

Main Outcomes and Measures: The primary outcome was acute kidney injury during cisplatin infusion, defined using a Kidney Disease: Improving Global Outcomes serum creatinine criteria-based definition (stage 1 or higher). The secondary outcome was acute kidney injury defined by electrolyte criteria from the National Cancer Institute Common Terminology Criteria for Adverse Events (grade 1 or higher). Assessments occurred at early (first or second cycle) and late (last or second to last cycle) cisplatin infusions.
Result(s): A total of 159 children (mean [SD] age at early cisplatin infusion, 7.2 [5.3] years; 80 [50%] male) participated. The most common diagnoses were central nervous system tumors (58 [36%]), neuroblastoma (43 [27%]), and osteosarcoma (33 [21%]). Acute kidney injury (by serum creatinine level increase) occurred in 48 of 159 patients (30%) at early cisplatin infusions and 23 of 143 patients (16%) at late cisplatin infusions. Acute kidney injury (by electrolyte abnormalities) occurred in 106 of 159 patients (67%) at early cisplatin infusion and 100 of 143 patients (70%) at late cisplatin infusions. Neuroblastoma diagnosis and higher precisplatin GFR were independently associated with acute kidney injury (serum creatinine level increase) at early cisplatin infusions (adjusted odds ratio [aOR] for neuroblastoma vs other, 3.25; 95% CI, 1.18-8.95; aOR for GFR, 1.01; 95% CI, 1.00-1.03) and late cisplatin infusions (aOR for neuroblastoma vs other, 6.85; 95% CI, 1.23-38.0; aOR for GFR, 1.01; 95% CI, 1.00-1.03). Higher cisplatin infusion dose was also independently associated with acute kidney injury (serum creatinine level increase) at later cisplatin infusions (aOR, 1.05; 95% CI, 1.01-1.10).
Conclusions and Relevance: The findings suggest that acute kidney injury is common among children receiving cisplatin infusions and that rate and risk factors differ at earlier vs later infusions. These results may help with risk stratification with a goal of risk reduction.

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Publisher
American Medical Association

Year of Publication
2020

951.

Multicenter analysis of posterior urethroplasty complexity and outcomes following pelvic fracture urethral injury.
Johnsen N.V., Moses R.A., Elliott S.P., Vanni A.J., Baradaran N., Greear G., Smith T.G., Granieri M.A., Alsikafi N.F., Erickson B.A., Myers J.B., Breyer B.N., Buckley J.C., Zhao L.C., Voelzke B.B.
Embase
World journal of urology. 38(4) (pp 1073-1079), 2020. Date of Publication: 01 Apr 2020.
[Article]
AN: 628133206
PURPOSE: To analyze outcomes of posterior urethroplasty following pelvic fracture urethral injuries (PFUI) and to determine risk factors for surgical complexity and success.
METHOD(S): Patients who underwent posterior urethroplasty following PFUI were identified in the Trauma and Urologic Reconstructive Network of Surgeons (TURNS) database. Demographics, injury patterns, management strategies, and prior interventions were evaluated. Risk factors for surgical failure and the impact of ancillary urethral lengthening maneuvers (corporal splitting, pubectomy and supracrural rerouting) were evaluated.
RESULT(S): Of the 436 posterior urethroplasties identified, 122 were following PFUI. 83 (68%) patients were acutely managed with suprapubic tubes, while 39 (32%) underwent early endoscopic realignment. 16 (13%) patients underwent pelvic artery embolization in the acute setting. 116 cases (95%) were completed via a perineal approach, while 6 (5%) were performed via an abdominoperineal approach. The need for one or more ancillary maneuvers to gain urethral length occurred in 4 (36%) patients. Of these, 44 (36%) received corporal splitting, 16 (13%) partial or complete pubectomy, and 2 (2%) supracrural rerouting. Younger patients, those with longer distraction defects, and those with a history of angioembolization were more likely to require ancillary maneuvers. 111 patients (91%) did not require repeat intervention during follow-up. Angioembolization (p=0.03) and longer distraction defects (p=0.01) were associated with failure.
CONCLUSION(S): Posterior urethroplasty provides excellent success rates for patients following PFUI. Pelvic angioembolization and increased defect length are associated with increased surgical complexity and risk of failure. Surgeons should be prepared to implement ancillary maneuvers when indicated to achieve a tension-free anastomosis.
PMID
31144093 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31144093]
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Publisher

NLM (Medline)
Year of Publication
2020

952.

Risk factors for febrile genito-urinary infection in the catheterized patients by with spinal cord injury-associated chronic neurogenic lower urinary tract dysfunction evaluated by urodynamic study and cystography: a retrospective study.
Shigemura K., Kitagawa K., Nomi M., Yanagiuchi A., Sengoku A., Fujisawa M.
Embase
World journal of urology. 38(3) (pp 733-740), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 627231811
INTRODUCTION: To investigate the risk factors for febrile genito-urinary tract infection (GUTI) in spinal cord injury-associated neurogenic lower urinary tract dysfunction (NLUTD) patients who perform routine clean intermittent catheterization (CIC) evaluated by urodynamic study (UDS) and cystography.
PATIENTS AND METHODS: Over a 3-year period, we retrospectively assessed risk factors for febrile UTI in 141 spinal cord injury patients diagnosed as NLUTD and performing routine CIC, regarding gender, UDS findings such as bladder compliance, maximum cystometric capacity, and cystography.
RESULT(S): A total of 41 patients had febrile GUTI in the follow-up period as along with 32 cases of pyelonephritis, 10 cases of epididymitis, and 1 case of prostatitis, including patients with multiple infectious diseases. The causative bacteria were Escherichia coli (14 cases) followed by Pseudomonas aeruginosa (n=5), Klebsiella pneumoniae (n=4), and Klebsiella oxytoca (n=4). Antibiotic-resistant E. coli were seen, with 36.4% instances of extended-spectrum beta-lactamase production in whole of E. coli. Male gender (p=0.018), ASIA Impairment Scale (AIS) C or more severe (p=0.031), the number of CIC (p=0.034), use of quinolones (p<0.001) and severe bladder deformity (DG 2 or more, p=0.004) were significantly associated with febrile GUTI occurrence.
CONCLUSION(S): Our data demonstrated that male gender, severe bladder deformity (DG 2 or more), AIS C or more, the number of CIC, and use of quinolones were significantly associated with febrile GUTI occurrence in NLUTD patients employing routine CIC. Further prospective studies are necessary to define the full spectrum of possible risk factors for febrile GUTI in these patients.
PMID
30949801 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30949801]
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Publisher
NLM (Medline)
Year of Publication

2020

953.

Novel biomarkers of acute kidney injury in children: an update on recent findings.
Sandokji I., Greenberg J.H.
Embase
Current opinion in pediatrics. 32(3) (pp 354-359), 2020. Date of Publication: 01 Jun 2020.
[Review]
AN: 631635100
PURPOSE OF REVIEW: The clinical diagnosis of acute kidney injury (AKI) relies largely on changes in serum creatinine; a delayed biomarker. Research in children has been focused on developing novel AKI biomarkers, which can improve the prediction, early detection and diagnosis of kidney injury, as well as our understanding of AKI pathophysiology. In this review, we describe recently published studies on urine or blood biomarkers of AKI. The mechanistic relevance of neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1, interleukin (IL)-18, liver-type fatty acid binding protein, tissue inhibitor of metalloproteinase (TIMP)-2/insulin-like growth factor-binding protein (IGFBP)-7, uromodulin, as well as other inflammatory biomarkers are discussed in the context of AKI pathophysiology, as well as their performance predicting or diagnosing AKI. RECENT FINDINGS: Biomarkers of tubular injury, cell cycle arrest and inflammation are presented in this review. NGAL continues to be the most frequently studied biomarker and continues to have good performance in a variety of clinical settings, most notably after cardiopulmonary bypass. We also found promising results with less studied biomarkers for the prediction of AKI in children, including TIMP2, IGFBP7, uromodulin, tumor necrosis factor-alpha and IL-8. SUMMARY: Identifying new AKI biomarkers is a priority in pediatric nephrology research because of the morbidity associated with AKI, as well as the lack of therapies for AKI. Recent research suggests that novel AKI biomarkers have the potential to predict the development of AKI and diagnose AKI earlier than changes in serum creatinine. The diverse causes of AKI, the different settings where patients develop AKI and the changing biomarker reference ranges throughout childhood remain challenges in biomarker development.
PMID
32332324 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32332324]
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Publisher
NLM (Medline)
Year of Publication
2020

954.

Corrigendum to "Risk factors and associated outcomes of early acute kidney injury in pediatric liver transplant recipients: A retrospective study" [J Pediatr Surg 55 (2020) 446-450](S002234681930507X)(10.1016/j.jpedsurg.2019.07.019).
Zhang Y., Xiang B., Wu Y., Xie X., Wang J., Jjin S.
Embase

Journal of Pediatric Surgery. 55(4) (pp 781), 2020. Date of Publication: April 2020.
[Erratum]
AN: 2005458777
The authors regret that there were errors in the abstract, manuscript text, and two tables. The corrected two tables are listed below. [Table presented] [Table presented] In the Results section of the Abstract of the manuscript, first line, should state "The final multivariable regression model showed that biliary atresia (odds ratio [OR]=9.097, P = 0.03), (increased time of the anhepatic phase [OR]=9.871, P = 0.005).... In the Manuscript text, under 2. Results, lines 9 and 10, should state "In the final multivariable regression model, pediatric liver recipients with biliary atresia (odds ratio [OR]=9.097, P = 0.03), (an increased anhepatic phase [OR]=9.871, P = 0.005).... The authors would like to apologise for any inconvenience caused.

PMID
32248903 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32248903]
Status
Embase
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Publisher
W.B. Saunders
Year of Publication
2020

955.

A Simple Scoring Method for Predicting the Low Risk of Persistent Acute Kidney Injury in Critically Ill Adult Patients.
Matsuura R., Iwagami M., Moriya H., Ohtake T., Hamasaki Y., Nangaku M., Doi K., Kobayashi S., Noiri E.
Embase
Scientific reports. 10(1) (pp 5726), 2020. Date of Publication: 31 Mar 2020.
[Article]
AN: 631416470
The renal angina index has been proposed to identify patients at high risk of persistent AKI, based on slight changes in serum creatinine and patient conditions. However, a concise scoring method has only been proposed for pediatric patients, and not for adult patients yet. Here, we developed and validated a concise scoring method using data on patients admitted to ICUs in 21 Japanese hospitals from 2012 to 2014. We randomly assigned to either discovery or validation cohorts, identified the factors significantly associated with persistent AKI using a multivariable logistic regression model in the discovery cohort to establish a scoring system, and assessed the validity of the scoring in the validation cohort using receiver operating characteristic analysis and the calibration slope. Among 8,320 patients admitted to the ICUs, persistent AKI was present in 1,064 (12.8%) patients. In the discovery cohort (n=4,151), 'hyperbilirubinemia', 'sepsis' and 'ventilator and/or vasoactive' with small changes in serum creatinine were selected to establish the scoring. In the validation cohort (n=4,169), the predicting model based on this scoring had a c-statistic of 0.79 (95%CI, 0.77-0.81) and was well calibrated. In conclusion, we established a concise scoring method to identify potential patients with persistent AKI, which performed well in the validation cohort.
PMID
32235839 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32235839]
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Publisher
NLM (Medline)
Year of Publication
2020

956.

Proteomic identification of early urinary-biomarkers of acute kidney injury in preterm infants.
Jung Y.H., Han D., Shin S.H., Kim E.-K., Kim H.-S.
Embase
Scientific reports. 10(1) (pp 4057), 2020. Date of Publication: 04 Mar 2020.
[Article]
AN: 631165103
The immature preterm kidney is likely to be vulnerable to acute kidney injury (AKI). However, the biomarkers currently used for AKI are not sensitive or specific and are also inadequate for the timely detection of AKI in preterm infants. The objectives of this study were to identify novel urinary biomarkers of AKI using proteomic techniques, and to verify and validate that the candidates can serve as early predictive biomarkers for AKI. In total, 1,810 proteins were identified in the discovery phase. Among those proteins, 174 were selected as the 1st targeted proteins. A total of 168 proteins were quantified, and the levels of 6 were significantly increased in the AKI group in the verification phase. Using a clinical assay, the results were confirmed and validated using samples of the first urine after birth from the biorepository. Finally, enzyme-linked immunosorbent assays revealed that the levels of annexin A5, neutrophil gelatinase-associated lipocalin (NGAL), and protein S100-P were significantly higher in the samples of the first urine from patients with AKI than in those from patients without AKI. In conclusion, urinary annexin A5, NGAL and protein S100-P levels are promising biomarkers for early, accurate prediction of AKI in preterm infants.
PMID
32132597 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32132597]
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Publisher
NLM (Medline)
Year of Publication
2020

957.

Early Detection of Renal Injury in Children with Sickle Cell Anaemia using Microalbuminuria in a Tertiary Health Institution in Southern Nigeria.
Ekpenyong E.E., Ikpeme E.E., Bassey E.G., Dixon-Umo O.T.
Embase
West African journal of medicine. 37(4) (pp 412-417), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 632692381
BACKGROUND: Sickle cell anaemia (SCA), one of the causes of morbidity and mortality in children is associated with a large spectrum of systemic complications including sickle cell nephropathy (SCN). Microalbuminuria has been used as a marker of preclinical glomerular damage in these patients. This study aimed at detecting early, renal injury in children with SCA aged 1-17 years, highlighting associations and predictors of microalbuminuria in these children.
METHOD(S): 102 known HbSS children aged 1-17yrears in steady state were recruited into a cross-sectional study. Socio-demographic and clinical findings were recorded. Albuminuria was assayed with spot urine using a quantitative method. Urine creatinine concentration was estimated using the Roche reflotron test strips for quantitative determination of creatinine in blood, serum, plasma and urine. Albumin to creatinine ratio (ACR) was then calculated. Microalbuminuria was defined as ACR of 30-300mg/g.
RESULT(S): Microalbuminuria was detected in 22.5% of SCA patients in our cohort. Age (p=0.001), gender (p=0.000), packed cell volume (p=0.047) showed a significant relationship with the occurrence of microalbuminuria in this study. Increasing age (OR=1.72, CI=1.22-2.44, p=0.002), female gender (OR=0.09, CI=0.01-0.95, p=0.04) and lower packed cell volume (OR=0.49, CI=0.26-0.90, p=0.02) emerged as independent risk factors associated with the occurrence of microalbuminuria in the study population.
CONCLUSION(S): Renal injury occurs in a high proportion of patients with SCA. Routine screening of all patients with SCA as part of their follow up is therefore recommended to identify patients with early renal injury for proper management.
PMID
32835405 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32835405]
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Publisher
NLM (Medline)
Year of Publication
2020

958.

Profile of renal artery embolization (RAE) for renal trauma: A comparison of data from two major trauma center.

Chen J., Cai W., Li L.
Embase
International braz j urol : official journal of the Brazilian Society of Urology. 46(2) (pp 194-202), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 630831558
OBJECTIVE: To evaluate usage of renal artery embolization (RAE) for renal injuries and discuss the indications for this treatment. MATERIALS AND METHODS: A retrospective study was performed evaluating the electronic medical records of all patients with renal trauma admitted to two major comprehensive hospitals in Shantou city from January 2006 to December 2015. RESULT(S): There were 264 and 304 renal traumatic patients admitted to hospital A and B, respectively. LGRT was the reason for presentation in the majority of patients (522, 91.9%). A total of 534 (94.0%) patients were treated conservatively. RAE was performed in 9 patients from 2012 to 2015 at hospital A, including in 6 patients (6/9, 66.7%) with LGRT, and 3 patients (3/9, 33.3%) with HGRT. No patient underwent interventional therapy (RAE) at hospital B during the same period. No significant differences in the operative rate of hospital A were observed between the two time periods (2006-2011 and 2012-2015). The operative rate for LGRT between the two hospitals from 2006 to 2011 and 2012 to 2015 was not significantly different. Hospital A showed a significant decrease in the rate of conservative treatment for patients with LGRT. In the univariate and multivariate analyses, the AAST renal grade both were significantly associated with undergoing RAE.
CONCLUSION(S): LGRT was present in the majority of patients, and most cases of renal trauma could be treated with conservative treatment. RAE was well utilized for the treatment of renal trauma. However, some patients with LGRT were treated with unnecessary interventional therapy.

PMID
32022507 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32022507]
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Publisher
NLM (Medline)
Year of Publication
2020

959.

Optimization of approaches to the treatment of dental diseases in children with chronic kidney damage undergoing hemodialysis.
Morozova N.S., Chugaeva U.Y., Kozlitina J.A., Strogonova A.G., Mazurina L.A., Ivannikova K.O.
Embase
Voprosy Prakticheskoi Pediatrii. 15(2) (pp 63-67), 2020. Date of Publication: 2020.
[Article]
AN: 632402119
The article describes manifestations of various kidney disease in children6 including those undergoing hemodialysis. Detailed analysis of literature sources of how renal function affects hard tissue of the teeth, periodontal tissue, oral mucosa on renal function is demonstrated. Possible causes for organ damage which occurs in the oral cavity are indicated. As well as their

relationship to with phosphorus-calcium metabolism in the body. Recommendations for dental treatment in children with kidney diseases are described in this paper.

Status
Embase
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Publisher
Dynasty Publishing House
Year of Publication
2020

960.

The Application of External Ureteral Catheters in Children With Acute Kidney Injury Caused by Ceftriaxone-Induced Urolithiasis.
Xu M., Geng H., Xu G., Fang X., He L., Lin H.
Embase
Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 200. Date of Publication: 22 Apr 2020.
[Article]
AN: 631660423
Objective: To evaluate our use of external ureteral catheters in children with acute kidney injury (AKI) resulting from ceftriaxone-induced urolithiasis.
Method(s): From July 2010 to June 2015, a series of 15 children, including 12 males and 3 females, were referred to our department. All of them were diagnosed of post-renal AKI and underwent emergent hospitalization. Evaluation of serum electrolytes, creatinine (Cr), blood urea nitrogen (BUN), complete blood count, and blood gas analysis were completed in each child both before they were admitted, and again after surgery. Bilateral externalized ureteral catheters were placed cystoscopically in each of these patients. The composition of collected calculi was analyzed by infrared spectrography.
Result(s): Bilateral externalized ureteral catheters were placed successfully in all patients. There were no procedure-related complications. Two days after catheter placement, the levels of serum Cr and BUN had improved in all patients, and these levels were noted to be significantly lower than before catheterization ($P < 0.001$). Infrared spectrography demonstrated that the primary composition of all calculi collected was ceftriaxone. No recurrent AKI or renal deterioration was detected during the follow-up which ranged from 3 to 8 years.
Conclusion(s): These results show that short-term external ureteral catheters can be effectively utilized in children with AKI caused by ceftriaxone-induced urolithiasis. We recommend this procedure as a viable replacement to indwelling stents in patients with bilateral ureteral stones.

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Embase
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Publisher

Frontiers Media S.A. (E-mail: info@frontiersin.org)
Year of Publication
2020

961.

Acute kidney injury among critically ill neonates in a tertiary hospital in Tanzania; Prevalence, risk factors and outcome.
Mwamanenge N.A., Assenga E., Furia F.F.
Embase
PLoS ONE. 15(2) (no pagination), 2020. Article Number: e0229074. Date of Publication: 2020.
[Article]
AN: 2004954794
Background Neonatal acute kidney injury contributes to high mortality in developing countries. The burden of neonatal AKI is not known in Tanzania despite having high neonatal mortality. This study was conducted to determine the burden of AKI among critically ill neonates admitted at Muhimbili National Hospital. Methods This was a cross-sectional study conducted in the neonatal ward at the MNH. Eligible critically ill neonates were recruited consecutively between October 2017 and March 2018. Data was collected using a standardized structured questionnaire. Blood specimen was drawn to measure baseline creatinine at admission, 48th hour, 72nd hour and 14th day. Data was analysed using SPSS version 20.0 Univariate analysis was done using chi-square to determine the association between categorical variables and multivariate logistic regression was performed to determine predictors of AKI. Results A total of 378 critically ill neonates were recruited, 31.5% had AKI and independent predictors of AKI were noted to be neonatal sepsis (aOR 2.237, 95%CI 1.3-3.6, P = 0.001), severe pneumonia (aOR3.0, 95%CI 1.0-9.3, P = 0.047) and use of gentamycin (aOR6.8, 95%CI 1.3-9.3, P = 0.02). Complete resolution of renal dysfunction at the fourteenth day was seen in 83.1% of the neonates while 16.9% had persistence of renal dysfunction. Ultrasound scan were performed among 105 participants with AKI revealed increased echogenicity, mild hydronephrosis and ectopic kidneys in 25 (23.8%), 4 (3.8%) and 2 (1.9%) respectively. In-hospital mortality was significantly higher among neonates with AKI (70.6%) as compared to those without (29.4%) p< 0.001. Conclusions AKI was noted in a third of critically ill neonates, with neonatal sepsis, severe pneumonia and use of gentamycin as independent predictors of AKI. Neonates who suffered AKI had twice as much mortality as compared to those without.

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32053686 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32053686]
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Publisher
Public Library of Science (E-mail: plos@plos.org)
Year of Publication
2020

962.

Incidence and risk factors of acute kidney injury after Kasai operation for biliary atresia: A retrospective study.
Park J.H., Ihn K., Han S.J., Kim S., Ham S.Y., Ko S., Kim M.-S.
Embase
International Journal of Medical Sciences. 17(8) (pp 1023-1029), 2020. Date of Publication: 2020.
[Article]
AN: 2004341615
Background: Biliary atresia is a progressive, inflammatory, and destructive pathology of the bile ducts. Patients who undergo surgery for correction of biliary atresia (Kasai operation) are at risk of acute kidney injury (AKI) because of their young age at the time of surgery, long operation time, and liver fibrosis or failure as complication of biliary atresia. Conversely, AKI is associated with poor outcomes after surgery. This study therefore aimed to evaluate the incidence, risk factors, and outcomes of AKI after Kasai operation.
Method(s): All consecutive patients who underwent Kasai operation between March 2006 and December 2015 in a single tertiary-care university hospital were enrolled. AKI was defined based on the Acute Kidney Injury Network criteria. Multivariate logistic regression models were used to assess risk factors for AKI.
Result(s): One hundred sixty-six patients received Kasai operation during study period. Of these, AKI occurred in 37 of 166 patients (22.3%). In multivariate logistic regression analysis, age older than 30 days, higher preoperative estimated glomerular filtration rate, and preoperative contrast use within 7 days were associated with the development of AKI. Perioperative packed red blood cells transfusion was related to reduced occurrence of AKI. AKI was associated with longer ICU stay (OR = 1.015, p = 0.016). More patients with AKI were also found to receive additional surgery except liver transplantation within 1 year compared to those without AKI (10.8 % vs. 2.3 %, p = 0.045).
Conclusion(s): Increased age is strongly associated with the development of AKI after Kasai operation. These findings indicate a rational basis for early corrective surgery for biliary atresia, early screening for AKI, and intervention to improve the results of Kasai operation.

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32410831 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32410831]
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Publisher
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Year of Publication
2020

963.

Risk factors and associated outcomes of early acute kidney injury in pediatric liver transplant recipients: A retrospective study.
Zhang Y., Xiang B., Wu Y., Xie X., Wang J., Jin S.
Embase

Journal of Pediatric Surgery. 55(3) (pp 446-450), 2020. Date of Publication: March 2020.
[Article]
AN: 2002697035
Background: Acute kidney injury (AKI) may contribute to high mortality rates after liver transplantation. Few studies have investigated AKI in pediatric liver transplantation. This retrospective study was conducted to investigate the risk factors for and associated outcomes of AKI in pediatric liver transplant recipients.
Method(s): Eighty pediatric liver transplant patients were included. The occurrence of AKI was defined by the KDIGO Clinical Practice Guidelines for Acute Kidney Injury. A multivariate regression analysis model was used to investigate risk factors for AKI in the pediatric liver recipients.
Result(s): The final multivariable regression model showed that biliary atresia (odds ratio [OR] = 0.097, p = 0.03), increased time of the anhepatic phase (OR = 0.871, p = 0.005) and lower postoperative jaundice clearance (OR = 13.936, p = 0.02) were independently associated with the development of AKI in pediatric patients. Additionally, cumulative 3-year patient (p = 0.15) and graft (p = 0.26) survival rates between the non-acute kidney injury (NAKI) and AKI groups were 95.2% vs 86.8% and 90.5% vs 84.2%, respectively.
Conclusion(s): Pediatric liver transplant recipients with a presence of biliary atresia, increased time of anhepatic phase, and a lower postoperative jaundice clearance had an increased risk of AKI. The long-term outcomes of patients who developed AKI appears to be worse compared with those having NAKI.
Type of Study: Prognosis study.
Level of Evidence: Level III.

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31466815 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31466815]
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Embase
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Publisher
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Year of Publication
2020

964.

Lactobacillus salivarius BP121 prevents cisplatin-induced acute kidney injury by inhibition of uremic toxins such as indoxyl sulfate and p-cresol sulfate via alleviating dysbiosis.
Lee T.-H., Park D., Kim Y.J.I., Lee I., Kim S., Oh C.-T., Kim J.-Y., Yang J., Jo S.-K.
Embase
International Journal of Molecular Medicine. 45(4) (pp 1130-1140), 2020. Date of Publication: 2020.
[Article]
AN: 2004978549
The gut microbiota is important for maintaining the integrity of the intestinal barrier, promoting immunological tolerance and carrying out metabolic activities that have not evolved in hosts. Intestinal dysbiosis is associated with chronic kidney disease and probiotic supplementation has been shown to be beneficial. However, it is not known whether gut microorganisms-specifically,

lactic acid bacteria (LAB) can protect against acute kidney injury (AKI). To address this issue, the present study investigated the effects of Lactobacillus sali- varius BP121, an intestinal LAB isolated from the feces of newborns, in a rat model of cisplatin-induced AKI and also in Caco-2 human intestinal epithelial cells. BP121 prevented cisplatin-induced AKI in rats, as demonstrated by decreases in inflammation and oxidative stress in kidney tissue and in serum levels of uremic toxins such as indoxyl sulfate (IS) and p-cresol sulfate (PCS). BP121 also reduced intestinal permeability, as determined using fluorescein isothiocyanate-dextran by immunohistochemical detection of tight junction (TJ) proteins such as zona occludens-1 and occludin. The abundance of Lactobacillus spp., which are beneficial intestinal flora, was increased by BP121; this was accompanied by an increase in the concentrations of short-chain fatty acids in feces. Additionally, H2O2-induced TJ protein damage was reduced in Caco-2 cells treated with BP121 culture supernatant, an effect that was reversed by the 5' AMP-activated protein kinase (AMPK) inhibitor Compound C and Toll-like receptor (TLR)4 inhibitor TLR4-IN-C34. In conclusion, this study demonstrated that L. salivarius BP121 protects against cisplatin-induced AKI by decreasing inflammation and oxidative stress and this renoprotective effect is partially mediated by modulating the gut environment and thereby suppressing IS and PCS production as well as by regulating AMPK and TLR4 dependent TJ assembly.

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32124946 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32124946]
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Publisher
Spandidos Publications (10 Vriaxidos Street, Athens 116 10, Greece. E-mail: subscriptions@spandidos-publications.com)
Year of Publication
2020

965.

Community-Based Epidemiology of Hospitalized Acute Kidney Injury.
Parikh R.V., Tan T.C., Salyer A.S., Auron A., Kim P.S., Ku E., Go A.S.
Embase
Pediatrics. 146(3) (no pagination), 2020. Article Number: e20192821. Date of Publication: September 2020.
[Article]
AN: 2007962144
BACKGROUND: Acute kidney injury (AKI) may lead to short- and long-term consequences in children, but its epidemiology has not been well described at a population level and outside of ICU settings.

METHOD(S): In a large, diverse pediatric population receiving care within an integrated health care delivery system between 2008 and 2016, we calculated age- and sex-adjusted incidences of hospitalized AKI using consensus serum creatinine (SCr)-based diagnostic criteria. We also investigated the proportion of AKI detected in non-ICU settings and the rates of follow-up outpatient SCr testing after AKI hospitalization.
RESULT(S): Among 1 500 546 children, the mean age was 9.8 years, 49.0% were female, and 33.1% were minorities. Age- and sex-adjusted incidence of hospitalized AKI among the entire pediatric population did not change significantly across the study period, averaging 0.70 (95% confidence interval: 0.68-0.73) cases per 1000 person-years. Among the subset of hospitalized children, the adjusted incidence of AKI increased from 6.0% of hospitalizations in 2008 to 8.8% in 2016. Approximately 66.7% of AKI episodes were not associated with an ICU stay, and 54.3% of confirmed, unresolved Stage 2 or 3 AKI episodes did not have outpatient follow-up SCr testing within 30 days postdischarge.
CONCLUSION(S): Community-based pediatric AKI incidence was ~1 per 1000 per year, with two-thirds of cases not associated with an ICU stay and more than one-half not receiving early outpatient follow-up kidney function testing. Further efforts are needed to increase the systematic recognition of AKI in all inpatient settings with appropriate, targeted postdischarge kidney function monitoring and associated management.

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Publisher
American Academy of Pediatrics
Year of Publication
2020

966.

Cell-Cycle Arrest Biomarkers: Usefulness for Cardiac Surgery-Related Acute Kidney Injury in Neonates and Infants*.
Bojan M., Pieroni L., Semeraro M., Froissart M.
Embase
Pediatric Critical Care Medicine. 21(6) (pp 563-570), 2020. Date of Publication: 01 Jun 2020.
[Article]
AN: 631982010

Objectives: Cell cycle arrest urine biomarkers have recently been shown to be early indicators of acute kidney injury in various clinical settings in critically ill adults and children. The product of tissue inhibitor metalloproteinase-1 and insulin-like growth factor binding protein-7 concentrations/1,000 (TIMP-1) x (IGFBP-7) provides stratification of acute kidney injury-risk in adults with critical illness. The present study explores the predictive accuracy of (TIMP-1) x (IGFBP-7) measured early after cardiopulmonary bypass for cardiac surgery-related acute kidney injury in neonates and infants, a population in whom such data are not yet available.
Design(s): Prospective, observational.
Setting(s): A tertiary referral pediatric cardiac ICU.
Patient(s): Fifty-seven neonates and 110 infants undergoing surgery with cardiopulmonary bypass.
Intervention(s): None.
Measurements and Main Results: (TIMP-1) x (IGFBP-7) was measured on the NephroCheck (Astute Medical, San Diego, CA) platform preoperatively, less than 1 hour of cardiopulmonary bypass and 1-3 hours of cardiopulmonary bypass. The incidence of postoperative acute kidney injury, dialysis, and/or death were compared among quintiles of postoperative (TIMP-1) x (IGFBP-7). Multivariable regression was used to assess the added predictive value for renal events of (TIMP-1) x (IGFBP-7) over clinical models. Basal (TIMP-1) x (IGFBP-7) increased with age at surgery (regression coefficient = 0.004 +/- 0.001; p = 0.005). (TIMP-1) x (IGFBP-7) increased after cardiopulmonary bypass. Neonates had lower postoperative (TIMP-1) x (IGFBP-7) compared with older infants, despite undergoing longer surgeries and experiencing a higher incidence of postoperative renal events. (TIMP-1) x (IGFBP-7) was not associated with acute kidney injury, dialysis, and/or death and was not a predictor of the aforementioned events when added to a clinical acute kidney injury model including age, duration of cardiopulmonary bypass, and mechanical ventilation prior to surgery.
Conclusion(s): These findings question the usefulness of (TIMP-1) x (IGFBP-7) for the prediction of cardiac surgery-related acute kidney injury in neonates and infants when measured within 3 hours of cardiopulmonary bypass.

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32195906 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32195906]
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Publisher
Lippincott Williams and Wilkins
Clinical Trial Number
https://clinicaltrials.gov/show/NCT01219998
Year of Publication
2020

967.

Proton pump inhibitors and the risk of hospital-acquired acute kidney injury in children.

Li Y., Xiong M., Yang M., Wang L., Nie S., Liu D., Pi M., Zhang A., Mao J., Liu H.-P., Xia H., Xu H., Liu Z., Feng S., Zhou W., Liu X., Yang Y., Tao Y., Feng Y., Chen C., Wang M., Zha Y., Feng J.-H., Li Q., Ge S., Chen J., He Y., Teng S., Hao C., Liu B.-C., Tang Y., He W., Hou F.F., Xu X.
Embase
Annals of Translational Medicine. 8(21) (no pagination), 2020. Article Number: 1438. Date of Publication: November 2020.
[Article]
AN: 2010167253
Background: To evaluate the association between use of proton pump inhibitor (PPI) and the risk of hospital-acquired acute kidney injury (HA-AKI) in hospitalized children.
Method(s): We conducted a multicenter retrospective cohort study in hospitalized children aged 1 month to 18 years from 25 tertiary hospitals across China from 2013 to 2015. Patient-level data were obtained from the electronic hospitalization databases. AKI was defined and staged using the serum creatinine (SCr) data according to the Kidney Disease Improving Global Outcomes (KDIGO) criteria.
Result(s): Among 42,232 children analyzed, 11,496 (27.2%) used PPI, 1,760 (4.2%) used histamine 2 receptor antagonist (H2RA), and 3,514 (8.3%) had HA-AKI during hospitalization. Over 85% of PPIs were prescribed for prophylaxis of gastro-duodenal lesions in children. The use of PPI was associated with a significantly increased risk of HA-AKI compared with both non-users [odds ratio (OR), 1.37; 95% confidence interval (CI), 1.23-1.53)] and H2RA users (OR, 1.24; 95% CI, 1.01-1.52). The associations were consistent across children of different age range, gender, subtypes of PPIs and methods of administration. A larger effect was observed in children with chronic kidney disease (OR, 3.37; 95% CI, 2.46-4.62) and those needed intensive care (OR, 1.54; 95% CI, 1.33-1.78). The risk of HA-AKI was increased even within the recommended dosage range of PPI.
Conclusion(s): PPIs were widely used and associated with an increased risk of HA-AKI in hospitalized children in China.

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Publisher
AME Publishing Company
Year of Publication
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968.

Risk Factors for Acute Kidney Injury and Chronic Kidney Disease following Allogeneic Hematopoietic Stem Cell Transplantation for Hematopoietic Malignancies.
Sakaguchi M., Nakayama K., Yamaguchi H., Mii A., Shimizu A., Inai K., Onai D., Marumo A., Omori I., Yamanaka S., Fujiwara Y., Fukunaga K., Ryotokuji T., Hirakawa T., Okabe M., Tamai H., Okamoto M., Wakita S., Yui S., Tsuruoka S., Inokuchi K.
Embase
Acta Haematologica. 143(5) (pp 452-464), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 630200713
Background: Acute kidney injury (AKI) and chronic kidney disease (CKD) are considered common complications after allogeneic hematopoietic stem cell transplantation (allo-HSCT).
Objectives and Method: In this study, 114 patients who had undergone allo-HSCT were retrospectively analyzed to investigate the risk factors for onset of posttransplant AKI and CKD as defined by the new Kidney Disease Improving Global Outcomes criteria.
Result(s): Seventy-four patients (64.9%) developed AKI and 25 (21.9%) developed CKD. The multivariate analysis showed that the risk factors for developing stage 1 or higher AKI were age >=46 years at the time of transplant (p = 0.001) and use of >=3 nephrotoxic drugs (p = 0.036). For CKD, the associated risk factors were disease status other than complete remission at the time of transplantation (p = 0.018) and onset of AKI after transplant (p = 0.035). The 5-year overall survival (OS) was significantly reduced by development of AKI (p < 0.001), but not CKD. Posttransplant AKI significantly increased the 5-year nonrelapse mortality (p < 0.001), whereas posttransplant CKD showed an increasing tendency, but the difference was not significant.
Conclusion(s): Posttransplant AKI impacts OS, significantly increases the risk of CKD, and is significantly associated with disseminated intravascular coagulation and use of 3 nephrotoxic drugs.

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31822013 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31822013]
Status
Embase
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(Shimizu) Department of Analytic Human Pathology, Nippon Medical School, Tokyo, Japan
Publisher
S. Karger AG

Year of Publication
2020

969.

Acute kidney injury is a common complication in children and adolescents hospitalized for diabetic ketoacidosis.
Huang S.-K., Huang C.-Y., Lin C.-H., Cheng B.-W., Chiang Y.-T., Lee Y.-C., Yeh S.-N., Chan C.-I., Chua W.-K., Lee Y., Ting W.-H.
Embase
PLoS ONE. 15(10 October) (no pagination), 2020. Article Number: e0239160. Date of Publication: October 2020.
[Article]
AN: 2008030781
Diabetic ketoacidosis (DKA) is associated with dehydration and which can cause acute kidney injury (AKI). The proportion of AKI in children and adolescents with DKA has not been reported in East Asian population. This study aimed to identify the prevalence of AKI and to determine whether there is an association between AKI severity and recovery time from metabolic acidosis in children and adolescents with DKA. Medical records of children and adolescents (aged <18 years) presenting with type 1 or type 2 diabetes mellitus and DKA between 2000-2017 at the MacKay Children's Hospital were retrospectively reviewed. AKI was defined by an admission creatinine level >1.5 times the calculated expected baseline creatinine level. Patients were divided into three groups based on AKI severity: no AKI, mild AKI, and severe AKI. In total, 170 (56.5%) patients with DKA presented AKI (mild AKI, 116 [38.5%]; severe AKI, 54 [18.0%]). Heart rate and laboratory parameters related to dehydration, such as corrected sodium level and blood urea nitrogen, were strongly associated with AKI development (P<0.01). Blood pH, plasma glucose, and potassium levels were also associated with AKI. A negative correlation with borderline significance between the estimated glomerular filtration rate (eGFR) and recovery time from metabolic acidosis was observed in the severe AKI group. AKI was highly prevalent in children and adolescents with DKA. An association between AKI and biomarkers indicating dehydration was noted. The recovery time from metabolic acidosis following treatment may be longer in children with a decreased eGFR who present with severe AKI. AKI is a common complication in children with DKA.

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Publisher
Public Library of Science
Year of Publication
2020

970.

Development of acute kidney injury following pediatric cardiac surgery.
Sharma A., Chakraborty R., Sharma K., Sethi S.K., Raina R.
Embase
Kidney Research and Clinical Practice. 39(3) (pp 259-268), 2020. Date of Publication: 2020. [Review]
AN: 2005153218
Acute kidney injury (AKI) in the pediatric population is a relatively common phenomenon. Specifically, AKI has been found in increasing numbers within the pediatric population following cardiac surgery, with up to 43% of pediatric patients developing AKI post-cardiac surgery. However, recent advances have allowed for the identification of risk factors. These can be divided into preoperative, intraoperative, and postoperative factors. Although the majority of pediatric patients developing AKI after cardiac surgery completely recover, this condition is associated with worse outcomes. These include fluid overload and increased mortality and result in longer hospital and intensive care unit stays. Detecting the presence of AKI has advanced; use of relatively novel biomarkers, including neutrophil gelatinase associated lipocalin, has shown promise in detecting more subtle changes in kidney function when compared to conventional methods. While a single, superior treatment has not been elucidated yet, novel functions of medications, including fenoldopam, theophylline and aminophylline, have been shown to have better outcomes for these patients. With the recent advances in identification of risk factors, outcomes, diagnosis, and management, the medical community can further explain the complexities of AKI in the pediatric population post-cardiac surgery.

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Publisher
The Korean Society of Nephrology
Clinical Trial Number

https://clinicaltrials.gov/show/NCT01275612
Year of Publication
2020

971.

Cystodistension injuries and long-term bladder functional outcomes: A unique case series from medical malpractice.
Goldsmith L., Eyre D., Reynard J.
Embase
Journal of Clinical Urology. 13(6) (pp 407-412), 2020. Date of Publication: November 2020.
[Article]
AN: 2005110864
Objectives: Bladder overdistension injuries are rare, but they can have devastating effects on the individual and lead to litigation. We aimed to (a) test the hypothesis that larger distension volumes and longer distension times are more likely to generate acontractile bladders, (b) determine prognostic information and (c) guide management protocols aimed at preventing cystodistension injuries.
Patients and Methods: We report 18 cases of cystodistension injury following acute urinary retention. One author provided expert medical opinion in these cases, where redress was sought in the UK courts through medical malpractice claims. Data were collected retrospectively.
Result(s): The cohort comprised 17 females and 1 male. The mean age was 31 years (range 17-69 years). Precipitating events included six surgical procedures, 11 vaginal deliveries and one episode of back pain. The median retention volume was 1450 mL (range 1000-3800 mL), and the median duration of retention was 1200 minutes (range 470-10,365 minutes). Fourteen patients performed intermittent self-catheterisation (ISC), six requiring this temporarily. No statistically significant association was demonstrated between retention characteristics and long-term functional outcomes of the bladder.
Conclusion(s): This case series demonstrates cystodistension injuries to be unpredictable in their long-term impact. No association between volume and duration of retention and long-term bladder function was found. In the long term, 50% void spontaneously, 33% void spontaneously but require ISC to effect complete bladder emptying and 17% remain catheter dependent.
Level of Evidence: Level 4.

Status
Embase
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Publisher
SAGE Publications Ltd
Year of Publication
2020

972.

Early echocardiographic signs of diastolic dysfunction predict acute kidney injury in cirrhotic patients.
Wu P.-S., Wang Y.-W., Tai C.-C., Hsieh Y.-C., Lee P.-C., Huang C.-C., Huang Y.-H., Hou M.-C., Lin H.-C., Lee K.-C.
Embase
Journal of the Chinese Medical Association. 83(11) (pp 984-990), 2020. Date of Publication: November 2020.
[Article]
AN: 2010105821
Background: Cardiovascular dysfunction in cirrhotic patients affects survival and the development of cirrhotic complications. We aimed to evaluate potential echocardiographic parameters to predict mortality and acute kidney injury (AKI) in cirrhotic patients.
Method(s): A total of 103 cirrhotic patients who underwent echocardiography between February 2009 and August 2016 in Taipei Veterans General Hospital were retrospectively enrolled. Cardiac function was evaluated using transthoracic two-dimensional echocardiography with tissue Doppler imaging. Cox hazard regression analysis was used for assessing predictors for 1-year mortality and AKI within 1 year.
Result(s): Baseline echocardiographic parameters were similar between survivors (n = 92) and nonsurvivors (n = 11). Lower serum levels of albumin, as well as higher albumin-bilirubin (ALBI) scores, Child-Pugh scores, and model for end-stage liver disease scores were observed in nonsurvivors. Cox proportional hazard regression analysis revealed Child-Pugh score as the only predictor of 1-year mortality. Baseline serum creatinine (Cr) > 1.5 mg/dL, total bilirubin > 2 mg/dL, and a higher E/e' ratio predict occurrence of AKI within 1 year. Among patients with serum Cr < 1.5 mg/dL, an increased atrial filling velocity and higher ALBI scores predict AKI occurrence within 1 year.
Conclusion(s): Severity of underlying liver disease but not echocardiographic parameters predicts 1-year mortality in cirrhosis. Early echocardiographic signs of diastolic dysfunction and higher ALBI scores may predict development of AKI in cirrhotic patients with serum Cr < 1.5 mg/dL.

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Publisher
Wolters Kluwer Health
Year of Publication
2020

973.

Nephrotoxic medications and acute kidney injury risk factors in the neonatal intensive care unit: clinical challenges for neonatologists and nephrologists.
Murphy H.J., Thomas B., Van Wyk B., Tierney S.B., Selewski D.T., Jetton J.G.
Embase
Pediatric Nephrology. 35(11) (pp 2077-2088), 2020. Date of Publication: 01 Nov 2020.
[Article]
AN: 2003514192
Neonatal acute kidney injury (AKI) is common. Critically ill neonates are at risk for AKI for many reasons including the severity of their underlying illnesses, prematurity, and nephrotoxic medications. In this educational review, we highlight four clinical scenarios in which both the illness itself and the medications indicated for their treatment are risk factors for AKI: sepsis, perinatal asphyxia, patent ductus arteriosus, and necrotizing enterocolitis. We review the available evidence regarding medications commonly used in the neonatal period with known nephrotoxic potential, including gentamicin, acyclovir, indomethacin, vancomycin, piperacillin-tazobactam, and amphotericin. We aim to illustrate the complexity of decision-making involved for both neonatologists and pediatric nephrologists when managing infants with these conditions and advocate for ongoing multidisciplinary collaboration in the development of better AKI surveillance protocols and AKI mitigation strategies to improve care for these vulnerable patients.

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31605211 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31605211]
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Publisher
Springer Science and Business Media Deutschland GmbH (E-mail: info@springer-sbm.com)
Year of Publication
2020

974.

Renal function status after 6 months in term sick newborns with acute kidney injury.
Sen A., Sharma S., Kaur C.
Embase
Journal of Clinical Neonatology. 9(4) (pp 255-260), 2020. Date of Publication: October-December 2020.
[Article]
AN: 633171187
Background: Assumption that resolution of acute kidney injury (AKI) is followed by complete renal recovery has been challenged by recent studies in adults and children. However, data in term newborns are scarce. This study was done to observe deranged renal parameters and hence risk

factor for chronic kidney disease at 6 months of age in term newborns who develop AKI due to various causes.
Method(s): This was a descriptive cohort study in term newborns developing AKI (nRIFLE). Sixty-one babies completed the study for final analysis. After 6 months of follow-up, clinical and laboratory renal parameters were studied. Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0.
Result(s): The median gestational age of cohort was 38 weeks, and the mean birth weight and length were 2.8 +/- 0.45 kg and 48.3 +/- 2.25 cm, respectively. Sepsis was the most common etiological factor in 54% cases of AKI followed by birth asphyxia (34%). The median age and serum creatinine at diagnosis of AKI were 4 days and 2.7 mg/dL, respectively. Nearly 77% of cases (n = 47) were oliguric and the median value of fractional excretionof sodium was 0.87 (0.688-1.335). One (1.64%) neonate was in risk stage, 8 (13.11%) in injury, and 52 (85.246%) in failure stage. At 6 months of follow-up, 41% (n = 25) had decreased serum bicarbonate values. Four out of 61 patients (6.56%) had reduced estimated glomerular filtration rate, while 15 (24.59%) had hyperfiltration. Overall, 63.93% (n = 39) of the cases had one or more renal parameters deranged at 6 months.
Conclusion(s): A large proportion of term newborns with AKI continue to have deranged renal parameters, therefore they need careful monitoring for long duration.

Status
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Wolters Kluwer Medknow Publications
Year of Publication
2020

975.

Acute Kidney Injury in Primary Care: A Review of Patient Follow-Up, Mortality, and Hospital Admissions following the Introduction of an AKI Alert System.
Barton A.L., Williams S.B.M., DIckinson S.J., Parry R.G., Pollard A.
Embase
Nephron. 144(10) (pp 498-505), 2020. Date of Publication: 01 Oct 2020.
[Review]
AN: 632739232
Background/Aims: In February 2017, our laboratory implemented an electronic AKI flagging system for primary care using the NHS England AKI detection algorithm. Our study investigated the impact on patient follow-up, hospital admission, length of stay, and mortality.
Method(s): Primary care results March 2017-February 2018 with an AKI test code were downloaded from the pathology computer.
Result(s): Over 12 months, 1,784 AKI episodes were identified; 81.3% AKI1, 11.3%, AKI2, and 7.5% AKI3. A repeat creatinine was requested within 14 days on 55% AKI1s, 84% AKI2s, and 86% AKI3s. Primary care took the repeat sample in 73.2% AKI1s and 56.7% AKI2s and acute hospital locations for 47.4% AKI3s. Median time to hospital admission was 34 days for AKI1, 6 for AKI2, and 1 for AKI3 ($p < 0.05$). Length of stay was found to be 1, 2, and 4 days for AKI 1/2/3, respectively ($p < 0.05$). The 90-day mortality for admitted patients was 15, 18, and 21% for AKI 1/2/3, respectively ($p = 0.180$). The 90-day mortality for the non-admitted patients was 4, 9, and 50% for AKI 1/2/3, respectively ($p < 0.05$). AKI patient outcome data pre versus post the start of the AKI flag system were compared. A statistically significant reduction was found in the median

length of stay for AKI1 and AKI3 and in mortality for AKI1 and AKI3 patients and for all AKIs as a whole. A further analysis was performed to take into account the difference in pre- and post-alert populations. Mortality overall was significantly improved ($p < 0.001$), and length of stay was reduced in AKI3 patients ($p = 0.048$). Discussion/Conclusion: Our study demonstrates that an electronic AKI warning alert system for primary care appears to be associated with a beneficial impact on patient management and outcome.

PMID
32818930 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32818930]
Status
Embase
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Publisher
S. Karger AG
Year of Publication
2020

976.

Assessment of early renal angina index for prediction of subsequent severe acute kidney injury during septic shock in children.
Huang L., Shi T., Quan W., Li W., Zhang L., Liu X., Huang S., Li Y., Li X.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 358. Date of Publication: 20 Aug 2020.
[Article]
AN: 632722912
Background: Acute kidney injury (AKI) is independently related to the adverse outcome of septic shock, but it lacks effective early predictors. Renal anginal index (RAI) was used to predict subsequent severe AKI (AKIs) in critically ill patients. The application of RAI in children with septic shock has not been reported. This study aims to evaluate the efficacy of early RAI in predicting subsequent AKIs within 3 days after PICU admission in children with septic shock by comparing with early fluid overload (FO) and early creatinine elevation.
Method(s): Sixty-six children admitted to PICU aged 1 month to 16 years old, with septic shock from January 2016 to December 2019 were analyzed retrospectively. According to the 2012 Kidney Disease Improving Global outcomes (KDIGO) criteria, AKIs was defined by the KDIGO stage >=2 within 3 days after PICU admission. Early RAI positive (RAI+) was defined as RAI >= 8 within 12 h of PICU admission. Any elevation of serum creatinine (SCr) over baseline within 12 h after PICU admission was denoted as "Early SCr > base". Early FO positive (FO+) was defined as FO > 10% within 24 h of PICU admission.
Result(s): Of 66 eligible cases, the ratio of early RAI+, early SCr > base, early FO+ was 57.57, 59.09 and 16.67% respectively. The incidence of AKIs in early RAI+ group (78.94%) was higher than that in early RAI- group (21.42%) ($p = 0.04$), and there was no significant difference compared with the early FO+ group (71.79%) and early SCr > base group (81.82%) ($P > 0.05$). After adjustment for confounders, early RAI+ was independently associated with the occurrence of AKIs within 3 days (OR 10.04, 95%CI 2.39-42.21, $p < 0.01$). The value of early RAI+ (AUC = 0.78) to identify patients at high risk of AKIs was superior to that of early SCr > base (AUC =

0.70) and early FO+ (AUC = 0.58). A combination of serum lactate with early RAI+ improved the predictive performance for assessing AKIs (AUC = 0.83).
Conclusion(s): Early RAI could be used as a more convenient and effective index to predict the risk of AKIs in children with septic shock within 3 days. Early RAI+ combined with serum lactate improved the predictive performance for assessing AKIs.

PMID
32854655 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32854655]
Status
Embase
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Publisher
BioMed Central Ltd
Year of Publication
2020

977.

Validity of Urine NGALds Dipstick for Acute Kidney Injury in a Malawian Trauma Cohort.
Bjornstad E.C., Muronya W., Kamija M., Smith Z., Munthali C.K., Gibson K., Mottl A.K., Charles A., Marshall S.W., Golightly Y.M., Gower E.W.
Embase
Kidney International Reports. 5(10) (pp 1791-1798), 2020. Date of Publication: October 2020.
[Article]
AN: 2007935263
Introduction: Acute kidney injury (AKI) is a major cause of mortality worldwide, particularly in low-resource settings with limited diagnostic testing. Neutrophil gelatinase-associated lipocalin (NGAL) has shown promise in predicting AKI. Nested within a larger, prospective cohort study evaluating AKI incidence in admitted trauma patients, our objective was to evaluate a novel dipstick, NGALds, for the prediction of AKI in Malawi, Africa.
Method(s): Participants were >6 months of age. Spearman rank correlation coefficients (R) assessed NGAL categories (negative [<=50 ng/ml], low risk [51-149 ng/ml], moderate risk [150-299 ng/ml], and high risk [>=300 ng/ml]) for the urine NGALds dipstick and laboratory-based NGAL Test.
Result(s): We enrolled 285 participants (one-third children). Thirteen percent developed AKI. The dipstick captured 45 of 52 participants (86.5%) with moderate- or high-risk NGAL values on laboratory-based testing (R = 0.74). The dipstick had sensitivity of 44.4%, specificity of 73.5%, positive predictive value of 19.5%, and negative predictive value of 90.2% for predicting AKI. Acute kidney injury was associated with an increased risk of mortality (relative risk [RR] = 3.9, 95% confidence interval [CI] = 1.9-8.2), but mortality risk greatly increased among children who first had a positive (>=150 ng/ml) NGALds result (RR = 12.0, 95% CI = 1.8-78.4).
Conclusion(s): The NGALds dipstick performed similarly to the NGAL Test in this low-resource setting and may be a useful tool to rule out AKI. It may be even more important in predicting high mortality risk among children.

Status

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Publisher
Elsevier Inc.
Year of Publication
2020

978.

Vancomycin-Associated Acute Kidney Injury in Critically Ill Adolescent and Young Adult Patients.
Hays W.B., Tillman E.
Embase
Journal of Pharmacy Practice. 33(6) (pp 749-753), 2020. Date of Publication: December 2020.
[Article]
AN: 626608827
Background: Risk factors for the development of vancomycin-associated acute kidney injury (AKI) have been evaluated in both pediatric and adult populations; however, no previous studies exist evaluating this in the critically ill adolescent and young adult patients.
Objective(s): Identify the incidence of AKI and examine risk factors for the development of AKI in critically ill adolescents and young adults on vancomycin.
Method(s): This retrospective review evaluated the incidence of AKI in patients 15 to 25 years of age who received vancomycin, while admitted to an intensive care unit. Acute kidney injury in this population was defined as an increase in serum creatinine by 0.5 mg/dL or 50% from baseline. Patients who developed AKI were evaluated for specific risk factors compared to those who did not develop AKI.
Result(s): A total of 50 patients (20 developed AKI) were included in the study. There was no difference in vancomycin daily dose or duration of vancomycin therapy. Maximum vancomycin trough (31.15 mg/dL vs 12.5 mg/dL, P =.006), percentage of patients with concurrent nephrotoxic medication (95% vs 60%, P =.012) and concurrent vasopressor (55% vs 23%, P =.029) were higher in those who developed AKI. Percentage of patients who underwent a procedure while on vancomycin (35% vs 6.7%, P =.021) was also higher within the AKI group.
Conclusion(s): Vancomycin-associated AKI occurred in 40% of critically ill adolescent and young adult patients. These patients may be more likely to develop vancomycin-associated AKI if they had undergone a procedure, as well as in the presence of high vancomycin trough levels, concurrent nephrotoxic agents, and concurrent vasopressor therapy.

PMID
30808269 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30808269]
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Publisher
SAGE Publications Inc.
Year of Publication
2020

979.

Prevalence and Clinical Course of Acute Kidney Injury in Hospitalized Cirrhotic Patients with Spontaneous Bacterial Peritonitis.
Sethasine S., Satayasanskul A.
Embase
Journal of the Medical Association of Thailand. 103(12) (pp S121-S127), 2020. Date of Publication: December 2020.
[Article]
AN: 2010379042
Background: Spontaneous bacterial peritonitis (SBP) is a complication of cirrhosis and often followed by liver decompensation. Acute kidney injury (AKI) frequently occurs and is the reason for the increased mortality rate in cirrhotic patients.
Objective(s): To evaluate the incidence rate of AKI and the prediction of one-month mortality in hospitalized SBP- cirrhotic patients.
Material(s) and Method(s): One hundred and twenty-three cirrhotic patients with SBP were included in a retrospective cohort study. Renal injury was defined by AKIN criteria. The AKI patients were assessed for severity, reversibility, hospital complications, length of hospital stay and mortality. Mean length of time of follow-up for all patients was 30 days. Kaplan-Meier survival for 30 days mortality by Cox regression model was calculated accordingly to the renal injury.
Result(s): The mean age of patients was 57.8+12.2; 62 (50.4%) were male. Most of them (78.7%) were Child-Pugh C cirrhosis. More than half of the patients (52%) were alcoholic cirrhosis with mean MELD score of 20.6+5.8. Mean length of hospitalization was 15+8.4 days. AKI occurred in 53.7% of the patients (83.3%, 7.6% and 9.1% for AKIN criteria 1, 2 and 3 respectively). The AKI group experienced non-liver related complications, septic shock and death in hospitalization proportionately greater than the other [(7.6% vs. 0%, p = 0.034); (33.3% vs. 14%, p = 0.013); (34.8% vs. 17.5%, p = 0.031), respectively]. Among three AKI sub-groups, there were no significant differences regarding MELD score (p = 0.16), episode of albumin infusion (p = 0.31), reversibility of kidney functions (p = 0.88) or intrahospital 30 days mortality (p = 0.56). The Kaplan-Meier survival showed a significant increase in 30 days mortality of AKI patients as compared to the others. (33.3% vs. 15.7%, p = 0.022). Multivariate cox regression analysis indicated that an AKI episode can predict 30 days mortality to be 2.42 times higher than non-AKI patients after adjusted mean Child-Pugh score. (adjusted HR 2.42, 95% CI 1.11 to 5.25).
Conclusion(s): AKI is a condition which can predict increased 30 days mortality and is associated with non-liver related complications in decompensated SBP-cirrhotic patients.

Status
Embase

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Publisher
Medical Association of Thailand
Year of Publication
2020

980.

Postoperative anemia is a risk factor for acute kidney injury after open aorta and vena cava surgeries.
Cui R., Li F., Shao J., Wang Y., Yue C., Zheng Y., Li X.
Embase
PLoS ONE. 15(10 October) (no pagination), 2020. Article Number: e0240243. Date of Publication: October 2020.
[Article]
AN: 2008351783
Open aorta and vena cava surgeries are usually associated with substantial blood loss which may result in postoperative acute kidney injury (AKI). The present study is designed to investigate the prevalence, outcome and risk factors of postoperative AKI associated with open aorta and vena cava surgeries, with a focus on the role of anemia in these conditions. A retrospective review of medical records of Peking Union Medical College Hospital was conducted. Patients who underwent open aorta and vena cava surgeries during January 1, 2010 and June 30, 2014 were included in this study. The primary analysis was between patients underwent open aorta and vena cava surgeryies, with or without postoperative AKI. Multivariable logistic regression models were used to determine risk factors of postoperative AKI. The study included 79 patients (63.3% male) with a mean age of 52.5+/-17.3 years (range, 17-81 years). Postoperative AKI occurred in 23/79 (29.1%) of the patients. Anemia was present in 11/79 (16%) at baseline, and increased to 45/79 (52%) postoperatively. After adjustment for various risk factors, postoperative anemia (OR, 5.202; 95% CI 1.403- 19.285) was independently associated with postoperative AKI. AKI is a common complication in patients who undergo open aorta and vena cava surgeries, and postoperative anemia was the most relevant predictive factor of AKI. Strategies to minimize bleeding and anemia for all patients may be advisable. Further studies are needed to assess the impact of AKI on long term outcome and to examine preventive strategies to address potentially modifiable risk factors.

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33048948 [https://www.ncbi.nlm.nih.gov/pubmed/?term=33048948]
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Publisher
Public Library of Science
Year of Publication

2020

981.

Dialysis therapies in Acute Kidney Injury for children.
Anonymous
Embase
Indian Journal of Nephrology. 30(7 Supplement 1) (pp S79-S86), 2020. Date of Publication: July 2020.
[Article]
AN: 633222511
Status
Embase
Publisher
Wolters Kluwer Medknow Publications
Year of Publication
2020

982.

Proenkephalin as a new biomarker for pediatric acute kidney injury - Reference values and performance in children under one year of age.
Hartman S.J.F., Zwiers A.J.M., Van De Water N.E.C., Van Rosmalen J., Struck J., Schulte J., Hartmann O., Pickkers P., Beunders R., Tibboel D., Schreuder M.F., De Wildt S.N.
Embase
Clinical Chemistry and Laboratory Medicine. 58(11) (pp 1911-1919), 2020. Date of Publication: 01 Nov 2020.
[Article]
AN: 2007012144
Objectives: Acute kidney injury (AKI) is common in critically ill children, but current biomarkers are suboptimal. Proenkephalin A 119-159 (PENK) is a promising new biomarker for AKI in adults, but pediatric data is lacking. We determined PENK reference intervals for healthy children, crucial for clinical implementation, and explored concentrations in critically ill infants aged under 1 year.
Method(s): Observational cohort study in healthy infants and critically ill children aged 0-1 years. Reference values were determined using generalized additive models. Plasma PENK concentrations between healthy children and critically ill children with and without AKI, were compared using linear mixed modelling. The performance of PENK as AKI biomarker was compared to cystatin C (CysC) and beta-trace protein (BTP) using receiver-operatingcharacteristic (ROC) analysis.
Result(s): PENK concentrations in 100 healthy infants were stable during the first year of life (median 517.3 pmol/L). Median PENK concentrations in 91 critically ill children, were significantly higher in those with AKI (n=40) (KDIGO Stage 1 507.9 pmol/L, Stage 2 704.0 pmol/L, Stage 3 930.5 pmol/L) than non-AKI patients (n=51, 432.2 pmol/L) ($p < 0.001$). PENK appeared to relate better to AKI diagnosis than CysC and BTP (AUROC PENK 0.858, CysC 0.770 and BTP 0.711) in the first 24 h after recruitment.
Conclusion(s): PENK reference values are much higher in young infants than adults, but clearly discriminate between children with and without AKI, with comparable or better performance than

CysC and BTP. Our results illustrate the importance of establishing age-normalized reference values and indicate PENK as a promising pediatric AKI biomarker.

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32598298 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32598298]
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(Struck, Schulte, Hartmann) SphingoTec GmbH, Hennigsdorf, Germany
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Publisher
De Gruyter Open Ltd
Year of Publication
2020

983.

Finding the dose for ceftolozane-tazobactam in critically ill children with and without acute kidney injury.
Butragueno-Laiseca L., Troconiz I.F., Grau S., Campillo N., Garcia X., Padilla B., Fernandez S.N., Santiago M.J.
Embase
Antibiotics. 9(12) (pp 1-14), 2020. Article Number: 887. Date of Publication: December 2020. [Article]
AN: 2005596478
Background: Ceftolozane-tazobactam is a new antibiotic against multidrug-resistant pathogens such as Pseudomonas aeruginosas. Ceftolozane-tazobactam dosage is still uncertain in children, especially in those with renal impairment or undergoing continuous renal replacement therapy (CRRT).
Method(s): Evaluation of different ceftolozane-tazobactam dosing regimens in three critically ill children. Ceftolozane pharmacokinetics (PK) were characterized by obtaining the patient's specific parameters by Bayesian estimation based on a population PK model. The clearance (CL) in patient C undergoing CRRT was estimated using the prefilter, postfilter, and ultrafiltrate concentrations simultaneously. Variables such as blood, dialysate, replacement, and ultrafiltrate flow rates, and hematocrit were integrated in the model. All PK analyses were performed using NONMEM v.7.4.
Result(s): Patient A (8 months of age, 8.7 kg) with normal renal function received 40 mg/kg every 6 h: renal clearance (CLR) was 0.88 L/h; volume of distribution (Vd) Vd1 = 3.45 L, Vd2 = 0.942 L; terminal halflife (t1/2,beta) = 3.51 h, dosing interval area under the drug concentration vs. time curve at steady-state (AUCtau,SS) 397.73 mg x h x L-1 . Patient B (19 months of age, 11 kg) with eGFR of 22 mL/min/1.73 m2 received 36 mg/kg every 8 h: CLR = 0.27 L/h; Vd1 = 1.13 L; Vd2 = 1.36; t1/2,beta = 6.62 h; AUCSS 1481.48 mg x h x L-1 . Patient C (9 months of age, 5.8 kg), with

severe renal impairment undergoing CRRT received 30 mg/kg every 8 h: renal replacement therapy clearance (CLRRT) 0.39 L/h; Vd1 = 0.74 L; Vd2= 1.17; t1/2,beta = 3.51 h; AUCtau,SS 448.72 mg x h x L-1 . No adverse effects attributable to antibiotic treatment were observed. Conclusion(s): Our results suggest that a dose of 35 mg/kg every 8 h can be appropriate in critically ill septic children with multi-drug resistance Pseudomonas aeruginosa infections. A lower dose of 10 mg/kg every 8 h could be considered for children with severe AKI. For patients with CRRT and a high effluent rate, a dose of 30 mg/kg every 8 h can be considered.

Status
Embase
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Publisher
MDPI AG
Year of Publication
2020

984.

Methods to estimate baseline creatinine and define acute kidney injury in lean Ugandan children with severe malaria: A prospective cohort study.
Batte A., Starr M.C., Schwaderer A.L., Opoka R.O., Namazzi R., Phelps Nishiguchi E.S., Ssenkusu J.M., John C.C., Conroy A.L.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 417. Date of Publication: 29 Sep 2020.
[Article]
AN: 632995988
Background: Acute kidney injury (AKI) is increasingly recognized as a consequential clinical complication in children with severe malaria. However, approaches to estimate baseline creatinine (bSCr) are not standardized in this unique patient population. Prior to wide-spread utilization, bSCr estimation methods need to be evaluated in many populations, particularly in children from low-income countries.
Method(s): We evaluated six methods to estimate bSCr in Ugandan children aged 6 months to 12 years of age in two cohorts of children with severe malaria (n = 1078) and healthy community children (n = 289). Using isotope dilution mass spectrometry (IDMS)-traceable creatinine

measures from community children, we evaluated the bias, accuracy and precision of estimating bSCr using height-dependent and height-independent estimated glomerular filtration (eGFR) equations to back-calculate bSCr or estimating bSCr directly using published or population-specific norms.
Result(s): We compared methods to estimate bSCr in healthy community children against the IDMS-traceable SCr measure. The Pottel-age based equation, assuming a normal GFR of 120 mL/min per 1.73m2, was the more accurate method with minimal bias when compared to the Schwartz height-based equation. Using the different bSCr estimates, we demonstrated the prevalence of KDIGO-defined AKI in children with severe malaria ranged from 15.6-43.4%. The lowest estimate was derived using population upper levels of normal and the highest estimate was derived using the mean GFR of the community children (137 mL/min per 1.73m2) to back-calculate the bSCr. Irrespective of approach, AKI was strongly associated with mortality with a step-wise increase in mortality across AKI stages ($p < 0.0001$ for all). AKI defined using the Pottel-age based equation to estimate bSCr showed the strongest relationship with mortality with a risk ratio of 5.13 (95% CI 3.03-8.68) adjusting for child age and sex.
Conclusion(s): We recommend using height-independent age-based approaches to estimate bSCr in hospitalized children in sub-Saharan Africa due to challenges in accurate height measurements and undernutrition which may impact bSCr estimates. In this population the Pottel-age based GFR estimating equation obtained comparable bSCr estimates to population-based estimates in healthy children.

PMID
32993548 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32993548]
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Publisher
BioMed Central Ltd
Year of Publication
2020

985.

A scoring system based on clinical features for the prediction of sporadic renal angiomyolipoma rupture and hemorrhage.
Xu X.-F., Hu X.-H., Zuo Q.-M., Zhang J., Xu H.-Y., Zhang Y.
Embase
Medicine (United States). 99(20) (no pagination), 2020. Article Number: e20167. Date of Publication: 2020.
[Article]

AN: 633104902
The purpose of this study is to analyze the risk factors of sporadic renal hamartoma and establish a risk scoring system, and to intervene in patients with high-risk sporadic renal hamartoma who are prone to rupture and bleeding as soon as possible.Retrospective univariate and multivariate logistic analyzes were conducted for clinical data of 332 sporadic renal hamartoma patients to screen out independent risk factors of tumor rupture. Score of each independent risk factor was calculated. (Calculation formula: The risk coefficient of each factor = the beta regression coefficient of each factor/the minimum value of the beta regression coefficient of all factors, the value of the smallest beta regression coefficient corresponding to all the factors was assigned 1 point. The score of each factor was equal to the risk coefficient of each variable was taken as an integer value by rounding.) The total score was equal to the sum of all factors. Then the area under the receiver operating characteristics (AUC) curve was compared between high risk factors and scoring system. Finally, the scoring system was evaluated by the area under the curve (AUC) and the Hosmer-Lemeshow method in an independent cohort of 130 patients.Factors such as symptoms at presentation, tumor size, tumor blood supply, and tumor growth pattern were significant predictors of sporadic renal angiomyolipoma rupture in both the univariate and multivariate analyses; these predictors were included in the scoring system to predict sporadic renal angiomyolipoma rupture. There were no significant differences in AUCs between high risk factors and scoring system (z = 0.6434, P=.583, AUC=0.913, and 0.903 for high risk factors and scoring system, respectively). The sporadic renal angiomyolipoma patients who scored >6 points were prone to rupture. AUROC of the scoring system in the validation set was 0.854(95%CI:0.779, 0.928). Using the Hosmer-Lemeshow method, the value of X2was 2.916, P=.893, suggesting the scoring system fitted well.A scoring system based on clinical features is simple and effective in predicting sporadic angiolipoma rupture and hemorrhage. When the score is higher than 6 points, the probability of hamartoma rupture and hemorrhage is significantly increased and early intervention is needed.

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32443333 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32443333]
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Publisher
Lippincott Williams and Wilkins
Year of Publication
2020

986.

The profiles of biopsy-proven renal tubulointerstitial lesions in patients with glomerular disease.
Dong J., Li Y., Yue S., Liu X., Wang L., Xiong M., Wang G., Nie S., Xu X.
Embase
Annals of Translational Medicine. 8(17) (no pagination), 2020. Article Number: 1066. Date of Publication: 01 Sep 2020.
[Article]
AN: 632916528

Background: Renal tubules and interstitium are vulnerable to injury and play a central role in the progression of various chronic kidney diseases (CKDs). However, high quality epidemiologic study on the profiles of biopsy-proven tubulointerstitial lesions (TILs) is extremely limited.
Method(s): We conducted a retrospective renal biopsy series including 62,569 native biopsies at 1,211 hospitals across China from 2015 to 2017. The TILs, including the shedding of tube epithelial, renal tubular atrophy, renal interstitial fibrosis, edema and inflammatory infiltration, were identified from the pathological report. We analyzed the severity and chronicity of TILs stratified by gender, age groups, biopsy indications, and concurrent glomerular diseases. We also examined the correlation between TIL and glomerulosclerosis.
Result(s): Of 56,880 patients with biopsy-proven glomerular disease, 79.5% had TILs. Renal interstitial inflammatory infiltration was the most common type of TIL (77.7%), followed by renal tubular atrophy (56.0%) and renal interstitial fibrosis (32.8%). Severe and chronic TILs were more common in adults than in children. The three glomerular diseases with the highest proportion of moderate-to-severe and chronic TIL were diabetic nephropathy, immunoglobulin A (IgA) nephropathy and focal segmental glomerulosclerosis. The severity of TILs was moderately correlated with glomerulosclerosis score (r=0.51). Moderate-to-severe and chronic TIL were more common in southern China. After adjusting for age, sex, hospital level, region, biopsy indication and type of concurrent glomerular diseases, adults with renal arteriole injury had a six-fold higher risk of moderate-to-severe TIL [odds ratio (OR), 7.12; 95% confidence interval (CI), 6.42 to 7.91] and a three-fold higher risk of chronic TIL (OR, 4.58; 95% CI, 4.37 to 4.79).
Conclusion(s): TILs were common in patients with biopsy-proven glomerular disease. The type and severity of TILs varied with age, region and concurrent glomerular diseases. Renal arteriole injury and glomerulosclerosis was associated with a significantly increased risk of TIL.

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987.

Acute kidney injury and chronic kidney disease after combined heart-liver transplant in patients with congenital heart disease: A retrospective case series.
Lee A., Concepcion W., Gonzales S., Sutherland S.M., Hollander S.A.
Embase
Pediatric Transplantation. 24(7) (no pagination), 2020. Article Number: e13833. Date of Publication: 01 Nov 2020.
[Article]
AN: 2006800385
Although it is known that children undergoing heart transplantation are at increased risk for both AKI and CKD, renal function following CHLT remains understudied. All pediatric CHLT patients from 2006 to 2019 were included. The prevalence of AKI in the first 7 post-operative days, renal recovery at 30 post-operative days, and CKD were ascertained. AKI was defined as an increase

in creatinine greater than 1.5 times baseline, and CKD, as an eCrCl less than 90 mL/min/1.73 m2. The need for RRT was also analyzed. 10 patients were included, with an average age of 20 years and an average listing time of 130 days. Preoperatively, the median eCrCl was 91.12 mL/min/m2 (IQR 70.51, 127.75 min/mL/m2). 5 (50%) patients had CKD, with 4 at stage 2 and 1 at stage 3. AKI occurred post-operatively in 3 of 9 (33%) patients: 2 at stage 1 and 1 at stage 2. 2 (67%) resolved by 7 days. Of the 5 patients who reached their 1-year follow-up, 1 (20%) had stage 3 CKD. Among 2 patients, neither had CKD at 5 years. One patient required RRT 2 weeks after CHLT. Despite an increased prevalence of preoperative CKD, patients undergoing CHLT have a lower AKI prevalence than those receiving an isolated heart or liver transplant. Of those with AKI, early renal recovery is common, although at 1 year CKD remains present in 20%. Among long-term survivors, normal renal function is achievable.

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988.

Role of urinary NGAL and KIM-1 as biomarkers of early kidney injury in obese prepubertal children.
Polidori N., Giannini C., Salvatore R., Pelliccia P., Parisi A., Chiarelli F., Mohn A.
Embase
Journal of Pediatric Endocrinology and Metabolism. 33(9) (pp 1183-1189), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 2007722250
Objectives: Childhood obesity is an important cause of end-stage renal disease. To date, available markers do not characterize kidney changes, especially in the early stages. kidney injury molecule-1 (KIM-1) and neutrophil gelatinase-associated lipocalin (NGAL) are already detected before the onset of proteinuria or alterations of glomerular filtration rate and thus might represent biomarkers that directly reflect kidney injury.
Method(s): We characterize kidney injury in a group of 40 obese-prepubertal children compared to 29-healthy age- and gender matched-peers. Anthropometric measurements and body composition were determined. Fasting blood samples were collected for measurement of insulin, glucose, lipid profile, transaminases, cystatin C and creatinine. Urine samples were collected to assess urinary NGAL, KIM-1 and urinary isoprostanes. Kidney length was measured with

ultrasound evaluation. Differences between the two groups were evaluated by Mann-Whitney U test, and Spearman correlation analysis was used to explore relationship between variables.
Result(s): Triglycerides, alanine transaminase (ALT), glucose, insulin, homeostasis model assessment insulin resistance, triglycerides/high-density lipoprotein (HDL)cholesterol ratio and cystatin C values were significantly higher in obese children than normal weight peers. Creatinine values were normal and similar between the two groups, while isoprostanes were higher in obese. Obese children had larger kidney sizes, indicating organ hypertrophy. NGAL and KIM-1 were increased in obese children compared to controls. A significant association between NGAL and KIM-1 with adiposity indices, insulin status and markers of oxidative stress postulated a possible effect of obesity in inducing kidney abnormalities. KIM-1 and NGAL are directly related respectively to cystatin C and isoprostanes, supporting the ability of these biomarkers in reflecting early kidney damages in obese subjects.
Conclusion(s): These findings suggest that obese subjects exhibit a certain degree of renal damage before kidney function loss.

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989.

Renal trauma: a 5-year retrospective review in single institution.
Syarif, Palinrungi A.M., Kholis K., Palinrungi M.A., Syahrir S., Sunggiardi R., Faruk M.
Embase
African Journal of Urology. 26(1) (no pagination), 2020. Article Number: 61. Date of Publication: December 2020.
[Article]
AN: 2007254576
Background: Renal trauma occurs in up to 5% of all trauma cases and accounts for 24% of abdominal solid organ injuries. Renal trauma management has evolved over the past decades, and current management is transitioning toward more conservative approaches for the majority of hemodynamically stable patients. The objective of this study was to analyze the mechanism of injury, management, and outcome in renal trauma.
Method(s): Patients diagnosed with renal trauma in Makassar, Indonesia, from January 2014 to December 2018 were identified retrospectively by the ICD-10 code. Data were collected from medical records. Imaging was classified by radiologists. Variables analyzed included age, sex, mechanism of injury, degree of renal trauma, related organ injury, management, and outcome.
Result(s): Out of the 68 patients identified, the average age was 23.9 +/- 0.6 years, and most were male (83.8%). Blunt trauma accounted for 89.7% of all cases. The most common renal injuries were grade IV (42.6%), and 14% of the cases had no hematuria. Most patients were treated with non-operative management (NOM). Nephrectomy was performed in 16.2% of cases,

and 5.9% of cases underwent renorrhaphy. It was found that 58.8% of cases had isolated renal trauma, and the overall mortality rate (2.9%) was due to related injuries.
Conclusion(s): The majority of blunt and penetrating renal trauma cases that are hemodynamically stable have a good outcome when treated with NOM. The presence of injury in other important organs both intra- and extra-abdominally aggravates the patient's condition and affects the prognosis.

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Publisher
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990.

Incidence of and factors associated with acute kidney injury after scoliosis surgery in pediatric patients.
Eklund J.E., Shah S.H., Rubin D.S., Mehta A.I., Minev E.M., Lee H.H., Roth S.
Embase
Spine Deformity. 8(5) (pp 991-999), 2020. Date of Publication: 01 Oct 2020.
[Article]
AN: 2004889522
Purpose: We sought to identify the national incidence of acute kidney injury (AKI) associated with pediatric posterior spinal fusion (PSF) surgery for scoliosis, and to determine factors that increase risk.
Method(s): The 1998-2014 National Inpatient Sample (NIS), a large United States hospital discharge database, was queried for discharges aged 0-17 years with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes for scoliosis undergoing PSF for the outcome of AKI. Discharges were divided into those with AKI and unaffected. We fit adjusted logistic regression models to yield point estimates, odds ratios, 95% confidence intervals, and p values for the weighted, national population sample with postulated risk factors. The fit of the multivariable regression model was tested using the Hosmer-Lemeshow test, and collinearity using the variance inflation factor.
Result(s): The NIS contained 103,270 weighted discharges meeting inclusion criteria. AKI incidence was 0.1%. Multivariable logistic regression model showed significantly increased odds ratios with thrombocytopenia, rhabdomyolysis, chronic kidney disease, abnormal coagulation, and male sex. AKI increased both hospital stay and cost by threefold compared to unaffected children.

Conclusion(s): This study suggests that AKI after pediatric PSF is rare. It is associated with abnormal coagulation, chronic kidney disease, and rhabdomyolysis, but not with the number of vertebral levels fused. Female sex appears to be protective. The retrospective nature of study and reliance on ICD-9-CM codes may under-represent the incidence of AKI in pediatric PSF patients.

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991.

Kinetic Estimated Glomerular Filtration Rate and Severity of Acute Kidney Injury in Critically Ill Children.
Latha A.V., Rameshkumar R., Bhowmick R., Rehman T.
Embase
Indian Journal of Pediatrics. 87(12) (pp 995-1000), 2020. Date of Publication: December 2020.
[Article]
AN: 2005007152
Objective: To study the Kinetic estimated Glomerular Filtration Rate (KeGFR) using serum creatinine (SCr) for the identification of acute kidney injury (AKI), stages of AKI, and extent of agreement with Kidney Disease Improving Global Outcomes (KDIGO) classification in critically ill children.
Method(s): A prospective observational study was conducted in a pediatric intensive care unit (PICU) in a tertiary care institute of South India from July through August 2018. Sixty children were enrolled. The patients with known End-Stage Renal Disease (ESRD), with previous renal transplantation, admission SCr more than 4 mg per dL, expired within 24 h of admission and patients who underwent Renal Replacement Therapy (RRT) before PICU admission were excluded. KeGFR was calculated for the first seven days, and the worst achieved value was determined. AKI staging by KDIGO was compared with AKI by KeGFR value. The requirement of RRT, multi-organ dysfunction syndrome (MODS), mechanical ventilation, cumulative fluid balance, PICU stay, and hospital mortality was recorded.

Result(s): AKI detection by KeGFR method showed a sensitivity of 93% (95% CI 80% - 98.2%) and specificity of 76% (95% CI 49.8% - 92.2%) compared to KDIGO criteria. The good agreement between KDIGO and KeGFR values for AKI was noted (Kappa = 0.71, p < 0.001). It was observed that 81.3% (n = 13) of Group-I, 56% (n = 14) of Group-II, 77.8% (n = 7) of Group-III and 90% (n = 9) of Group-IV by KeGFR were graded as Stage-0, Stage-1, Stage-2 and Stage-3 of AKI by KDIGO criteria respectively (p < 0.001). There was no significant difference noted in secondary outcomes. The survival of children with AKI and those without AKI (by both KDIGO staging and KeGFR) showed no significant difference.
Conclusion(s): KeGFR is highly sensitive, and there is a good agreement with KDIGO criteria in the identification of AKI in critically ill children. Further research is required to validate these study results.

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992.

Acute kidney injury and risk of CKD and hypertension after pediatric cardiac surgery.
Zappitelli M., Parikh C.R., Kaufman J.S., Go A.S., Kimmel P.L., Hsu C.-Y., Coca S.G., Chinchilli V.M., Greenberg J.H., Moxey-Mims M.M., Ikizler T.A., Cockovski V., Dyer A.-M., Devarajan P.
Embase
Clinical Journal of the American Society of Nephrology. 15(10) (pp 1403-1412), 2020. Date of Publication: October 2020.
[Article]
AN: 2005193059
Background and objectives The association of AKI after pediatric cardiac surgery with long-term CKD and hypertension development is unclear. The study objectives were to determine whether AKI after pediatric cardiac surgery is associated with incident CKD and hypertension. Design, setting, participants, & measurements This was a prospective cohort study of children of 1 month to 18 years old who were undergoing cardiac surgery at two tertiary care centers (Canada, United States). Participants were recruited before cardiac surgery and were followed during hospitalization and at 3, 12, 24, 36, and 48 months after discharge. Exposures were postoperative AKI, based on the Kidney Disease Improving Global Outcomes (KDIGO) definition, and age,2 years old at surgery. Outcomes and measures were CKD (low eGFR or albuminuria for age) and hypertension (per the 2017 American Academy of Pediatrics guidelines) at follow-up, with the composite outcome of CKD or hypertension. Results Among 124 participants, 57 (46%) developed AKI. AKI versus non-AKI participants had a median (interquartile range) age of 8 (4.8-40.8) versus 46 (6.0-158.4) months, respectively, and higher preoperative eGFR. From the 3-to 48-month follow-up, the cohort prevalence of CKD was high (17%-20%); hypertension prevalence

was also high (22%-30%). AKI was not significantly associated with the development of CKD throughout followup. AKI was associated with hypertension development at 12 months after discharge (adjusted relative risk, 2.16; 95% confidence interval, 1.18 to 3.95), but not at subsequent visits. Children aged,2yearsoldatsurgeryhada significantly higher prevalence of hypertension during follow-up than older children (40% versus 21% at 3-month follow-up; 32% versus 13% at 48-month follow-up). Conclusions CKD and hypertension burden in the 4 years after pediatric cardiac surgery is high. Young age at surgery, but not AKI, is associated with their development.

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993.

CT volumetric measurements correlate with split renal function in renal trauma.
Chung P.H., Gross J.A., Robinson J.D., Hagedorn J.C.
Embase
International Urology and Nephrology. 52(11) (pp 2107-2111), 2020. Date of Publication: 01 Nov 2020.
[Article]
AN: 2005188131
Purpose: To evaluate whether volumetric measurements of segmental vascular injuries (SVIs) based on computed tomography (CT) imaging obtained during an initial trauma survey correlate with future nuclear medicine (NM) split renal function.
Method(s): A retrospective review was performed of renal trauma patients treated at a level 1 trauma center between 2008 and 2015. Patients with unilateral SVIs on initial CT imaging with follow-up NM renal scans were evaluated. CT-based split renal function was calculated by assessing the ratio of ipsilateral uninjured kidney volume to bilateral total uninjured kidney volume by two separate radiologists.
Result(s): Eight patients with unilateral SVIs on initial CT trauma evaluation underwent follow-up NM renal scans at a mean of 4 months (range 2-6) after injury. Mean NM split renal function of the injured kidney was 43% (range 22-57). Based on the CT volumetric measurements of the affected kidney, mean percent injured was 23% (range 7-62) with a calculated mean split renal function of 44% (range 23-60). Calculated mean CT split function correlated with NM split function (R = 0.89). Intraclass correlation measuring inter-rater reliability for CT volumetric measurements was 0.94 (95% confidence interval 0.72-0.99).
Conclusion(s): Volumetric measurements based on CT imaging obtained during the initial trauma evaluation correlated with future NM split renal function after SVIs with high inter-rater reliability. This method utilizes pre-existing imaging and avoids additional radiation exposure, work burden, and financial cost from a NM scan. Further evaluation is required to assess feasibility with more complex injuries.

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994.

Analysis of the association between kidney injury biomarkers concentration and nephritis in immunoglobulin A vasculitis: A pediatric cohort study.
Dyga K., Machura E., Swietochowska E., Szczepanska M.
Embase

International Journal of Rheumatic Diseases. 23(9) (pp 1184-1193), 2020. Date of Publication: 01 Aug 2020.
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AN: 2005481243
Objective: The aim of this study was to investigate the clinical course, selected biochemical parameters and concentrations of renal injury biomarkers such as neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1) and liver-fatty acid binding protein (L-FABP) in patients with immunoglobulin A vasculitis (IgAV) to identify the markers associated with nephritis in the course of the disease (IgAVN).
Method(s): The study involved 29 children with IgAV and 34 healthy controls. Eleven (38%) patients had renal involvement (IgAV-N) and 18 (62%) did not exhibit nephritis (IgAV-noN). Initial laboratory tests, determining the concentrations of NGAL, KIM-1 and L-FABP in serum and urine, were conducted on children from the study group in an acute phase of IgAV as well as after an average of 6 months, during a follow-up visit. The interconnection between renal involvement, anthropometric measurements, epidemiological data, laboratory parameters and levels of examined biomarkers have been thoroughly evaluated.
Result(s): The serum and urine levels of NGAL, KIM-1 and L-FABP were significantly higher in children with an acute phase of IgAV as compared to the control group (P <.001) and markedly lower during follow-up retesting in comparison with the values obtained at inclusion (P <.001). However, the concentration of none of the evaluated biomarkers correlated with nephrological indices. Among all examined parameters, only male subjects were associated with nephritis (P =.017).
Conclusion(s): We have established no evident association between the concentrations of NGAL, KIM-1 and L-FABP and nephritis in the course of IgAV in children. Additionally, we confirmed a significant male predominance in patients with nephritis.

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995.

Phenotypes and Baseline Risk Factors of Acute Kidney Injury in Children After Allogeneic Hematopoietic Stem Cell Transplantation.

Daraskevicius J., Azukaitis K., Dziugeviciute-Tupko J., Peciulyte M., Planciunaite R., Vaitkeviciene G., Rascon J., Jankauskiene A.
Embase
Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 499. Date of Publication: 27 Aug 2020.
[Article]
AN: 632797663
Background: Acute kidney injury (AKI) is a frequent and widely recognized complication of allogeneic hematopoietic stem cell transplantation (allo-HSCT). Despite relatively high prevalence, AKI after allo-HSCT and its risk factors in children remain obscure. The aim of this study was to describe the prevalence and course of AKI during the first 100 days after allo-HSCT in children and to investigate its associations with baseline characteristics.
Method(s): Retrospective single-center chart review of all patients under 18 who underwent allo-HSCT during 2011-2017 was performed. AKI was defined using the pediatric RIFLE criteria and only the patients with pRIFLE stage I (eGFR decrease by 50% or more) or higher were considered for the analysis. Recurrent AKI and acute kidney disease (AKD) were defined according to the Acute Disease Quality Initiative consensus. Demographic, clinical, and procedure-related characteristics were recorded at the day of HSCT.
Result(s): Fifty-one patients (68.6% boys) with a median age of 9 years (range: 0.25-17) were included. During a median follow-up of 82 (IQR, 60-98) days, 27 (52.9%) patients experienced a total of 39 AKI episodes, translating into one AKI episode per 100 patient days. Multiple AKIs occurred in 11 (21.6%) patients and 18 (35.3%) progressed to AKD. Four patients died, all with ongoing or previous AKI. Patients with AKD were, on average, older (10 vs. 6 years; p = 0.03) and had higher baseline body mass index (BMI) [standard deviation score (SDS) 0.83 vs. 0.04, p = 0.05], whereas patients with recurrent AKI had higher baseline estimated glomerular filtration rate (eGFR) (244.1 vs. 193.9 ml/min/1.73 m2, p = 0.02). In the adjusted Cox models (HR; 95% CI), older age (1.10; 1.01-1.20) was associated with higher risk of overall AKI and higher eGFR (1.02; 1.01-1.04) was associated with higher risk of recurrent AKI, while older age (1.17; 1.04-1.31), higher eGFR (HR 1.01; 1.0-1.02), and higher BMI SDS (1.66; 1.01-2.72) were associated with higher risk of AKD.
Conclusion(s): AKI is a frequent early complication of allo-HSCT in children, and approximately one fifth experience AKI recurrence and one third develop AKD. Older age, higher BMI, and higher eGFR at the day of transplant may have an effect on the risk of AKI development and its course.

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996.

Tubular injury and cell-cycle arrest biomarkers to predict acute kidney injury in noncritically ill children receiving aminoglycosides.

Chui H., Caldwell J., Yordanova M., Cockovski V., Fredric D., Harel-Sterling M., Haasz M., Al-Ismaili Z., Pizzi M., Ma Q., Devarajan P., Goldstein S.L., Zappitelli M.
Embase
Biomarkers in Medicine. 14(10) (pp 879-894), 2020. Date of Publication: July 2020.
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AN: 632962760
Aim: NGAL, IL-18, KIM-1 as well as urinary TIMP2 and IGFBP7 and their mathematical product (TIMP2*IGFBP7) were evaluated for detecting pediatric aminoglycoside acute kidney injury (AG-AKI).
Method(s): In a prospective study, noncritically ill children received aminoglycosides (AG) >=3 days. The area under the curve (AUC) for biomarkers to detect AKI was calculated by a) days before AKI onset; b) treatment days.
Result(s): There were 113 AG episodes (68% febrile neutropenia). The AKI group had a higher proportion with febrile neutropenia. The AKI group had significantly lower NGAL 3 days before AKI, as patients with febrile neutropenia had a lower NGAL during AG treatment ($p < 0.05$). NGAL, IL-18 and TIMP2*IGFBP7 had AUC >=0.73 at 3, 2 and 2 days before AKI onset.
Conclusion(s): NGAL, IL-18 and TIMP2*IGFBP7 were modest early biomarkers of AG-AKI. Febrile neutropenia was associated with lower NGAL.

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997.

The long and the short of it - the impact of acute kidney injury in critically ill children. Em poucas palavras - o impacto da injuria renal aguda em criancas criticamente doentes <Em poucas palavras - o impacto da injuria renal aguda em criancas criticamente doentes.>
Zappitelli M., Noone D.
Embase
Jornal de Pediatria. 96(5) (pp 533-536), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 2004592963
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31917134 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31917134]

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998.

Impact of the development of acute kidney injury on patients admitted to the pediatric intensive care unit. Impacto do desenvolvimento de lesao renal aguda em pacientes internados na unidade de terapia intensiva pediatrica <Impacto do desenvolvimento de lesao renal aguda em pacientes internados na unidade de terapia intensiva pediatrica.>
Ferreira M.C.D.R., Lima E.Q.
Embase
Jornal de Pediatria. 96(5) (pp 576-581), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 2002914424
Objective: To identify the risk factors for the development of acute kidney injury and for short and long-term mortality of patients with acute kidney injury after admission to the Pediatric Intensive Care Unit.
Material(s) and Method(s): Retrospective analysis of patients admitted to the Pediatric Intensive Care Unit from January 2004 to December 2008. Acute kidney injury was defined by the KDIGO criterion. Risk factors for acute kidney injury, in-hospital, and long-term mortality were obtained through multivariate logistic regression analysis. Long-term mortality (up to 2011) was obtained by searching the institution's database and by telephone contact with patients' family members.
Result(s): A total of 434 patients were evaluated and the incidence of acute kidney injury was 64%. Most acute kidney injury episodes (78%) occurred within the first 24hours after admission to the Pediatric Intensive Care Unit. The risk factors for the development of acute kidney injury were: low volume of diuresis, younger age, mechanical ventilation, vasoactive drugs, diuretics, and amphotericin. Lower weight, positive fluid balance, acute kidney injury, dopamine use and mechanical ventilation were independent risk factors for in-hospital mortality. Long-term mortality was 17.8%. Systolic blood pressure, PRISM score, low volume of diuresis, and mechanical ventilation were independent risk factors associated with long-term mortality after admission to the Pediatric Intensive Care Unit.
Conclusion(s): Acute kidney injury was a frequent, early event, and was associated with in-hospital mortality and long-term mortality after admission to the Pediatric Intensive Care Unit.

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999.

A meta-analysis of the incidence rate of postoperative acute kidney injury in patients with congenital heart disease.
Li D., Niu Z., Huang Q., Sheng W., Wang T.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 350. Date of Publication: 17 Aug 2020.
[Article]
AN: 632604530
Background: Acute kidney injury (AKI) is a common complication of cardiac surgery. However, the incidence rate of AKI in patients with congenital heart disease (CHD) greatly varies between reports owing to the different definitions used for AKI. Therefore, this study was designed as a meta-analysis aimed at summarizing the incidence rate of AKI in patients with congenital heart disease (CHD) on the basis of different AKI criteria.
Method(s): Studies published till April 24, 2020, on the incidence rate of AKI in patients with CHD, were retrieved from electronic databases and printed literature. To pool data from the included studies, the effect size, a combined statistics, was chosen and presented with the incidence rate and 95% confidence interval (CI). Heterogeneity was evaluated using I 2 statistics and Cochran Q test. The incidence rates obtained from the subgroup analysis according to study location, type of surgery, type of cohort, age, and AKI criteria) were also evaluated to determine the correlation of AKI with these factors. Publication bias was estimated using the Egger test.
Result(s): Thirty studies, comprising 9925 patients with AKI who had CHD, were included. Overall, the pooled incidence rate of AKI in the patients with CHD was 38.4% (95% CI, 32.0-44.7%). However, the incidence rate was not significantly affected by gender, study location, type of surgery, type of cohort, and AKI criteria. Moreover, age was significantly associated with the incidence of AKI, and the incidence rate was higher in the patients aged < 1 month than in those aged 1 month to 18 years, < 18 years, and >= 18 years (P < 0.05).
Conclusion(s): In this study, the estimated incidence rate of AKI in patients with CHD was 38.4% and may be influenced by age. These findings highlight the importance of further investigation of the specific causes of and effective preventive measures for AKI.

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BioMed Central Ltd (United Kingdom. E-mail: info@biomedcentral.com)
Year of Publication

2020

1000.

Effects of hydroxyurea on the oxidative stress and markers of renal tissue damage in patients with sickle cell disease of adults in Basra.
Saker H.D., Jewad A.M., Hussein M.G.
Embase
Biochemical and Cellular Archives. 20(Supplement2) (pp 3827-3831), 2020. Date of Publication: 2020.
[Article]
AN: 633035021
Sickle cell disease is a multisystem disorder and the most common genetic disease, characterize by the existence of an abnormal hemoglobin called hemoglobin -S (HbS). It is a type of hemoglobinopathy results from a mutation in the betaglobin chain inducing the substitution of Val by Glu at the position 6 on the chromosome-11. The objective of this study was to determination of oxidative stress status represented by measuring MDA, superoxide dismutase, catalase, glutathione peroxidase and glutathione in serum of patients with SCD and comparing with healthy individuals. Setting and design :A total 144 with Sickle cell disease (72 male and 72 female) with age of (16- 55) years and (30) with same age range (15 male and 15 female) as a healthy control group. The patients with Sickle cell disease (SCD) group, who were diagnosed and classified mainly by the physicians. The patients group was divided into two subgroups, patients with the homozygotes (SS) 72(36 SS treated and 36 of SS untreated with hydroxyurea) and 72 with sickle -beta thalassemia (36 Sf treated and 36 of Sf untreated with hydroxyurea). Serum superoxide dismutase, glutathione peroxidase, Catalase, glutathione and Malondialdehyde were measured by using Elabscience, USAkits. The serum levels of SOD, CAT and Gpx activities as well as the GSH concentration were significantly decreased in the sickle cell disease untreated patients with hydroxyurea; whereas MDA concentration was significantly increase (both homozygote (SS) and sickle Beta-thalassemia) as compared with the control group ($p < 0.01$). Treating with hydroxyurealed toopposite the above results. Treating with hydroxyurealed to overcome the oxidative stress status of the patients with the sickle cell disease in the both-homozygous (SS) and (Sf).

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Connect Journal (E-mail: contact@connectjournals.com)
Year of Publication
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1001.

Renin-angiotensin system blockers and 1-year mortality in patients with post-operative acute kidney injury.

Slagelse C., Gammelager H., Iversen L.H., Liu K.D., Sorensen H.T., Christiansen C.F.
Embase
Acta Anaesthesiologica Scandinavica. 64(9) (pp 1262-1269), 2020. Date of Publication: 01 Oct 2020.
[Article]
AN: 2005521178
Background: Angiotensin-converting enzyme inhibitor (ACE-I) and angiotensin-receptor blocker (ARB) users may be associated with increased mortality in patients with post-operative acute kidney injury (AKI), but data are limited. We studied whether users of ACE-I/ARBs with AKI after colorectal cancer surgery (CRC) were associated with increased 1-year mortality after AKI.
Method(s): This population-based cohort study in Northern Denmark included patients with AKI within 7 days after CRC surgery during 2005-2014. From reimbursed prescriptions, patients were classified as ACE-I/ARB current, former, or non-users. We computed the cumulative 30-day and 1-year mortality after AKI with 95% confidence intervals (95% CI) using the Kaplan-Meier method (1-survival function). Hazard ratios (HRs) comparing mortality in current and former users with non-users were computed by Cox proportional hazards regression analyses, controlling for potential confounders.
Result(s): We identified 10 713 CRC surgery patients. A total of 2000 patients had AKI and were included. Thirty-day mortality was 16.5% (95% CI 13.7-19.8), 16.2% (95% CI 11.3-22.8), and 13.4% (95% CI 11.6-15.4) for current, former, and non-users. Adjusted HR was 1.26 (95% CI 0.96-1.65) and 1.19 (95% CI 0.78-1.82) for current and former users compared with non-users. One-year mortality rates were 26.4% (95% CI 22.9-30.4), 29.8% (95% CI 23.2-37.8), and 24.7% (95% CI 22.4-27.2) in current, former, and non-users. Compared with non-users, the adjusted 1-year HR for death in current and former users were 1.29 (95% CI 0.96-1.73) and 1.11 (95% CI 0.91-1.35).
Conclusion(s): Based on our findings, current users of ACE-I/ARB may possibly have a small increase in mortality rate in the year after post-operative AKI, although the degree of certainty is low.

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1002.

Outcome of acute kidney injury in children at nishtar hospital, multan, Pakistan.

Mehar F., Ullah S., Safdar R.S., Khan A.A., Naz M., Ain Q.U.
Embase
Rawal Medical Journal. 45(3) (pp 598-601), 2020. Date of Publication: 2020.
[Article]
AN: 2005052752
Objective: To find the outcome of acute kidney injury (AKI) among children at Nishtar Hospital, Multan. Methodology: This descriptive, cross-sectional study was conducted at the Department of Pediatric Medicine, Nishtar hospital, Multan, from October 2019 to March 2020. A total of 156 children, aged 1-12 years with AKI were enrolled. All were treated as per institutional protocol, and followed up for 14 days. Final outcome was noted in terms of complete recovery, partial recovery or death.
Result(s): Overall, mean age was 5.13+/-2.61 years. Out of the 156 patients, 105 (67.30%) were male and 51 (32.69%) were females. Mean body weight was 13.35+/-6.78 kg. We have found that 117 (75%) children had completed recovery, 33 (21.15%) partial recovery and deaths were noted in six (3.85%).
Conclusion(s): This study has shown the 75% patients had complete recovery, 21.15% had partial recovery and deaths in 3.85% patients of acute kidney injury.

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Year of Publication
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1003.

The study of the relationship between kidney injury molucle-1 and n-aceytl beta-d-glucosaminidase in diabetic nephropathy stage in type 2 dibetes patients at al-sadr teaching hispital in najif.
Alzamly B.K., Alturfi Z.S.
Embase
International Journal of Pharmaceutical Research. 12(3) (pp 1947-1950), 2020. Date of Publication: July-September 2020.
[Article]
AN: 2004878126
This study included 90 samples divided into two groups, the first included 30 healthy people of both genders as a control group, and the second included 60 patients of men and women with type 2 diabetes in equal numbers, The information collected included (name, gender, height, weight, disease duration, type of treatment, blood pressure, in addition to chronic diseases such as blood pressure and smoking), whereas the patients of thyroid diseases, high blood pressure, smokers, and diabetes patients who take injections and diuretics with its different types were excluded.

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Embase
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Publisher

Advanced Scientific Research
Year of Publication
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1004.

Effects of intraoperative dexmedetomidine on the incidence of acute kidney injury in pediatric cardiac surgery patients: A randomized controlled trial.
Kim E.-H., Lee J.-H., Kim H.-S., Jang Y.-E., Ji S.-H., Kim W.-H., Kwak J.G., Kim J.-T.
Embase
Paediatric Anaesthesia. 30(10) (pp 1132-1138), 2020. Date of Publication: 01 Oct 2020.
[Article]
AN: 2006079472
Background: Perioperative dexmedetomidine use has been reported to reduce the incidence of postoperative acute kidney injury after adult cardiac surgery. However, large-scale randomized controlled trials evaluating the effect of dexmedetomidine use on acute kidney injury in pediatric patients are lacking.
Aim(s): We investigated whether intraoperative dexmedetomidine could reduce the incidence of acute kidney injury in pediatric cardiac surgery patients.
Method(s): In total, 141 pediatric patients were randomly assigned to dexmedetomidine or control groups. After anesthetic induction, patients in the dexmedetomidine group were administered 1 microg/kg of dexmedetomidine over 10 minutes and an additional 0.5 microg/kg/h of dexmedetomidine during surgery. Additionally, 1 microg/kg of dexmedetomidine was infused immediately after cardiopulmonary bypass was initiated. The incidence of acute kidney injury was defined following Kidney Disease Improving Global Outcomes guidelines.
Result(s): The final analysis included 139 patients. The incidence of acute kidney injury did not differ between dexmedetomidine and control groups (16.9% vs 23.5%; odds ratio 0.661; 95% CI 0.285 to 1.525; P =.33). Similarly, neither the incidence of abnormal postoperative estimated glomerular filtration rate values (P =.96) nor the incidence of arrhythmia, mechanical ventilation duration, length of stay in the intensive care unit, and hospitalization differed between the two groups.
Conclusion(s): Intraoperative dexmedetomidine did not reduce acute kidney injury incidence in pediatric cardiac surgery patients.

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Publisher
Blackwell Publishing Ltd (E-mail: info@royensoc.co.uk)
Year of Publication
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1005.

Longitudinal kidney injury biomarker trajectories in children with obstructive uropathy.
McLeod D.J., Sebastiao Y.V., Ching C.B., Greenberg J.H., Furth S.L., Becknell B.
Embase
Pediatric Nephrology. 35(10) (pp 1907-1914), 2020. Date of Publication: 01 Oct 2020.
[Article]
AN: 2005016517
Background: Congenital obstructive uropathy (OU) is a leading cause of pediatric kidney failure, representing a unique mechanism of injury, in part from renal tubular stretch and ischemia. Tubular injury biomarkers have potential to improve OU-specific risk stratification.
Method(s): Patients with OU were identified in the Chronic Kidney Disease in Children (CKiD) study. "Cases" were defined as individuals receiving any kidney replacement therapy (KRT), while "controls" were age- and time-on-study matched and KRT free at last study visit. Urine and plasma neutrophil gelatinase-associated lipocalin (NGAL), interleukin 18 (IL-18), and liver-type fatty acid-binding protein (L-FABP) levels were measured at enrollment and annually and compared between cases and controls. Urine values were normalized to urine creatinine.
Result(s): In total, 22 cases and 22 controls were identified, with median (interquartile range) ages of 10.5 (9.0-13.0) and 15.9 (13.9-16.9) years at baseline and outcome, respectively. At enrollment there were no differences noted between cases and controls for any urine (u) or plasma (p) biomarker measured. However, the mean pNGAL and uL-FABP/creatinine increased throughout the study period in cases (15.38 ng/ml per year and 0.20 ng/ml per mg/dl per year, respectively, p = 0.01 for both) but remained stable in controls. This remained constant after controlling for baseline glomerular filtration rate (GFR).
Conclusion(s): In children with OU, pNGAL and uL-FABP levels increased over the 5 years preceding KRT; independent of baseline GFR. Future studies are necessary to identify optimal cutoff values and to determine if these markers outperform current clinical predictors.

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1006.

Rasburicase improves the outcome of acute kidney injury from typical hemolytic uremic syndrome.
Cho M.H., Ahn Y.H., Lim S., Kim J.H., Ha I.-S., Cheong H.I., Kang H.G.
Embase
Pediatric Nephrology. 35(11) (pp 2183-2189), 2020. Date of Publication: 01 Nov 2020.
[Article]
AN: 2005267612
Background: Typical hemolytic uremic syndrome (HUS) causes acute kidney injury (AKI) and serious sequelae of chronic kidney disease (CKD) in some. Hyperuricemia is a common finding in typical HUS that may contribute to kidney damage. We explored whether aggressive management of hyperuricemia with rasburicase could improve outcomes in AKI patients with typical HUS.
Method(s): We retrospectively analyzed medical records of children with typical HUS admitted to a tertiary center between 2005 and 2017. We compared clinical outcomes of hospitalization and 1-year post-discharge between those with rasburicase treatment (n = 13) and those without (controls, n = 29).
Result(s): With rasburicase treatment, hyperuricemia corrected more rapidly (median 36 vs. 120 h, p < 0.001), and hospital stays were shorter (median 9 vs. 12 days, p = 0.003) than in the controls. There was no difference in dialysis requirement. At 1-year post-discharge, the proportion of patients with impaired kidney function (estimated glomerular filtration rate < 90 mL/min/1.73 m2) was lower in the rasburicase group (7.7% vs. 41.4%, p = 0.036) than in the controls. Hypertension and proteinuria tended to be more common in the controls than in the rasburicase group. Collectively, long-term renal sequelae of impaired kidney function, proteinuria, or hypertension at a 1-year follow-up was less common in the rasburicase group than in the controls (7.7% vs. 62.1%; p = 0.001).
Conclusion(s): Children with typical HUS treated with rasburicase had shorter hospital stays and less long-term sequelae at 1-year post-discharge than those who were not treated with rasburicase. These results support the use of rasburicase to prevent CKD in pediatric patients with typical HUS-associated AKI. [Figure not available: see fulltext.].

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Year of Publication
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1007.

The impact of increased awareness of acute kidney injury in the Neonatal Intensive Care Unit on acute kidney injury incidence and reporting: results of a retrospective cohort study.
Starr M.C., Kula A., Lieberman J., Menon S., Perkins A.J., Lam T., Chabra S., Hingorani S.
Embase
Journal of Perinatology. 40(9) (pp 1301-1307), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 2005595084
Objective: To evaluate the impact of nephrology integration in the NICU on acute kidney injury (AKI) incidence, provider reporting, and nephrology referral. Study design: Cohort study in a single-center NICU from January 2012 to December 2017 (n = 1464). We assessed the impact of clinical practice changes including neonatal-nephrology rounds on the incidence of AKI.
Result(s): AKI occurred in 318 neonates (22%). AKI occurred less frequently in those admitted after clinical practice changes (P < 0.001). After multivariable adjustment, clinical practice changes were associated with reduced odds of AKI (adjusted odds ratio, 0.31; 95% CI 0.22-0.44, P < 0.001). Provider reporting of AKI improved (P < 0.001) and more neonates were referred for nephrology follow-up (P < 0.001).
Conclusion(s): Increased nephrology integration in the NICU was associated with decreased AKI incidence. While recognition of AKI improved, AKI remained poorly reported and nephrology AKI follow-up did not routinely occur. This study supports the importance of increased nephrology involvement in the NICU.

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Publisher
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Year of Publication
2020

1008.

Preterm birth and neonatal acute kidney injury: implications on adolescent and adult outcomes.
Harer M.W., Charlton J.R., Tipple T.E., Reidy K.J.
Embase
Journal of Perinatology. 40(9) (pp 1286-1295), 2020. Date of Publication: 01 Sep 2020.
[Review]
AN: 2004660099
As a result of preterm birth, immature kidneys are exposed to interventions in the NICU that promote survival, but are nephrotoxic. Furthermore, the duration of renal development may be truncated in these vulnerable neonates. Immaturity and nephrotoxic exposures predispose preterm newborns to acute kidney injury (AKI), particularly in the low birth weight and extremely preterm gestational age groups. Several studies have associated preterm birth as a risk factor for future chronic kidney disease (CKD). However, only a few publications have investigated the impact of neonatal AKI on CKD development. Here, we will review the evidence linking preterm birth and AKI in the NICU to CKD and highlight the knowledge gaps and opportunities for future research. For neonatal intensive care studies, we propose the inclusion of AKI as an important short-term morbidity outcome and CKD findings such as a reduced glomerular filtration rate in the assessment of long-term outcomes.

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Publisher
Springer Nature
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2020

1009.

Acute kidney injury, fluid balance and risks of intraventricular hemorrhage in premature infants.
Adcock B., Carpenter S., Bauer J., Giannone P., Schadler A., Chishti A., Hanna M.
Embase
Journal of Perinatology. 40(9) (pp 1296-1300), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 2004282892
Objective: Evaluate association between fluid balance and intraventricular hemorrhage (IVH).
Study design: Retrospective review of infants <30 weeks gestation admitted to Kentucky Children's Hospital Neonatal Intensive Care Unit.

Result(s): Infants with acute kidney injury (AKI) had a 2.4-fold increased risk of IVH (OR 2.38, 95% CI 1.46-3.87) and a 3.5-fold increased risk of severe IVH (OR 3.45, 95% CI 1.98-6.04). Infants above birthweight on day 4 had a 1.9-fold increased risk of IVH (OR 1.86, 95% CI 1.05-3.27) and a 2.0-fold increased risk of severe IVH (OR 1.96, 95% CI 1.03-3.74). When controlling for confounding factors, infants with AKI or above birthweight on day 4 had a 4.6-fold (aOR 4.60, 95% CI 1.80-11.78) and 3.0-fold (aOR 2.96, 95% CI 1.01-8.65) increased risk of severe IVH, respectively.
Conclusion(s): Infants with AKI during the first week of life had a higher association of severe IVH even after controlling for confounding factors.

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1010.

Kidney and blood pressure abnormalities 6 years after acute kidney injury in critically ill children: a prospective cohort study.
Benisty K., Morgan C., Hessey E., Huynh L., Joffe A.R., Garros D., Dancea A., Sauve R., Palijan A., Pizzi M., Bhattacharya S., Doucet J.A., Cockovski V., Gottesman R.G., Goldstein S.L., Zappitelli M.
Embase
Pediatric Research. 88(2) (pp 271-278), 2020. Date of Publication: 01 Aug 2020.
[Article]
AN: 2004013437
Background: Acute kidney injury (AKI) in pediatric intensive care unit (PICU) children may be associated with long-term chronic kidney disease or hypertension.
Objective(s): To estimate (1) prevalence of kidney abnormalities (low estimated glomerular filtration rate (eGFR) or albuminuria) and blood pressure (BP) consistent with pre-hypertension or hypertension, 6 years after PICU admission; (2) if AKI is associated with these outcomes.
Method(s): Longitudinal study of children admitted to two Canadian PICUs (January 2005-December 2011). Exposures (retrospective): AKI or stage 2/3 AKI (KDIGO creatinine-based definition) during PICU. Primary outcome (single visit 6 years after admission): presence of (a) low eGFR (<90 ml/min/1.73 m2) or albuminuria (albumin to creatinine ratio >30 mg/g) (termed "CKD signs") or (b) BP consistent with >=pre-hypertension (>=90th percentile) or hypertension (>=95th percentile).
Result(s): Of 277 children, 25% had AKI. AKI and stage 2/3 AKI were associated with 2.2- and 6.6-fold higher adjusted odds, respectively, for the 6-year outcomes. Applying new hypertension guidelines attenuated associations; stage 2/3 AKI was associated with 4.5-fold higher adjusted odds for 6-year CKD signs or >=elevated BP.
Conclusion(s): Kidney and BP abnormalities are common 6 years after PICU admission and associated with AKI. Other risk factors must be elucidated to develop follow-up recommendations and reduce cardiovascular risk.

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1011.

Hyperferritinemia and acute kidney injury in pediatric patients receiving allogeneic hematopoietic cell transplantation.
Kurokawa M., Nishiyama K., Koga Y., Eguchi K., Imai T., Oba U., Shiraishi A., Nagata H., Kaku N., Ishimura M., Honjo S., Ohga S.
Embase
Pediatric Nephrology. 35(10) (pp 1977-1984), 2020. Date of Publication: 01 Oct 2020.
[Article]
AN: 2005138074
Background: Acute kidney injury (AKI) often occurs in pediatric patients who received allogeneic hematopoietic cell transplantation (HCT). We evaluated the risk and effect of HCT-related AKI in pediatric patients.
Method(s): We retrospectively studied the survival and renal outcome of 69 children 100 days and 1-year posttransplant in our institution in 2004-2016. Stage-3 AKI developed in 34 patients (49%) until 100 days posttransplant.

Result(s): The 100-day overall survival (OS) rates of patients with stage-3 AKI were lower than those without it (76.5% vs. 94.3%, P = 0.035). The 1-year OS rates did not differ markedly between 21 post-100-day survivors with stage-3 AKI and 29 without it (80.8% vs. 87.9%, P = 0.444). The causes of 19 deaths included the relapse of underlying disease or graft failure (n = 11), treatment-related events (4), and second HCT-related events (4). Underlying disease of malignancy (crude hazard ratio (HR) 5.7; 95% confidence interval (CI), 2.20 to 14.96), > 1000 ng/mL ferritinemia (crude HR 4.29; 95% CI, 2.11 to 8.71), stem cell source of peripheral (crude HR 2.96; 95% CI, 1.22 to 7.20) or cord blood (crude HR 2.29; 95% CI, 1.03 to 5.06), and myeloablative regimen (crude HR 2.56; 95% CI, 1.24 to 5.26), were identified as risk factors for stage-3 AKI until 100 days posttransplant. Hyperferritinemia alone was significant (adjusted HR 5.52; 95% CI, 2.21 to 13.76) on multivariable analyses.
Conclusion(s): Hyperferritinemia was associated with stage-3 AKI and early mortality posttransplant. Pretransplant iron control may protect the kidney of pediatric HCT survivors.

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1012.

Independent risk factors and long-term outcomes for acute kidney injury in pediatric patients undergoing hematopoietic stem cell transplantation: A retrospective cohort study.
Hirano D., Kakegawa D., Miwa S., Umeda C., Takemasa Y., Tokunaga A., Kawakami Y., Ito A.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 373. Date of Publication: 27 Aug 2020.
[Article]
AN: 632722913
Background: Acute kidney injury (AKI) remains a frequent complication in children undergoing hematopoietic stem cell transplantation (HSCT) and an independent risk factor of the patient's survival and a prognostic factor of progression to chronic kidney disease (CKD). However, the causes of these complications are diverse, usually overlapping, and less well understood.
Method(s): This retrospective analysis was performed in 43 patients (28 boys, 15 girls; median age, 5.5 years) undergoing HSCT between April 2006 and March 2019. The main outcome was the development of AKI defined according to the Pediatric Risk, Injury, Failure, Loss, End-stage Renal Disease (pRIFLE) criteria as >= 25% decrease in estimated creatinine clearance. The secondary outcome was the development of CKD after a 2-year follow-up.
Result(s): AKI developed in 21 patients (49%) within 100 days after HSCT. After adjusting for possible confounders, posttransplant AKI was associated with matched unrelated donor (MUD) (HR, 6.26; P = 0.042), but not total body irradiation (TBI). Of 37 patients who were able to follow-

up for 2 years, 7 patients died, but none had reached CKD during the 2 years after transplantation.
Conclusion(s): Posttransplant AKI was strongly associated with HSCT from MUD. Although the incidence of AKI was high in our cohort, that of posttransplant CKD was lower than reported previously in adults. TBI dose reduced, GVHD minimized, and infection prevented are required to avoid late renal dysfunction after HSCT in children since their combinations may contribute to the occurrence of AKI.

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1013.

Upregulated miR-101 inhibits acute kidney injury-chronic kidney disease transition by regulating epithelial-mesenchymal transition.
Zhao J.-Y., Wang X.-L., Yang Y.-C., Zhang B., Wu Y.-B.
Embase
Human and Experimental Toxicology. 39(12) (pp 1628-1638), 2020. Date of Publication: 01 Dec 2020.
[Article]
AN: 2005508750
Acute kidney injury (AKI) is an independent risk factor for chronic kidney disease (CKD). However, the role and mechanism of microRNA (miRNA, miR) in AKI-CKD transition are elusive. In this study, a murine model of renal ischemia/reperfusion was established to investigate the repairing effect and mechanism of miR-101a-3p on renal injury. The pathological damage of renal tissue was observed by hematoxylin and eosin and Masson staining. The levels of miR-101, profibrotic cytokines, and epithelial-mesenchymal transition (EMT) markers were analyzed using Western blotting, real-time polymerase chain reaction, and/or immunofluorescence. MiR-101 overexpression caused the downregulation of alpha-smooth muscle actin, collagen-1, and vimentin, as well as upregulation of E-cadherin, thereby alleviating the degree of renal tissue damage. MiR-101 overexpression mitigated hypoxic HK-2 cell damage. Collagen, type X, alpha 1 and transforming growth factor beta receptor 1 levels were downregulated in hypoxic cells transfected with miR-101 mimic. Our study indicates that miR-101 is an anti-EMT miRNA, which provides a novel therapeutic strategy for AKI-CKD transition.

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1014.

Acute Kidney Injury in Children after Hematopoietic Cell Transplantation Is Associated with Elevated Urine CXCL10 and CXCL9.
Erez D.L., Denburg M.R., Afolayan S., Jodele S., Wallace G., Davies S.M., Seif A.E., Bunin N., Laskin B.L., Sullivan K.E.
Embase
Biology of Blood and Marrow Transplantation. 26(7) (pp 1266-1272), 2020. Date of Publication: July 2020.
[Article]
AN: 2005760559
Acute kidney injury (AKI) is nearly universally associated with worse outcomes, especially among children after hematopoietic stem cell transplant (HCT). Our objective was to examine urinary immune biomarkers of AKI after HCT to provide insights into novel mechanisms of kidney injury in this population. Studying patients undergoing allogeneic HCT provides a unique opportunity to examine immune markers of AKI because the risk of AKI is high and the immune system newly develops after transplant. Children (>2 years old) and young adults undergoing their first allogeneic HCT and enrolled in a prospective, observational cohort study at 2 large children's hospitals had urine collected pre-HCT and monthly for the first 4 months after HCT. Urine samples at each monthly time point were assayed for 8 immune-related biomarkers. AKI was defined as a 1.5-fold increase in the monthly serum creatinine value, which was recorded +/-1 day from when the research urine sample was obtained, as compared with the pre-HCT baseline. Generalized estimating equation regression analysis evaluated the association between the monthly repeated measures (urinary biomarkers and AKI). A total of 176 patients were included from 2 pediatric centers. Thirty-six patients from 1 center were analyzed as a discovery cohort and the remaining 140 patients from the second center were analyzed as a validation cohort. AKI rates were 18% to 35% depending on the monthly time point after HCT. Urine CXCL10 and CXCL9 concentrations were significantly higher among children who developed AKI compared with children who did not (P <.01) in both cohorts. In order to gain a better understanding of the cellular source for these biomarkers in the urine, we also analyzed in vitro expression of CXCL10 and CXCL9 in kidney cell lines after stimulation with interferon-gamma and interferon-alpha. HEK293-epithelial kidney cells demonstrated interferon-induced expression of CXCL10 and CXCL9, suggesting a potential mechanism driving the key finding. CXCL10 and CXCL9 are associated with AKI after HCT and are therefore promising biomarkers to guide improved diagnostic and treatment strategies for AKI in this high-risk population.

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1015.

Acute kidney injury in paediatric patients with sickle cell disease is associated with increased morbidity and resource utilization.
McCormick M., Richardson T., Warady B.A., Novelli E.M., Kalpatthi R.
Embase
British Journal of Haematology. 189(3) (pp 559-565), 2020. Date of Publication: 01 May 2020.
[Article]
AN: 2004226135
Renal disease is a common complication experienced by patients with sickle cell disease (SCD), though the epidemiology of acute kidney injury (AKI) in paediatric patients and its impact on long-term renal outcomes is unclear. We utilized the Pediatric Health Information System (PHIS) to identify inpatient encounters of paediatric patients with SCD admitted for vaso-occlusive pain crisis (VOC). Overall, 1.4% of patients experienced at least one episode of AKI and 2.5% of admissions were complicated by AKI. Patients with at least one episode of AKI were more likely to be adolescents or young adults at the time of their initial admission, had increased rates of admission to the ICU, longer lengths of stay, increased costs of hospitalization, increased risk of readmission and increased rates of SCD-related comorbidities. Generalized estimating equation modelling demonstrated that increasing age, history of hypertension, history of haematuria and history of chronic kidney disease were associated with increased odds of developing AKI, though hydroxycarbamide use (OR 0.64, 95% CI 0.44-0.94) was protective. Episodes of AKI during hospitalization in children with SCD are associated with increased morbidity and utilization of hospital resources. Increasing the use of hydroxycarbamide may decrease the likelihood of this complication.

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1016.

Evaluation of a point-of-care serum creatinine measurement device and the impact on diagnosis of acute kidney injury in pediatric cardiac patients: A retrospective, single center study.
Kimura S., Iwasaki T., Shimizu K., Kanazawa T., Kawase H., Shioji N., Kuroe Y., Isoyama S., Morimatsu H.
Embase
Health Science Reports. 3(1) (no pagination), 2020. Article Number: e143. Date of Publication: 01 Mar 2020.
[Article]
AN: 2004662612
Background and aims: Agreement between measurements of creatinine concentrations using point-of-care (POC) devices and measurements conducted in a standard central laboratory is unclear for pediatric patients. Our objectives were (a) to assess the agreement for pediatric patients and (b) to compare the incidence of postoperative acute kidney injury (AKI) according to the two methods.
Method(s): This retrospective, single-center study included patients under 18 years of age who underwent cardiac surgery and who were admitted into the pediatric intensive care unit of a tertiary teaching hospital (Okayama University Hospital, Japan) from 2013 to 2017. The primary objective was to assess the correlation and the agreement between measurements of creatinine concentrations by a Radiometer blood gas analyzer (Cregas) and those conducted in a central laboratory (Crelab). The secondary objective was to compare the incidence of postoperative AKI between the two methods based on Kidney Disease Improving Global Outcomes (KDIGO) criteria.
Result(s): We analyzed the results of 1404 paired creatinine measurements from 498 patients, whose median age was 14 months old (interquartile range [IQR] 3, 49). The Pearson correlation coefficient of Cregas vs Crelab was 0.968 (95% confidence interval [CI], 0.965-0.972, P < 0.001). The median bias between Cregas and Crelab was 0.02 (IQR -0.02, 0.05) mg/dL. While 199 patients (40.0%) were diagnosed as having postoperative AKI based on Crelab, 357 patients (71.7%) were diagnosed as having postoperative AKI based on Cregas (Kappa = 0.39, 95% CI, 0.33-0.46). In a subgroup analysis of patients whose Cregas and Crelab were measured within 1 hour, similar percentage of patients were diagnosed as having postoperative AKI based on Cregas and Crelab (42.8% vs 46.0%; Kappa = 0.76, 95% CI, 0.68-0.84).
Conclusion(s): There was an excellent correlation between Cregas and Crelab in pediatric patients. Although more patients were diagnosed as having postoperative AKI based on Cregas than based on Crelab, paired measurements with a short time gap showed good agreement on AKI diagnosis.

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1017.

Renal hypoplasia can be the cause of membranous nephropathy-like lesions.
Takizawa K., Miura K., Kaneko N., Yabuuchi T., Ishizuka K., Kanda S., Harita Y., Akioka Y., Horita S., Taneda S., Honda K., Hattori M.
Embase
Clinical and Experimental Nephrology. 24(9) (pp 813-820), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 2004977743
Background: Renal hypoplasia (RH) is the most common cause of chronic kidney disease in children. In cases of RH, proteinuria is often induced by glomerular hypertrophy and hyperfiltration that is commonly associated with focal segmental glomerulosclerosis. This study reports the first case series of a possible association between RH and membranous nephropathy (MN).
Method(s): Of the 168 children with RH who visited our department between 1999 and 2017, five with overt proteinuria (>= 1 g/gCr) underwent renal biopsy. We retrospectively reviewed the medical charts and analyzed biopsy specimens using light microscopy (LM), immunofluorescence (IF), and electron microscopy.
Result(s): The five children (four boys and one girl) had a median age of 5.5 years at the time of renal biopsy. The median proteinuria was 4.23 g/gCr (range 1.46-14.25), median serum albumin, 2.9 g/dL (range 2.3-3.7), and median estimated glomerular filtration rate, 59.7 mL/min/1.73 m2 (range 36.7-103.6). LM showed segmental spike formation and mesangial hypercellularity and IF study showed segmental granular immunoglobulin G (IgG) staining (IgG1 and IgG3 dominant) along the capillary loops in all five patients. Electron-dense deposits were observed in the subepithelial and mesangial areas. Thus, the pathological studies showed MN-like lesions in all patients.
Conclusion(s): Our study suggests that RH can be the cause of MN-like lesions.

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Springer (Singapore)
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1018.

Acute kidney injury and chronic kidney disease after non-kidney solid organ transplantation.
Menon S., Pollack A.H., Sullivan E., Murphy T., Smith J.
Embase
Pediatric Transplantation. 24(6) (no pagination), 2020. Article Number: e13753. Date of Publication: 01 Sep 2020.
[Article]
AN: 2005145389
Background: SOT is the treatment of choice for end-stage organ disease. Improved long-term survival after NKSOT has uncovered chronic morbidity including CKD. AKI is common after NKSOT and may be associated with long-term CKD.
Method(s): We performed a retrospective cohort study looking at AKI and CKD after pediatric heart (n = 109) or liver (n = 112) transplant. AKI was defined using KDIGO creatinine-based criteria. pAKI was AKI <= 7 days post-transplant; CKD3-5 was eGFR < 60 mL/min/1.73 m2 by modified Schwartz formula for > 3 months. We looked at the incidence of CKD3-5 and the effect of perioperative pAKI on the slope of eGFR post-transplant.
Result(s): pAKI was seen in 63% (n = 69) after heart and 38% (n = 43) after liver transplant. pAKI was associated with longer ICU and hospital stays. Cumulative incidence (95% CI) of CKD3-5 at 60 months post-heart transplant was 40.9% (27.9%-57.1%) in patients with AKI vs 35.8% (17.1%-64.8%) in those without (P = NS). Post-liver transplant, the cumulative incidence of CKD3-5 at 60 months was 0% in those without pAKI vs 10% (3.2%-29.3%) in those with (P =.01). Patients with pAKI had lower eGFR at last follow-up.
Conclusion(s): pAKI and CKD are common after NKSOT. Incidence of CKD is higher in those with pAKI. AKI episodes are associated with a drop in eGFR during follow-up. Identifying patients who have had AKI is an important first step in identifying those at risk of repeated AKI episodes. These patients would benefit from closer monitoring for CKD, lower nephrotoxic drug use, and follow-up with nephrology.

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1019.

Plasma osteopontin levels is associated with biochemical markers of kidney injury in patients with leptospirosis.
Chagan-Yasutan H., Hanan F., Niki T., Bai G., Ashino Y., Egawa S., Telan E.F.O., Hattori T.
Embase
Diagnostics. 10(7) (no pagination), 2020. Article Number: 439. Date of Publication: July 2020.
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AN: 2006983227
Leptospirosis becomes severe, with a fatality rate of >10%, and manifests as severe lung injury accompanied by acute kidney injury. Using urine and blood samples of 112 patients with leptospirosis, osteopontin (OPN), galectin-9 (Gal-9) and other kidney-related biomarkers were measured to understand the pathological and diagnostic roles of OPN and Gal-9 in leptospirosis. Plasma levels of full-length (FL)-OPN (pFL-OPN) ($p < 0.0001$), pFL-Gal-9($p < 0.0001$) and thrombin-cleaved OPN ($p < 0.01$) were significantly higher in patients with leptospirosis than in healthy controls ($n = 30$), as were levels of several indicators of renal toxicity: serum cystatin C ($p < 0.0001$), urine N-acetyl-beta-glucosaminidase (NAG)/creatinine ($p < 0.05$), and urine clusterin/creatinine ($p < 0.05$). pFL-Gal-9 levels were negatively correlated with pFL-OPN levels ($r = -0.24$, $p < 0.05$). pFL-OPN levels were positively correlated with serum cystatin C ($r = 0.41$, $p < 0.0001$), urine NAG/creatinine ($r = 0.35$, $p < 0.001$), urine clusterin/creatinine ($r = 0.33$, $p < 0.01$), and urine cystatin C/creatinine ($r = 0.33$, $p < 0.05$) levels. In a group of patients with abnormally high creatinine levels, significantly higher levels of serum cystatin C ($p < 0.0001$) and pFL-OPN ($p < 0.001$) were observed. Our results demonstrate that pFL-OPN reflect kidney injury among patients with leptospirosis.

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1020.

Renal Precision Medicine in Neonates and Acute Kidney Injury: How to Convert a Cloud of Creatinine Observations to Support Clinical Decisions.
Allegaert K., Smits A., van Donge T., van den Anker J., Sarafidis K., Levtchenko E., Mekahli D.
Embase

Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 366. Date of Publication: 28 Jul 2020.
[Review]
AN: 632540577
Renal precision medicine in neonates is useful to support decision making on pharmacotherapy, signal detection of adverse (drug) events, and individual prediction of short- and long-term prognosis. To estimate kidney function or glomerular filtration rate (GFR), the most commonly measured and readily accessible biomarker is serum creatinine (Scr). However, there is extensive variability in Scr observations and GFR estimates within the neonatal population, because of developmental physiology and superimposed pathology. Furthermore, assay related differences still matter for Scr, but also exist for Cystatin C. Observations in extreme low birth weight (ELBW) and term asphyxiated neonates will illustrate how renal precision medicine contributes to neonatal precision medicine. When the Kidney Disease Improving Global Outcome (KDIGO) definition of acute kidney injury (AKI) is used, this results in an incidence up to 50% in ELBW neonates, associated with increased mortality and morbidity. However, urine output criteria needed adaptations to broader time intervals or weight trends, while Scr and its trends do not provide sufficient detail on kidney function between ELBW neonates. Instead, we suggest to use assay-specific centile Scr values to better describe postnatal trends and have illustrated its relevance by quantifying an adverse drug event (ibuprofen) and by explaining individual amikacin clearance. Term asphyxiated neonates also commonly display AKI. While oliguria is a specific AKI indicator, the majority of term asphyxiated cases are non-oliguric. Asphyxia results in a clinical significant-commonly transient-mean GFR decrease (-50%) with a lower renal drug elimination. But there is still major (unexplained) inter-individual variability in GFR and subsequent renal drug elimination between these asphyxiated neonates. Recently, the Baby-NINJA (nephrotoxic injury negated by just-in-time action) study provided evidence on the concept that a focus on nephrotoxic injury negation has a significant impact on AKI incidence and severity. It is hereby important to realize that follow-up should not be discontinued at discharge, as there are concerns about long-term renal outcome. These illustrations suggest that integration of renal (patho)physiology into neonatal precision medicine are an important tool to improve contemporary neonatal care, not only for the short-term but also with a positive health impact throughout life.

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1021.

Cardiac-cerebral-renal associations in pediatric traumatic brain injury: Preliminary findings.
Lele A.V., Alunpipatthanachai B., Clark-Bell C., Watanitanon A., Min Xu M., Anne Moore R.V.T., Zimmerman J.J., Portman M.A., Chesnut R.M., Vavilala M.S.
Embase
Journal of Clinical Neuroscience. 76 (pp 126-133), 2020. Date of Publication: June 2020.
[Article]
AN: 2005557219
Objective: The clinical epidemiology of organ outcomes in pediatric traumatic brain injury (TBI) has not been examined. We describe associated markers of cerebral, cardiac and renal injury after pediatric TBI.
Design(s): Prospective observational study.
Patient(s): Children 0-18 years who were hospitalized with TBI. Measurements: Measures of myocardial (at least one elevated plasma troponin [cTnI] >= 0.4 ng/ml) and multiorgan (hemodynamic variables, cerebral perfusion, and renal) function were examined within the first ten days of hospital admission and within 24 h of each other.
Main Result(s): Data from 28 children who were 11[IQR 10.3] years, male (64.3%), with isolated TBI (67.9%), injury severity score (ISS) 25[10], and admission Glasgow coma score (GCS) 11[9] were examined. Overall, 50% (14 children) had elevated cTnI, including those with isolated TBI (57.9%; 11/19), polytrauma (33.3%; 3/9), mild TBI (57.1% 8/14), and severe TBI (42.9%; 6/11). Elevated cTnI occurred within the first six days of admission and across all age groups, in both sexes, and regardless of TBI lesion type, GCS, and ISS. Age-adjusted admission tachycardia was associated with cTnI elevation (AUC 0.82; $p < 0.001$). Reduced urine output occurred more commonly in patients with isolated TBI (27.3% elevated cTnI vs. 0% normal cTnI).
Conclusion(s): Myocardial injury commonly occurs during the first six days after pediatric TBI irrespective of injury severity, age, sex, TBI lesion type, or polytrauma. Age-adjusted tachycardia may be a clinical indicator of myocardial injury, and elevated troponin may be associated with cardio-cerebro-renal dysfunction.

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Publisher
Churchill Livingstone
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1022.

Renal angina index in pediatric septic patients as a predictor of acute kidney injury in remote area.
Budi N.S., Semedi B.P., Utariani A., Asmaningsih N.
Embase
Critical Care and Shock. 23(4) (pp 176-184), 2020. Date of Publication: 2020.
[Article]
AN: 2004880356
Background: One of the most common sepsis comorbidities is severe acute kidney injury (AKI), which occurs in about 20% of pediatric patients with severe sepsis and is independently associated with poor outcomes. Many studies have shown the ability of renal angina index (RAI) with a cut-off point of 8 to predict the risk of AKI grade 2 and 3, but with varying sensitivity and specificity. Therefore, this study aims to identify a RAI cut-off point to predict the incidence of AKI in pediatric septic patients in the setting of a regional hospital in Indonesia.
Method(s): An observational analytic study with a prospective longitudinal design was conduct-ed on 30 pediatric patients in the Resuscitation Room of Dr. Soetomo General Hospital Sura-baya. Patients who met the inclusion criteria were given 1-hour standardized resuscitation, then were observed. Every action taken to the patient was recorded, fluid input and output were measured, and mechanical ventilation and vasopressor administration were documented until the third day to determine factors influ-encing the incidence of AKI.
Result(s): In this study, 56.7% of pediatric septic patients had AKI. The Pediatric Logistic Organ Dysfunction-2 (PELOD-2) score in this study had a median of 11, in accordance with the pediatric sepsis guideline. RAI, with a cut-off point of 8 as a predictor for AKI grade 2-3, had a sensitivity of 100% and a specificity of 68% (area under the curve [AUC]=0.912). In terms of AKI risk tranche, the majority of patients (93.1%) had mechanical ventilation, while in terms of AKI injury tranche, the majority met the fluid overload criteria (79.3%).
Conclusion(s): RAI, with a cut-off point of 8, can be used as a predictor for severe AKI in pediatric septic patients.

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The Indonesian Foundation of Critical Care Medicine (E-mail: simonnanlohy@yahoo.com)
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1023.

Endogenous miR-204 protects the kidney against chronic injury in hypertension and diabetes.
Cheng Y., Wang D., Wang F., Liu J., Huang B., Baker M.A., Yin J., Wu R., Liu X., Regner K.R., Usa K., Liu Y., Zhang C., Dong L., Geurts A.M., Wang N., Miller S.S., He Y., Liang M.
Embase

Journal of the American Society of Nephrology. 31(7) (pp 1539-1554), 2020. Date of Publication: July 2020.
[Article]
AN: 2006922545
Background Aberrant microRNA (miRNA) expression affects biologic processes and downstream genes that are crucial to CKD initiation or progression. The miRNA miR-204-5p is highly expressed in the kidney but whether miR-204-5p plays any role in the development of chronic renal injury is unknown. Methods We used real-time PCR to determine levels of miR-204 in human kidney biopsies and animal models. We generated Mir204 knockout mice and used locked nucleic acid-modified anti-miR to knock down miR-204-5p in mice and rats. We used a number of physiologic, histologic, and molecular techniques to analyze the potential role of miR-204-5p in three models of renal injury. Results Kidneys of patients with hypertension, hypertensive nephrosclerosis, or diabetic nephropathy exhibited a significant decrease in miR-204-5p compared with controls. Dahl salt-sensitive rats displayed lower levels of renal miR-204-5p compared with partially protected congenic SS.13BN26 rats. Administering anti-miR-204-5p to SS.13BN26 rats exacerbated interlobular artery thickening and renal interstitial fibrosis. In a mouse model of hypertensive renal injury induced by uninephrectomy, angiotensin II, and a high-salt diet, Mir204 gene knockout significantly exacerbated albuminuria, renal interstitial fibrosis, and interlobular artery thickening, despite attenuation of hypertension. In diabetic db/db mice, administering anti-miR-204-5p exacerbated albuminuria and cortical fibrosis without influencing blood glucose levels. In all three models, inhibiting miR-204-5p or deleting Mir204 led to upregulation of protein tyrosine phosphatase SHP2, a target gene of miR-204-5p, and increased phosphorylation of signal transducer and activator of transcription 3, or STAT3, which is an injury-promoting effector of SHP2. Conclusions These findings indicate that the highly expressed miR-204-5p plays a prominent role in safeguarding the kidneys against common causes of chronic renal injury.

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1024.

Urethral injury in children: Experience in a teaching hospital in Enugu, Nigeria.
Chukwubuike K.E., Enebe J.T., Nduagubam O.C.
Embase
Proceedings of Singapore Healthcare. 29(3) (pp 151-155), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 2005126913
Background: Urethral injury in children is uncommon, and its treatment is challenging. This study evaluated our experience in the management of urethral injuries in children who presented at the paediatric surgical unit of a teaching hospital in Enugu, Nigeria.
Method(s): The medical records of patients younger than 15 years old admitted to our centre with urethral injury from January 2008 and December 2017 were reviewed retrospectively.
Result(s): During the period of the study, 11 cases (all male) were managed. The mean age of the patients at presentation was 11 years. Road traffic accident was the most common mechanism of injury, and the bulbar urethra was the most injured part of the urethra. All the patients had urethroplasty through the perineal approach. There was 90% success at first instance. One patient required redo urethroplasty.
Conclusion(s): Urethral trauma is associated with considerable morbidity. Road traffic accident was the most common mechanism of injury, and the bulbar urethra was the part of the urethra most affected. Transperineal urethroplasty was an effective modality of treatment.

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SAGE Publications Inc. (E-mail: claims@sagepub.com)
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1025.

Characteristics of the ruptured intracranial cerebral aneurysms in patients with autosomal dominant polycystic kidney disease (ADPKD) and review of literature.
Masui K., Wajima D., Aketa S.
Embase
Interdisciplinary Neurosurgery: Advanced Techniques and Case Management. 22 (no pagination), 2020. Article Number: 100846. Date of Publication: December 2020.
[Review]
AN: 2007367400

Objective: This study was performed to examine the characteristics of the ruptured intracranial cerebral aneurysms in patients with autosomal dominant polycystic kidney disease (ADPKD) in a single institute and review of the past reports.
Patients and Methods: We reviewed the cases of ruptured cerebral aneurysm in ADPKD patients from January 2000 to December 2016 in our institute. We extracted patient's demographics (patient age and sex), the sites of cerebral aneurysms and their sizes, Hunt and Kosnik grades at the onset, their medical history (hypertension and hemodialysis), familial history of subarachnoid hemorrhage (SAH), surgical procedures, and modified Rankin Scale (mRS) at 3 months after onsets. In addition, we reviewed our data compared to the reports associated with ruptured intracranial cerebral aneurysms in patients with ADPKD.
Result(s): The tendency of SAH of ADPKD patients was estimated that the onset average age of SAH was around 30-40, female dominant, predilection sites (middle cerebral artery (MCA) and anterior communicating artery (A-Com)), small aneurysm size (under 5 mm), many having hypertension as past medical history, and favoured neck clipping for ruptured aneurysms. The tendency was estimated from the data.
Conclusion(s): Most of ruptured cerebral aneurysms in ADPKD patients were small and located in the anterior circulation. The rate of repeat SAH was high, considered that patients were given regular follow-up by magnetic resonance angiography (MRA).

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Publisher
Elsevier B.V.
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2020

1026.

Prevalence of acute kidney injury (AKI) in extremely low gestational age neonates (ELGAN).
Askenazi D.J., Heagerty P.J., Schmicker R.H., Griffin R., Brophy P., Juul S.E., Mayock D.E., Goldstein S.L., Hingorani S.
Embase
Pediatric Nephrology. 35(9) (pp 1737-1748), 2020. Date of Publication: 01 Sep 2020.
[Article]
AN: 2005138072
Background: To determine the prevalence and severity of acute kidney injury (AKI) at different time frames in relation to gestational age (GA) and birthweight (BW) in extremely low gestational age neonates (ELGAN). Our hypothesis is that ELGAN with lower GA and lower BW have higher AKI rates.
Method(s): A total of 923 ELGAN enrolled in the Preterm Erythropoietin Neuroprotection Trial were evaluated from birth until death or hospital discharge. AKI was defined according to kidney disease: improving global outcomes (KDIGO) definition from clinically-derived serum creatinine (SCr) measurements. Severe AKI was defined as stage 2 or higher.
Result(s): For the entire cohort, 351/923 (38.0%, CI = 34.8-41.3%) had at least one episode of stage 1 or higher AKI and 168/923 (18.2%, CI = 15.7-20.7%) had at least one episode of severe (stage 2 or higher) AKI. The prevalence of AKI stage 1 or higher for the entire cohort during the early (days 3-7), middle (days 8-14), and late follow-up period (after day 14) was 112/923 (12.1%,

CI = 10.0-14.3%), 142/891 (15.9%, CI = 13.5-18.4%), and 249/875 (28.5%, CI = 25.4-31.5%), respectively. The rates of severe AKI during the hospital course were 27.8%, 21.9%, 13.6%, and 9.4% for the 24-, 25-, 26-, and 27-week GA groups, respectively. AKI rates were significantly higher with decreasing GA and decreasing BW for stated time trends (all $p < 0.01$ using tests for trend).
Conclusion(s): AKI is relatively common in ELGAN during their initial hospital course and is associated with lower GA and BW.

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Publisher
Springer
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1027.

Parvovirus B19 infection and kidney injury: Report of 4 cases and analysis of immunization and viremia in an adult cohort of 100 patients undergoing a kidney biopsy.
Kauffmann M., Bobot M., Daniel L., Torrents J., Knefati Y., Moranne O., Burtey S., Zandotti C., Jourde-Chiche N.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 260. Date of Publication: 09 Jul 2020.
[Article]
AN: 632297957
Background: The seroprevalence of human Parvovirus B19 (PVB19) is 70-85% in adults worldwide. PVB19 is the etiologic agent of the fifth disease, is a cause of aplastic anemia, and can be associated with kidney injury. We aimed to describe the cases of 4 patients with kidney injury related to PVB19 primary infection, and to evaluate the seroprevalence of PVB19 and the incidence of PVB19 primary infection in patients undergoing a native kidney biopsy.
Method(s): Cases of PVB19 infection with kidney injury were reviewed from the archives of the department of Nephrology. A systematic screening of anti-PVB19 IgG and IgM antibodies and viral DNA was performed in sera from 100 consecutive patients with a kidney biopsy in 2017-2018.
Result(s): The 4 patients with PVB19 infection-associated kidney disease displayed: one lupus-like glomerulonephritis (GN) without lupus auto-antibodies, one minimal change disease with tubular necrosis, one secondary hemolytic and uremic syndrome and one membrano-proliferative

GN. In the 100 patients biopsied, 67 had elevated anti-PVB19 IgG, among whom 8 had elevated IgM, without circulating viral DNA, without any particular renal pathological pattern. One additional patient showed a seroconversion at the time of kidney biopsy, which revealed a class V lupus nephritis.
Conclusion(s): PVB19 primary infection can be associated with different kidney diseases. The seroprevalence of PVB19 among patients with a kidney biopsy is similar to the overall population, and primary infection is rarely documented (1%) after systematic screening. Whether PV19 is nephrotoxic, or triggers renal endothelial injury and immune activation, remains to be elucidated.

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Year of Publication
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1028.

Acute kidney injury without previous renal disease in critical care unit.
Piyaphanee N., Chaiyaumporn S., Phumeetham S., Lomjansook K., Sumboonnanonda A.
Embase
Pediatrics International. 62(7) (pp 810-815), 2020. Date of Publication: 01 Jul 2020.
[Article]
AN: 2005533310
Background: Acute kidney injury (AKI) is common in hospitalized and critically ill children. Apart from primary kidney disease, etiologies of AKI are usually related to systemic disease and nephrotoxic insult. This study examines the incidence, characteristics, and mortality risks of AKI in critically ill children without primary renal disease or previously known chronic kidney disease.
Method(s): A retrospective cohort study was conducted of patients aged 1-18 years, diagnosed with AKI (excluding severe glomerulonephritis and previously known chronic kidney disease) in pediatric intensive care units between 2013 and 2016. Acute kidney injury was defined according to the Kidney Disease Improving Global Outcomes classifications. Cox proportional hazards regression analysis was employed to assess the relationship between the risk factors and mortality.
Result(s): Of 1,377 pediatric intensive care unit patients, 253 (18.4%) developed AKI and only 169 (12.3%) who did not have previously known renal disease were included. Of these 169 AKI patients, the mean age was 8.1 +/- 4.7 years; 88 (52.1%) patients were male; and 60 (35.5%) patients had AKI stage 3. The most common etiologies of AKI were sepsis (76.9%) and shock (64.5%). Fifty-three (31.4%) of those patients died during admission. The risk factors for death

were the need for mechanical ventilation (adjusted hazard ratio, 17.82; 95% CI, 2.41-132.06) and AKI stage 3 (adjusted hazard ratio, 2.32; 95% CI, 1.07-5.00).
Conclusion(s): Acute kidney injury in critically ill children without previously known renal disease was approximately two-thirds of the overall incidence. The risk factors of in-hospital death were the use of mechanical ventilation, and AKI stage 3.

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Publisher
Blackwell Publishing
Year of Publication
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1029.

Continuous renal replacement therapy in critically ill patients with acute on chronic liver failure and acute kidney injury: A retrospective cohort study.
Saraiva I.E., Ortiz-Soriano V.M., Mei X., Gianella F.G., Woc W.S., Zamudio R., Kelly A., Gupta M., Grigorian A.Y., Neyra J.A.
Embase
Clinical Nephrology. 93(4) (pp 187-194), 2020. Date of Publication: April 2020.
[Article]
AN: 2006097340
Background: Incident acute kidney injury (AKI) in critically ill patients with acute on chronic liver failure (ACLF) is associated with poor prognosis. The role of continuous renal replacement therapy (CRRT) is not well established for patients with ACLF and AKI.
Material(s) and Method(s): We conducted a retrospective cohort study to examine clinical outcomes in 66 patients with ACLF and AKI requiring CRRT.
Result(s): All-cause hospital mortality was 89.4%. Five (7.6%) patients were listed for liver transplantation, of whom 1 (1.5%) was eventually subjected to transplantation. Etiology of AKI included type 1 hepatorenal syndrome (HRS) with or without some degree of acute tubular necrosis (ATN) in 20 (30.3%) patients, and primarily ATN in 46 (69.7%) patients. When evaluated at the time of CRRT initiation, Child-Pugh-Turcotte (CPT) and Model for End-stage Liver Disease (MELD) (area under the receiver operating characteristics curve (AUROC) 0.67 for both) had fair performance for prediction of mortality, whereas Sequential Organ Failure Assessment (SOFA) and Chronic Liver Failure (CLIF)-SOFA performed better for the prediction of mortality (AUROC 0.87 for both). SOFA and CLIF-SOFA also performed well when determined at the time of ICU admission (AUROC 0.86 and 0.85, respectively). Etiology of liver disease or AKI did not influence prognosis.
Conclusion(s): Critically ill patients with ACLF and AKI requiring CRRT have poor hospital survival, even with provision of extracorporeal support therapy. SOFA and CLIF-SOFA are good prognostic tools of mortality in this susceptible population.

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Publisher
Dustri-Verlag Dr. Karl Feistle (Bajuwarenring 4, Oberhaching 82041, Germany. E-mail: marina.rottner@dustri.de)
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1030.

Plasma cystatin C versus renal resistive index as early predictors of acute kidney injury in critically ill neonates.
El-sadek A.E., El-Gamasy M.A., Behiry E.G., Torky A.A., Fathy M.A.
Embase
Journal of Pediatric Urology. 16(2) (pp 206.e1-206.e8), 2020. Date of Publication: April 2020.
[Article]
AN: 2004543983
Introduction: Acute kidney injury (AKI) independently predicts morbidity and mortality of critically ill neonates. Serum cystatin C is a promising early biomarker for AKI. Evaluating the renal resistive index (RRI) by Doppler ultrasound demonstrates abnormal intrarenal vascular impendence.
Objective(s): The objective of this study was to compare the ability of plasma cystatin C and the RRI to predict AKI early in critically ill neonates. Study design: Sixty critically ill neonates in neonatal intensive care units were assigned to three groups: group 1 (cases) of thirty participants fulfilling the AKI diagnostic criteria of neonatal Kidney Disease Improving Global Outcome, group 2 of thirty participants not fulfilling the criteria, as well as the 3rd group of thirty age- and sex-matching healthy participants.
Result(s): Group 1 demonstrated a significantly high mean cystatin C level during the 1st day of incubation compared with the other two groups [group 1 (3.18 +/- 1.25), group 2 (1.68 +/- 0.66), and group 3 (0.80 +/- 0.26)]. Serum creatinine and RRI were insignificantly different among all groups. At a cutoff value of 2.68 (mg/l), cystatin C level had significantly higher area under the curve (AUC) (0.804) than both serum creatinine (0.453) and RRI (0.551) and had 53.3% sensitivity and 100% specificity in the early prediction of neonates with AKI. The RRI had a lower non-significant AUC (0.551) at a cutoff value of 0.53 and had 100% sensitivity and 40% specificity, while serum creatinine had a low non-significant AUC (0.453) at a cutoff value of 0.49 (mg/dl) and had 33.3% sensitivity and 86.7% specificity. Applying regression analysis to predict AKI in critically ill neonates as early as possible, higher plasma cystatin C and lower estimated glomerular filtration rate cystatin were the only independent risk factors within critically ill neonates.

Conclusion(s): The level of plasma cystatin C increased 48 h before both RRI and serum creatinine did in critically ill neonates who developed AKI, so it is more reliable in predicting AKI in critically ill neonates than serum creatinine and RRI. [Table presented]

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1031.

Clinical effect and safety of continuous renal replacement therapy in the treatment of neonatal sepsis-related acute kidney injury.
Cai C., Qiu G., Hong W., Shen Y., Gong X.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 286. Date of Publication: 18 Jul 2020.
[Article]
AN: 632351333
Background: Sepsis is the leading cause of acute kidney injury (AKI) in the neonatal intensive care unit (NICU). The aim of the study is to explore the efficacy and security of continuous renal replacement therapy (CRRT) in the treatment of neonatal sepsis-related AKI.
Method(s): Totally12 sepsis-related AKI neonates treated with CRRT were hospitalized in the NICU of Shanghai Children's Hospital between November 2012 and November 2019, and the clinical data of these 12 cases were retrospectively analyzed. Renal function, acid-base balance, electrolytes, blood pressure and hemodynamics indexes were recorded before CRRT initiation, 12/24/48 h after CRRT initiation and at the end of CRRT respectively. The efficacy of CRRT was evaluated and the clinical outcome was observed in these 12 sepsis-related AKI neonates. Repeated measurement analysis of variance was used for statistical analysis of the data.
Result(s): (1) Continuous veno-venous hemodialysis filtration (CVVHDF) was used in 12 cases of sepsis-related AKI neonates. There were 6 cases with oliguria, 3 cases with fluid overload (FO), 3 cases with septic shock. The duration of CRRT was 49 ~ 110 h, average (76.2 +/- 23.5) h. (2) The blood pressure (BP) of 12 sepsis -related AKI neonates could reach the normal level (40-60 mmHg) 12 h after CRRT initiation, and the normal BP level could be maintained during the CRRT treatment. After 12 h CRRT, the blood pH value increased to the normal range (7.35 ~ 7.45). After 12 h CRRT treatment, the oxygenation index of 12sepsis-related AKI neonates could reach 200 mmHg. After 24 h CRRT treatment, it could rise to more than 300 mmHg. Serum potassium, serum urea nitrogen and serum creatinine levels decreased significantly 12 h after CRRT initiation, and reached the normal range 24 h after CRRT initiation. The urine volume significantly increased 24 h after CRRT initiation. (3) Venous catheterization was performed successfully in all sepsis-related AKI neonates. We observed 2 cases of thrombocytopenia, 1 case of obstruction

and 1 case of hypotension in the course of CRRT. There were no complications such as hypothermia, hemorrhage, thrombosis and infection.11 neonates were cured and discharged. One neonate was treated with CRRT and passed through the oliguria stage of AKI, but died after the parents gave up the treatment.
Conclusion(s): It is safe and effective to treat neonatal sepsis-related AKI with CRRT, which should be an effective measure for the treatment of sepsis-related AKI neonates.

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1032.

Cellular and molecular mechanisms of kidney injury in 2,8-dihydroxyadenine nephropathy.
Klinkhammer B.M., Djudjaj S., Kunter U., Palsson R., Edvardsson V.O., Wiech T., Thorsteinsdottir M., Hardarson S., Foresto-Neto O., Mulay S.R., Moeller M.J., Jahnen-Dechent W., Floege J., Anders H.-J., Boor P.
Embase
Journal of the American Society of Nephrology. 31(4) (pp 799-816), 2020. Date of Publication: April 2020.
[Article]
AN: 2006843353
Background: Hereditary deficiency of adenine phosphoribosyltransferase causes 2,8-dihydroxyadenine (2,8-DHA) nephropathy, a rare condition characterized by formation of 2,8-DHA crystals within renal tubules. Clinical relevance of rodentmodels of 2,8-DHAcrystal nephropathy induced by excessive adenine intake is unknown.
Method(s): Using animal models and patient kidney biopsies, we assessed the pathogenic sequelae of 2,8- DHA crystal-induced kidney damage. We also used knockout mice to investigate the role of TNF receptors 1 and 2 (TNFR1 and TNFR2), CD44, or alpha2-HS glycoprotein (AHSG), all of which are involved in the pathogenesis of other types of crystal-induced nephropathies.
Result(s): Adenine-enriched diet in mice induced 2,8-DHA nephropathy, leading to progressive kidney disease, characterized by crystal deposits, tubular injury, inflammation, and fibrosis. Kidney injury depended on crystal size. The smallest crystals were endocytosed by tubular epithelial cells. Crystals of variable size were excreted in urine. Large crystals obstructed whole tubules. Medium-sized crystals induced a particular reparative process that we term extratubulation. In this process, tubular cells, in coordination with macrophages, overgrew and translocated crystals into the interstitium, restoring the tubular luminal patency; this was followed by degradation of interstitial crystals by granulomatous inflammation. Patients with adenine phosphoribosyltransferase deficiency showed similar histopathological findings regarding crystal morphology, crystal clearance, and renal injury. In mice, deletion of Tnfr1 significantly reduced tubular CD44 and annexin two expression, as well as inflammation, thereby ameliorating the disease course. In contrast, genetic deletion of Tnfr2, Cd44, or Ahsg had no effect on the manifestations of 2,8- DHA nephropathy.

Conclusion(s): Rodentmodels of the cellular andmolecular mechanisms of 2,8-DHA nephropathy and crystal clearance have clinical relevance and offer insight into potential future targets for therapeutic interventions.

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1033.

Profile of Acute Kidney Injury in Patients with Decompensated Cirrhosis at a Tertiary-Care Center in Uttarakhand, India.
Arora M.S., Kaushik R., Ahmad S., Kaushik R.M.
Embase
Digestive Diseases. 38(4) (pp 335-343), 2020. Date of Publication: 01 Jul 2020.
[Article]
AN: 630297412
Objectives: To study the clinical profile and predictors of acute kidney injury (AKI) in patients with decompensated cirrhosis.
Material(s) and Method(s): This observational study was conducted at Himalayan Institute of Medical Sciences, Dehradun, India, on 175 consecutive patients with decompensated cirrhosis. Patients were studied for AKI as per International Club of Ascites-AKI criteria.
Result(s): The prevalence of AKI was 40.6%, with prerenal AKI 67.6%, hepatorenal syndrome (HRS) 23.8%, intrinsic renal AKI 7%, and postrenal AKI 1.4%. Mean arterial pressure (MAP), platelet count, and serum albumin were significantly lower and total leucocyte count (TLC), blood urea nitrogen, serum creatinine (SCr), total bilirubin, aspartate aminotransferase, international normalized ratio, Child-Turcotte-Pugh (CTP) score, and model for end-stage liver disease (MELD) score higher in cirrhosis patients with AKI than without AKI ($p < 0.05$ each). MAP, hemoglobin, TLC, and SCr were significantly different in various types of AKI ($p < 0.05$ each). AKI had a significant association with CTP score, alcohol, spontaneous bacterial peritonitis (SBP), sepsis, and shock ($p < 0.05$ each). Type of AKI had significant association with SBP, sepsis, and

shock (p < 0.05 each). Mortality occurred in 33.8% patients with AKI with 64.7% mortality in patients with HRS. Outcome had significant association with AKI, stage and type of AKI (p < 0.05 each). Multivariate analysis showed SBP, sepsis, and shock as independent predictors of AKI (p < 0.05 each).
Conclusion(s): AKI occurred commonly in patients with decompensated cirrhosis. Prerenal AKI and HRS were the most common types of AKI. SBP, sepsis, and shock were important predictors of AKI.

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1034.

Renal Replacement Therapy in Pediatric Acute Kidney Injury.
Sethi S.K., Chakraborty R., Joshi H., Raina R.
Embase
Indian Journal of Pediatrics. 87(8) (pp 608-617), 2020. Date of Publication: 01 Aug 2020.
[Review]
AN: 2004048435
Acute kidney injury (AKI) is common in critically ill children and affects nearly 30-40% of patients admitted to the pediatric intensive care unit (ICU). Even with technological advances in critical care and dialysis, there is a high mortality rate of 66.8% to 90% in ICU patients. Renal replacement therapy (RRT) is often performed to treat patients with AKI. However, for optimal RRT treatment, it is crucial to consider the indications, modes of access, and prescription of each RRT method. Therefore, this review aims to discuss the various modalities of RRT in pediatric patients, which include peritoneal dialysis (PD), hemodialysis (HD), continuous RRT (CRRT), and sustained low-efficiency dialysis (SLED).

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1035.

A novel machine learning algorithm, Bayesian networks model, to predict the high-risk patients with cardiac surgery-associated acute kidney injury.
Li Y., Xu J., Wang Y., Zhang Y., Jiang W., Shen B., Ding X.
Embase
Clinical Cardiology. 43(7) (pp 752-761), 2020. Date of Publication: 01 Jul 2020.
[Article]
AN: 2004894076
Background: Cardiac surgery-associated acute kidney injury (CSA-AKI) is a well-recognized complication with an ominous outcome. Hypothesis: Bayesian networks (BNs) not only can reveal the complex interrelationships between predictors and CSA-AKI, but predict the individual risk of CSA-AKI occurrence.
Method(s): During 2013 and 2015, we recruited 5533 eligible participants who underwent cardiac surgery from a tertiary hospital in eastern China. Data on demographics, clinical and laboratory information were prospectively recorded in the electronic medical system and analyzed by gLASSO-logistic regression and BNs.
Result(s): The incidences of CSA-AKI and severe CSA-AKI were 37.5% and 11.1%. BNs model revealed that gender, left ventricular ejection fractions (LVEF), serum creatinine (SCr), serum uric acid (SUA), platelet, and aortic cross-clamp time (ACCT) were found as the parent nodes of CSA-AKI, while ultrafiltration volume and postoperative central venous pressure (CVP) were connected with CSA-AKI as children nodes. In the severe CSA-AKI model, age, proteinuria, and SUA were directly linked to severe AKI; the new nodes of NYHA grade and direct bilirubin created relationships with severe AKI through was related to LVEF, surgery types, and SCr level. The internal AUCs for predicting CSA-AKI and severe AKI were 0.755 and 0.845, which remained 0.736 and 0.816 in the external validation. Given the known variables, the risk for CSA-AKI can be inferred at individual levels based on the established BNs model and prior information.
Conclusion(s): BNs model has a high accuracy, good interpretability, and strong generalizability in predicting CSA-AKI. It facilitates physicians to identify high-risk patients and implement protective strategies to improve the prognosis.

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1036.

Acute Kidney Injury: Diagnosis and Management.
Roy J.-P., Devarajan P.
Embase
Indian Journal of Pediatrics. 87(8) (pp 600-607), 2020. Date of Publication: 01 Aug 2020.
[Review]
AN: 2003634399
Pediatric medicine is growing in complexity and an increasing number of children with co-morbidities are exposed to potential renal damage. Initially ill-defined and thought to be mostly a transient phenomenon in children, acute kidney injury (AKI) has now emerged as a complex clinical syndrome independently associated with increased mortality and morbidity, including the development of chronic renal sequelae. Recent advances in molecular nephrology have better elucidated the early phase of AKI, where evidence of renal tissue damage is associated with adverse outcomes even without decrease in glomerular filtration rate, illustrating the flaws of the old paradigm based solely on an insensitive filtration marker, the serum creatinine. Prevention, prompt evaluation and early interventions are of essence to decrease AKI incidence and severity. Emerging data reveal that AKI is commonly encountered in hospitalized children, especially critically ill ones, hence the importance for all clinicians to be able to identify high risk patients, recognize AKI early and be comfortable with the initial medical management. In recent years, significant advances have been made in AKI definition and prediction, allowing early preventive measures in high risk children that are now proven to reduce AKI incidence. This review covers recent advances in the diagnosis, risk stratification, prevention and management of AKI in children.

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Publisher
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1037.

Impact of severe acute kidney injury and chronic kidney disease on allogeneic hematopoietic cell transplant recipients: a retrospective single center analysis.
Gutierrez-Garcia G., Villarreal J., Garrote M., Rovira M., Blasco M., Suarez-Lledo M., Rodriguez-Lobato L.G., Charry P., Rosinol L., Marin P., Pedraza A., Solano M.T., Ramos C., de Llobet N., Lozano M., Cid J., Martinez C., Poch E., Carreras E., Urbano-Ispizua A., Fernandez-Aviles F., Pereira A., Quintana L.F.
Embase
Bone Marrow Transplantation. 55(7) (pp 1264-1271), 2020. Date of Publication: 01 Jul 2020.
[Article]
AN: 2004343151
Acute kidney injury (AKI) increases early mortality in allogeneic hematopoietic cell transplant (allo-HCT) recipients and may accelerate chronic kidney disease (CKD) development. We analyzed prospective variables related to AKI and CKD in 422 allo-HCT recipients to establish risk factors of severe acute renal failure and CKD. Renal function and creatinine were periodically assessed from baseline till the last follow-up. Sixty-three patients (14%) developed severe AKI (AKI-3) at 100 days post transplant and 15% at 12 months. Variables associated with AKI-3 were age above 55 years [hazard ratio (HR): 2.4; p = 0.019], total body irradiation (TBI) (HR: 1.8; p = 0.044), high-risk cytomegalovirus reactivation (HR: 1.8; p = 0.041), and methotrexate as GVHD prophylaxis (HR: 2.1; p = 0.024). AKI-3 increased the mortality risk (HR: 2.5, 95% confidence interval: 1.9-3.4). The CKD prevalence in 161 living patients was 10.2% at the last follow-up and in most, CKD developed 1 year post HCT, independent of AKI. The CKD at 1 year post HCT was associated with increased mortality (HR: 3.54; p < 0.001). Interestingly, pretransplant CKD was associated with early mortality (HR: 5.6; p < 0.001). In fact, pre- and posttransplant CKD had independent unfavorable long-term outcomes. These pretransplant factors can potentially be targeted to improve allo-HCT outcomes.

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1038.

Outcome of anastomotic urethroplasty in traumatic stricture (distraction defect) of posterior urethra in boys.
Zafar G.M., Hayat S., Amin J., Humayun F.
Embase
Arab Journal of Urology. 18(2) (pp 94-100), 2020. Date of Publication: 02 Apr 2020.
[Article]
AN: 2004229983
Objective: To report the outcomes of operative management of traumatic posterior urethral distraction defect in boys at our Centre, as traumatic posterior urethral stricture in children is a rare condition that presents a major surgical challenge to the paediatric urologist and consensus on the optimal treatment of these strictures in children has not been reached.
Patients and Methods: We retrospectively analysed our data from July 2013 to June 2018. All boys aged <=16 years with traumatic posterior bulbo-prostatic obliteration (distraction defect) were included. Initial suprapubic cystostomy and delayed definite anastomotic urethroplasty was done in all the boys. The boys were evaluated preoperatively with a retrograde urethrogram and simultaneous voiding cystourethrogram, as well as cystourethroscopy.
Result(s): A total of 38 boys, with posterior urethral distraction defect, were divided into primary and redo surgery groups. The primary group comprised 34 boys who were operated upon for the first time. A perineal approach with development of an inter-crural space was done in 12 boys and along with an inferior pubectomy in 19 boys. Three boys in the primary group needed a transpubic approach due to a longer defect. In the redo group, there were six boys, of which four were operated initially outside our hospital, while two were our own unsuccessful urethroplasties. In the redo group, a perineal approach with inferior pubectomy was done in two boys and a transpubic urethroplasty in the remaining four boys. The success rate of anastomotic urethroplasty without any ancillary procedures was 81.5% (strict criterion), while the overall success rate was 94.7% (permissible criterion, which included boys who were managed later with direct vision internal urethrotomy and dilatation).
Conclusion(s): The ideal treatment of post-traumatic posterior urethral defect/strictures in boys is tension-free bulbo-prostatic anastomosis. This was done using a transperineal approach in most of the boys, but a few required a transpubic approach, with good results. Abbreviations: DVIU: direct vision internal urethrotomy; SPC: suprapubic cystostomy; SUI: stress urinary incontinence.

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Year of Publication
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1039.

Reducing acute kidney injury in pediatric oncology patients: An improvement project targeting nephrotoxic medications.
Young J., Dahale D., Demmel K., O'Brien M., Geller J., Courter J., Haslam D.B., Danziger-Isakov L., Goldstein S.L.
Embase
Pediatric Blood and Cancer. 67(8) (no pagination), 2020. Article Number: e28396. Date of Publication: 01 Aug 2020.
[Article]
AN: 2005144855
Background: Nephrotoxic medication exposure and associated acute kidney injury (AKI) occur commonly in hospitalized children. At Cincinnati Children's Hospital Medical Center, there is an initiative to increase awareness of nephrotoxic medication exposure and decrease rates of associated AKI. The oncology service utilized these data in a quality improvement project to drive reductions in AKI rates.
Method(s): Three interventions were implemented targeted at decreasing the incidence of nephrotoxic exposure, as well as protecting against the conversion of exposures to AKI episodes. Cefepime replaced piperacillin-tazobactam for febrile neutropenia, vancomycin stewardship limited empiric courses to 72 hours, and nephroprotection for intravenous contrast administration was standardized for defined high-risk patients.
Result(s): The study cohort comprised 42 520 noncritically ill patient days admitted to the oncology service at Cincinnati Children's Hospital Medical Center. A total of 273 unique patients were exposed to combination nephrotoxic medications, leading to 111 AKI episodes. The rate of nephrotoxic medication exposure within the oncology service decreased by 49% from 16.08 to 8.17 per 1000 patient days. Episodes of AKI associated with nephrotoxic medication exposure decreased by 45% from 3.48 to 1.92 per 1000 patient days.
Conclusion(s): Interventions to decrease AKI took a three-pronged approach. Collectively, this approach was proven successful with significant reductions in both rates of nephrotoxic medication exposure and associated AKI among hospitalized oncology patients.

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1040.

Clinical guidelines for the diagnosis and treatment of lower urinary tract dysfunction in patients with spinal cord injury.
Sekido N., Igawa Y., Kakizaki H., Kitta T., Sengoku A., Takahashi S., Takahashi R., Tanaka K., Namima T., Honda M., Mitsui T., Yamanishi T., Watanabe T.
Embase
International Journal of Urology. 27(4) (pp 276-288), 2020. Date of Publication: 01 Apr 2020.
[Article]
AN: 2004310022
The present article is an abridged English translation of the Japanese clinical guidelines for the diagnosis and treatment of lower urinary tract dysfunction in patients with spinal cord injury updated as of July 2019. The patients are adult spinal cord injured patients with lower urinary tract dysfunction; special consideration of pediatric and elderly populations is presented separately. The target audience is healthcare providers who are engaged in the medical care of patients with spinal cord injury. The mandatory assessment includes medical history, physical examination, frequency-volume chart, urinalysis, blood chemistry, transabdominal ultrasonography, measurement of post-void residual urine, uroflowmetry and video-urodynamic study. Optional assessments include questionnaires on the quality of life, renal scintigraphy and cystourethroscopy. The presence or absence of risk factors for renal damage and symptomatic urinary tract infection affects urinary management, as well as pharmacological treatments. Further treatment is recommended if the maximum conservative treatment fails to improve or prevent renal damage and symptomatic urinary tract infection. In addition, management of urinary incontinence should be considered individually in patients with risk factors for urinary incontinence and decreased quality of life.

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1041.

Evaluation of Novel Biomarkers for Early Diagnosis of Acute Kidney Injury in Asphyxiated Full-Term Newborns: A Case-Control Study.
Zhang Y., Zhang B., Wang D., Shi W., Zheng A.
Embase
Medical Principles and Practice. 29(3) (pp 285-291), 2020. Date of Publication: 01 May 2020.
[Article]
AN: 632025652
Objectives: To investigate the changes of serum cystatin C (Cys-C), beta 2-microglobulin (beta2-MG), urinary neutrophil gelatinase-associated lipocalin (NGAL), and alpha 1-microglobulin (alpha1-MG) in asphyxiated neonates, and to evaluate the value of combined detection of multiple biomarkers in the early diagnosis of acute kidney injury (AKI) in asphyxiated neonates.
Method(s): A total of 110 full-term asphyxiated and 30 healthy neonates were included. The asphyxia neonates were divided into AKI and non-AKI groups. Serum Cys-C, beta2-MG, urine NGAL, and alpha1-MG were measured 24 h after birth. The diagnostic value of the biomarkers was determined using receiver operating characteristic (ROC) curves.
Result(s): There was no significant difference in serum creatinine and blood urea nitrogen among the control group, moderate asphyxia group, and severe asphyxia group at 24 h after birth. Significant differences were noticed in terms of serum Cys-C, beta2-MG, urinary NGAL, and alpha1-MG among the 3 groups. Moreover, with the aggravation of asphyxia, the above indicators gradually increased. There were significant differences in the 4 indicators between the AKI and non-AKI groups ($p < 0.05$). The area under the ROC curve of the above indicators was 0.670, 0.689, 0.865, and 0.617, respectively ($p < 0.05$). The sensitivity and specificity of the combined diagnosis of asphyxia neonatorum AKI with the 4 indicators were 0.974 and 0.506, respectively.
Conclusion(s): Serum Cys-C, beta2-MG, urine NGAL, and alpha1-MG are early specific indicators for the diagnosis of renal injury after neonatal asphyxia. Combined detection of these parameters could aid clinical evaluation of renal injury in asphyxiated neonates.

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1042.

Blocking Connexin-43 mediated hemichannel activity protects against early tubular injury in experimental chronic kidney disease.
Price G.W., Chadjichristos C.E., Kavvadas P., Tang S.C.W., Yiu W.H., Green C.R., Potter J.A., Siamantouras E., Squires P.E., Hills C.E.
Embase
Cell Communication and Signaling. 18(1) (no pagination), 2020. Article Number: 79. Date of Publication: 25 May 2020.
[Article]
AN: 631836819
Background: Tubulointerstitial fibrosis represents the key underlying pathology of Chronic Kidney Disease (CKD), yet treatment options remain limited. In this study, we investigated the role of connexin43 (Cx43) hemichannel-mediated adenosine triphosphate (ATP) release in purinergic-mediated disassembly of adherens and tight junction complexes in early tubular injury.
Method(s): Human primary proximal tubule epithelial cells (hPTECs) and clonal tubular epithelial cells (HK2) were treated with Transforming Growth Factor Beta1 (TGF-beta1) +/- apyrase, or ATPgammaS for 48 h. For inhibitor studies, cells were co-incubated with Cx43 mimetic Peptide 5, or purinergic receptor antagonists Suramin, A438079 or A804598. Immunoblotting, single-cell force spectroscopy and trans-epithelial electrical resistance assessed protein expression, cell-cell adhesion and paracellular permeability. Carboxyfluorescein uptake and biosensing measured hemichannel activity and real-time ATP release, whilst a heterozygous Cx43+/- mouse model with unilateral ureteral obstruction (UUO) assessed the role of Cx43 in vivo.
Result(s): Immunohistochemistry of biopsy material from patients with diabetic nephropathy confirmed increased expression of purinergic receptor P2X7. TGF-beta1 increased Cx43 mediated hemichannel activity and ATP release in hPTECs and HK2 cells. The cytokine reduced maximum unbinding forces and reduced cell-cell adhesion, which translated to increased paracellular permeability. Changes were reversed when cells were co-incubated with either Peptide 5 or P2-purinoceptor inhibitors. Cx43+/- mice did not exhibit protein changes associated with early tubular injury in a UUO model of fibrosis.
Conclusion(s): Data suggest that Cx43 mediated ATP release represents an initial trigger in early tubular injury via its actions on the adherens and tight junction complex. Since Cx43 is highly expressed in nephropathy, it represents a novel target for intervention of tubulointerstitial fibrosis in CKD. [MediaObject not available: see fulltext.] Graphical abstract: In proximal tubular epithelial cells (PTECs), tight junction proteins, including zona occuludens-1 (ZO-1), contribute to epithelial integrity, whilst the adherens junction protein epithelial (E)-cadherin (ECAD) maintains cell-cell coupling, facilitating connexin 43 (Cx43) gap junction-mediated intercellular communication (GJIC) and the direct transfer of small molecules and ions between cells. In disease, such as diabetic nephropathy, the pro-fibrotic cytokine transforming growth factor beta1 (TGF-beta1) binds to its receptor and recruits SMAD2/3 signalling ahead of changes in gene transcription and up-regulation of Cx43-mediated hemichannels (HC). Uncoupled hemichannels permit the release of adenosine triphosphate (ATP) in to the extracellular space ([ATP]e), where ATP binds to the P2X7 purinoreceptor and activates the nucleotide-binding domain and leucine-rich repeat containing (NLR) protein-3 (NLRP3) inflammasome. Inflammation results in epithelial-to-mesenchymal transition (EMT), fibrosis and tubular injury. A major consequence is further loss of ECAD and reduced stickiness between cells, which can be functionally measured as a decrease in the maximum unbinding force needed to uncouple two adherent cells (Fmax). Loss of ECAD feeds forward to further lessen cell-cell coupling exacerbating the switch from GJIC to HC-mediated release of ATP. Reduction in ZO-1 impedes tight junction effectiveness and decreases trans-epithelial resistance (TER), resulting in increased paracellular permeability. [Figure not available: see fulltext.].

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1043.

Haematocrit differences modify the association of cardiopulmonary bypass reoxygenation with acute kidney injury after paediatric Tetralogy of Fallot repair.
Liu H., Zheng S.-Q., Qian S.-C., He H.-H., Xue J.-R.
Embase
Perfusion (United Kingdom). 35(4) (pp 284-289), 2020. Date of Publication: 01 May 2020.
[Article]
AN: 2002854327
Background: Little is known regarding the potential impact of haematocrit differences in the association between cardiopulmonary bypass reoxygenation and acute kidney injury following Tetralogy of Fallot repair.
Method(s): We investigated the association of perfusate oxygenation during aortic occlusion associated with acute kidney injury between 204 normal and 248 higher haematocrit children with Tetralogy of Fallot, aged 1 month-18 years, who were surgically repaired in 2012-2018. Normal and higher haematocrit children were defined as having a preoperative haematocrit within and above age- and sex-specific reference intervals, respectively. Acute kidney injury was determined as a binary variable according to the Kidney Disease Improving Global Outcomes criteria.
Result(s): After adjusting for baseline and clinical covariates, a significant interaction between the haematocrit and continuous perfusate oxygenation on acute kidney injury was found (pinteraction = 0.049): a higher perfusate oxygenation was associated with a greater acute kidney injury risk among higher haematocrit children (adjusted odds ratio = 1.50, 95% confidence interval = [1.02, 2.22] per SD, p = 0.038) but not among normal haematocrit children (adjusted odds ratio = 0.91, 95% confidence interval = [0.51, 1.63] per SD, p = 0.73). After a similar adjustment, there was a marginal interaction between tertiles of perfusate oxygenation and haematocrit on acute kidney injury (pinteraction = 0.09): the middle and top tertiles of perfusate oxygenation were associated with a trend towards increased acute kidney injury risks among higher haematocrit children (adjusted odds ratio = 1.69, 95% confidence interval = [0.61, 4.66]; adjusted odds ratio = 2.25, 95% confidence interval = [0.84, 5.99], respectively) but not among normal haematocrit children (adjusted odds ratio = 1.16, 95% confidence interval = [0.46, 2.94]; adjusted odds ratio = 0.45, 95% confidence interval = [0.15, 1.36], respectively) compared with the bottom tertile.
Conclusion(s): Preoperative haematocrit differences significantly modify the association of perfusate oxygenation with acute kidney injury, highlighting differential control of reoxygenation for different haematocrit children with Tetralogy of Fallot in the management of cardiopulmonary bypass.

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1044.

Blunt renal trauma in children: Our experience with conservative management at children hospital & ICH Multan.
Khawaja A.A., Aslam M., Ahmad S.
Embase
Pakistan Journal of Medical and Health Sciences. 14(1) (pp 166-168), 2020. Date of Publication: January 2020.
[Article]
AN: 2006059693
Background: Pediatric kidney is believed to be more susceptible to trauma due to decrease in physical renal protective mechanism. Blunt renal trauma is common injury seen in children and accounts for more than 90% of renal injuries in pediatric population.
Method(s): All children with blunt renal trauma referred to us through emergency, outdoor or from other institutions were included in the study. Data of all patients was reviewed retrospectively. Injuries were graded according to the American Association for the Surgery of Trauma Organ Injury Scale. Outcome of all cases was reviewed.
Result(s): Twentytwo patients with Grade I to V were included in this study. Surgery was performed in two patients. One patient with Puj disruption was attempted cystoscopy and retrograde catherization but failed. Later he was operated and Puj reconstruction was done. Other patient had neglected Puj obstruction with nonfunctioning kidney, so nephrectomy was done. Eleven patient required blood transfusion.
Conclusion(s): These data support the use of conservative management for all grades in stable children with blunt renal injury.

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Year of Publication
2020

1045.

Effects of hyperchloremia on renal recovery in critically ill children with acute kidney injury.
Barhight M.F., Brinton J.T., Soranno D.E., Faubel S., Mourani P.M., Gist K.M.
Embase
Pediatric Nephrology. 35(7) (pp 1331-1339), 2020. Date of Publication: 01 Jul 2020.
[Article]
AN: 2004388586
Background: Serum chloride derangements are associated with poor clinical outcomes, including acute kidney injury (AKI) and mortality. We sought to determine the association between persistent hyperchloremia and renal recovery in critically ill children with AKI.
Method(s): We performed a retrospective cohort study of all patients with day 2 AKI admitted to a large academic pediatric intensive care unit from January 2014 to December 2015. After applying exclusion criteria, 348 patients were categorized as (1) hyperchloremia on both day 2 and day 7 (PersistentCl), (2) hyperchloremia on day 2 with normochloremia on day 7 (RecoveredCl), (3) normochloremia on day 2 with hyperchloremia on day 7 (DelayedCl), and (4) no hyperchloremia on day 2 nor day 7 (NormalCl). Hyperchloremia was defined as >= 110 mEq/L. The primary outcome was renal recovery on day 7, defined as the absence of AKI criteria. Secondary outcomes included discharge renal recovery, mortality, duration of mechanical ventilation, and hospital length of stay.
Result(s): Day 7 renal recovery rates for PersistentCl, RecoveredCl, DelayedCl, and NormalCl were 37%, 66%, 71%, and 52% respectively. PersistentCl had lower odds of day 7 renal recovery (aOR = 0.29; 95% CI, 0.14 to 0.60; p = 0.0009), lower odds of discharge renal recovery (aOR = 0.22; 95% CI, 0.11 to 0.48; p = 0.0001), and higher odds of mortality (aOR = 3.50; 95% CI, 1.11 to 11.10; p = 0.03) when compared with RecoveredCl after adjusting for confounders.
Conclusion(s): Persistent hyperchloremia is independently associated with impaired renal recovery as well as higher mortality. Prospective studies are indicated to determine if serum chloride represents a modifiable risk factor for poor outcomes. [Figure not available: see fulltext.]

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Publisher
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1046.

Acute kidney injury following the concurrent administration of antipseudomonal beta-lactams and vancomycin: a network meta-analysis.
Bellos I., Karageorgiou V., Pergialiotis V., Perrea D.N.
Embase
Clinical Microbiology and Infection. 26(6) (pp 696-705), 2020. Date of Publication: June 2020.
[Review]
AN: 2005598330
Background: Acute kidney injury is a major complication of vancomycin treatment, especially when it is co-administered with other nephrotoxins.
Objective(s): This meta-analysis aims to comparatively assess the nephrotoxicity of antipseudomonal beta-lactams when combined with vancomycin. Data sources: Medline, Scopus, CENTRAL and Clinicaltrials.gov databases were systematically searched from inception through 20 August 2019. Study eligibility criteria: Studies evaluating acute kidney injury risk following the concurrent use of antipseudomonal beta-lactams and vancomycin were selected.
Participant(s): Adult and paediatric patients treated in hospital or intensive care unit.
Intervention(s): Administration of vancomycin combined with any antipseudomonal beta-lactam.
Method(s): Acute kidney injury incidence was defined as the primary outcome. Secondary outcomes included severity, onset, duration, need of renal replacement therapy, length of hospitalization and mortality. Quality of evidence was assessed using the ROBINS-I tool and the Confidence In Network Meta-Analysis approach.
Result(s): Forty-seven cohort studies were included, with a total of 56 984 patients. In the adult population, the combination of piperacillin-tazobactam and vancomycin resulted in significantly higher nephrotoxicity rates than vancomycin monotherapy (odds ratio (OR) 2.05, 95% confidence intervals (CI) 1.17-3.46) and its concurrent use with meropenem (OR 1.84, 95% CI 1.02-3.10) or cefepime (OR 1.80, 95% CI 1.13-2.77). In paediatric patients, acute kidney injury was significantly higher with vancomycin plus piperacillin-tazobactam than vancomycin alone (OR 4.18, 95% CI 1.01-17.29) or vancomycin plus cefepime OR 3.71, 95% CI 1.08-11.24). No significant differences were estimated for the secondary outcomes. Credibility of outcomes was judged as moderate, mainly due to imprecision and inter-study heterogeneity.
Conclusion(s): The combination of vancomycin and piperacillin-tazobactam is associated with higher acute kidney injury rates than its parallel use with meropenem or cefepime. Current evidence is exclusively observational and is limited by inter-study heterogeneity. Randomized controlled trials are needed to verify these results and define preventive strategies to minimize nephrotoxicity risk.

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Publisher
Elsevier B.V.
Year of Publication
2020

1047.

Acute peritoneal dialysis in children with acute kidney injury at the University of Abuja teaching hospital, abuja, Nigeria: A report of 12 months experience in a developing country.
Anigilaje E.A., Fashie A.P., Odeyemi B., Yakubu A.
Embase
African Health Sciences. 20(1) (pp 314-323), 2020. Date of Publication: 23 Apr 2020.
[Article]
AN: 2004427558
Background: Acute peritoneal dialysis (APD) is becoming a common modality of renal support in children with acute kidney injury (AKI) in developing countries.
Objective(s): To describe the details of APD among children with AKI at the University of Abuja Teaching Hospital, Abuja, Nigeria Methods: A retrospective review of children with AKI that had manual APD with an improvised nasogastric tubes from January to December 2017 Results: Forty-three AKI cases were managed in the study period out of which 19 were treated with APD (dialysis access rate of 100%). Ten (52.6%) were males. Causes of AKI included sepsis in 9 (47.3%), hypovolaemia from diarrhoea in 4 (21.1%), acute glomerulonephritis in 3 (15.8%) and acute tubular necrosis from severe malaria fever in 3 (15.8%). Their ages ranged from 1 month to 72 months with a mean age of 30.9 months and a mean weight of 10.9 kilograms. Peri-catheter leakages (9, 47%), outflow obstruction (6, 31.6%), peritonitis (5, 26.3%), hyperglycaemia (4, 21.1%) and hypokalaemia (4, 21.1%) were the complications seen. Klebsiella species (4) and Staphylococcus aureus (1) were the bacteria isolated. Five of the 19 children died giving a mortality rate of 26.3%.
Conclusion(s): APD remains a lifesaving, cheap and affordable mode of renal replacement therapy in a developing country like Nigeria. Fortunately, complications from APD are also manageable and they should not discourage its use.

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Publisher
Makerere University, Medical School (E-mail: pic@infocom.co.ug)
Year of Publication
2020

1048.

Incidence, risk factors, and outcomes of acute kidney injury in neonates after surgical procedures.
Wu Y., Hua X., Yang G., Xiang B., Jiang X.
Embase
Pediatric Nephrology. 35(7) (pp 1341-1346), 2020. Date of Publication: 01 Jul 2020.
[Article]
AN: 2004514726
Background: Acute kidney injury (AKI) is common and associated with poor outcomes in critically ill neonates. The objective of this study was to study the incidence, risk factors, and clinical outcomes of AKI in neonates receiving non-cardiac surgery.

Method(s): We performed a single-center retrospective study between January 2017 and December 2018 of neonates who had received abdominal and thoracic surgical procedures. AKI was defined by the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Patient information, clinical data, and outcomes were collected and analyzed. Logistic regression was used to analyze risk factors of AKI and association between AKI and mortality.
Result(s): Fifty-four (33.8%) of 160 patients developed AKI after surgical procedures. Compared with neonates without AKI, neonates with AKI had higher mortality rate (18.5% VS 5.7%, p = 0.022), lower gestational age (30.5 weeks, interquartile range [IQR] 28-33.5, VS 34.5 weeks, IQR 33-37.5, p = 0.035), higher rates of very low birth weight (33.3% VS 17.0%, p = 0.019), longer duration of mechanical ventilation (0.5 days, IQR 0-1.5, VS 0 days, IQR 0-1, p = 0.043) and higher rates of sepsis (35.2% VS 19.8%, p = 0.034). Risk factors of AKI included gestational age under 32 weeks (OR 4.8, 95% CI 1.8-12.6; p = 0.001), sepsis (OR 4.3, 95% CI 1.7-11.3; p = 0.003), operation time longer than 120 min (OR 2.7, 95% CI 1.1-6.6; p = 0.024), and diagnosis of necrotizing enterocolitis (OR 3.5, 95% CI 1.3-9.1; p = 0.011). AKI after surgery was significantly associated with mortality (OR 4.3, 95% CI 1.1-16.9; p = 0.036).
Conclusion(s): AKI is common and associated with poor outcomes in surgical neonates. Early recognition and intervention of AKI in these patients are important.

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Publisher
Springer
Year of Publication
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1049.

Utilities of traditional and novel biomarkers in the management of acute kidney injury.
Chen L.-S., Singh R.J.
Embase
Critical Reviews in Clinical Laboratory Sciences. 57(4) (pp 215-226), 2020. Date of Publication: 18 May 2020.
[Review]
AN: 2003838406
Acute kidney injury (AKI), characterized by an abrupt decrease of renal function, is associated with multiple etiologies and pathological mechanisms. Clinically, AKI has traditionally been defined and stratified by rising serum creatinine and a decrease in urine output. However, neither criterion is sensitive enough for early detection of AKI, nor can they provide useful etiological information for making appropriate therapeutic decisions. Therefore, numerous AKI biomarkers have been discovered, investigated and tested in large cohort studies in the hope of improving diagnosis and clinical management of AKI. In this review, we describe in detail recent developments on three novel AKI markers: neutrophil gelatinase-associated lipocalin, liver-type fatty acid-binding protein, and the composite score of insulin-like growth factor-binding protein 7 and tissue inhibitor of metalloproteinase 2 ([TIMP-2]*[IGFBP7]). We also examine several emerging AKI markers, including proenkephalin A 119-159, fibroblast growth factor 23, calprotectin, and endocan that are in the pipeline for market approval. To date, the translation of

new AKI biomarkers into clinical use has been limited. We discuss existing barriers and ongoing efforts to overcome the hurdles. Lastly, we propose several practical approaches, such as incorporating emerging markers into bundled care for AKI and conducting clinical validation studies in specific subpopulation (e.g. pediatric patients after cardiac surgery, adult major trauma patients) to avoid the confounding effects of other complications, as a focus for future research in marker-guided AKI patient management.

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1050.

IL-17 aggravates renal injury by promoting podocyte injury in children with primary nephrotic syndrome.
Zhai S., Sun B., Zhang Y., Zhao L., Zhang L.
Embase
Experimental and Therapeutic Medicine. 20(1) (pp 409-417), 2020. Date of Publication: July 2020.
[Article]
AN: 2005851860
Primary nephrotic syndrome (PNS) is the most common chronic kidney disease in childhood, where podocyte injury is a key factor in the occurrence of kidney disease. In the present study, the expression of IL-17 in renal tissues of patients with PNS and its relationship with podocyte injury were examined. Reverse transcription-quantitative PCR (RT-qPCR), western blot analysis and immunochemistry were used to measure the expression of IL-17 in renal biopsies of patients with ONS, including 9 patients with minimal change nephrotic syndrome (MCNS), 15 patients with mesangial proliferative glomerulonephritis (MsPGN) and 9 patients with focal segmental glomerulosclerosis (FSGS), in addition to 15 normal kidney tissues. IL-17 was found to be highly expressed in the renal tissues from patients with PNS, with the highest expression levels found in tissues from patients with FSGS and the lowest in those from MCNS. A negative correlation was observed between the levels of IL-17 mRNA and PCX mRNA in renal tissues, whereas a positive correlation between IL-17 mRNA levels and the number of urinary podocytes in patients with PNS was found. In vitro, IL-17 induced podocyte apoptosis and reduced the expression of markers associated with podocytes, including Wilm's tumor 1, nephrin, synaptopodin and podocalyxin, whilst increasing the levels of Fas, Fas ligand (FasL), active-caspase-8, active-caspase-3 and phosphorylated-p65. However, treatment with helenalin, a NF-kappaB inhibitor, decreased p65 phosphorylation, attenuated IL-17-induced podocyte apoptosis and suppressed the IL-17-activated Fas/FasL/caspase-8/caspase-3 apoptotic pathway. Taken together, these observations suggest that IL-17 was highly expressed in renal tissues from patients with PNS, where it induced podocyte apoptosis by activating the Fas/FasL/caspase-8/caspase-3 apoptotic pathway in a NF-kappaB-dependent manner.

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2020

1051.

Incidence, risk factors, and outcome of acute kidney injury in hospitalized term newborns.
Nandhagopal N., Firdaus U., Ali S., Afzal K.
Embase
Journal of Clinical Neonatology. 9(2) (pp 121-124), 2020. Date of Publication: April-June 2020.
[Article]
AN: 631797649
Background: Acute kidney injury (AKI) is a common and devastating medical condition. However, the true incidence of AKI around the world is not known. In newborns patients, AKI importance and dilemmas are even more pronounced, as a newborn's kidneys are more susceptible to hypoperfusion and have low glomerular filtration rate.
Objective(s): The objective is to determine the incidence, risk factors, and outcome of AKI in term newborns.
Design(s): Prospective observational. Study Setting: Neonatology Division, Department of Pediatrics, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh.
Method(s): A hospital-based prospective study was done on 160 term inborn newborns. Babies were closely examined for the occurrence of AKI based on rising creatinine level or falling urine output.
Result(s): The mean birth weight and the mean gestational of the study population were 2.64 (standard deviation [SD] 0.52) and 38.4 weeks (SD 1.05), respectively. Thirty-five babies developed AKI between 24 and 48 h of life. On applying nRIFLE criteria, 21, 7, and 7 babies fell into Stage 1 (risk), Stage 2 (injury), and Stage 3 (failure), respectively. At discharge, all babies showed normalization of renal function test and follow-up ultrasound at 3 months of age did not show any significant abnormality. The presence of asphyxia, comorbid sepsis, and circulatory collapse were found to have a significant association with AKI. The stage of AKI as per nRIFLE criteria significantly affected the outcome of newborns.
Conclusion(s): AKI is a significant problem seen in newborns admitted to NICU. The most common risk factors identified were perinatal asphyxia, sepsis, and circulatory failure. There is a pressing need to improve antenatal care to decrease the burden of asphyxiated newborn and preventing hospital-acquired infection. This may translate into future wellbeing of the newborns.

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1052.

The effectiveness of urinary TIMP-2 and IGFBP-7 in predicting acute kidney injury in critically ill neonates.
Chen J., Sun Y., Wang S., Dai X., Huang H., Bai Z., Li X., Wang J., Li Y.
Embase
Pediatric Research. 87(6) (pp 1052-1059), 2020. Date of Publication: 01 May 2020.
[Article]
AN: 2003855197
Backgroud: Urinary tissue inhibitor of metalloproteinase-2 (TIMP-2), insulin-like growth factor binding protein-7 (IGFBP-7) and the combination of TIMP-2 and IGFBP-7 ([TIMP-2]*[IGFBP7]) are proposed to be predictive biomarkers for acute kidney injury (AKI). The intention of our study was to determine whether there is any significant predictive value of these biomarkers for the occurrence of AKI and severe AKI in critically ill neonates.
Method(s): Urinary samples were serially collected in 237 neonates during neonatal intensive care unit (NICU) stay for measurements of TIMP-2 and IGFBP-7 in this prospective study. AKI diagnosis was based on KDIGO classification without urine output or serum creatinine >1.2 mg/dL.
Result(s): Twenty neonates developed AKI, including 11 with KDIGO stage 1, defined as mild AKI, and 9 with stages 2 and 3, defined as severe AKI. Urinary IGFBP-7 and [TIMP-2]*[IGFBP7] remained associated with AKI after adjustment for gestational age, gender and illness severity. Urinary [TIMP-2]*[IGFBP7] achieved an AUC of 0.71 (P = 0.034) and displayed a sensitivity of 88.9% and a specificity of 50.9% for discriminating severe AKI at the optimal cut-off value of 0.045.
Conclusion(s): The combination of TIMP-2 and IGFBP-7 had independent discriminative value for severe AKI in critically ill neonates.

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Year of Publication
2020

1053.

Acute kidney injury in critically ill children and 5-year hypertension.
Hessey E., Perreault S., Roy L., Dorais M., Samuel S., Phan V., Lafrance J.-P., Zappitelli M.
Embase
Pediatric Nephrology. 35(6) (pp 1097-1107), 2020. Date of Publication: 01 Jun 2020.
[Article]
AN: 2004405124
Background: To develop a pediatric-specific hypertension algorithm using administrative data and use it to evaluate the association between acute kidney injury (AKI) in the intensive care unit (ICU) and hypertension diagnosis 5 years post-discharge.
Method(s): Two-center retrospective cohort study of children (<= 18 years old) admitted to the pediatric ICU in Montreal, Canada, between 2003 and 2005 and followed until 2010. Patients with a valid healthcare number and without end-stage renal disease were included. Patients who could not be merged with the provincial database, did not survive admission, underwent cardiac surgery, had pre-existing renal disease associated with hypertension or a prior diagnosis of hypertension were excluded. AKI defined using the Kidney Disease: Improving Global Outcomes (KDIGO) definition. Using diagnostic codes and medications from administrative data, novel pediatric-specific hypertension definitions were designed. Both the evaluation of the prevalence of hypertension diagnosis and the association between AKI and hypertension occurred.
Result(s): Nineteen hundred and seventy eight patients were included (median age at admission [interquartile range] 4.3 years [1.1-11.8], 44% female, 325 (16.4%) developed AKI). Of these patients, 130 (7%) had a hypertension diagnosis 5 years after discharge. Patients with AKI had a higher prevalence of hypertension diagnosis [non-AKI: 84/1653 (5.1%) vs. AKI: 46/325 (14.2%), p <.001]. Children with AKI had a higher adjusted risk of hypertension diagnosis (hazard ratio [95% confidence interval] 2.19 [1.47-3.26]).
Conclusion(s): Children admitted to the ICU have a high prevalence of hypertension post-discharge and children with AKI have over two times higher risk of hypertension compared to those with no AKI.

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1054.

Prevalence of Acute Kidney Injury in Neonates with Congenital Diaphragmatic Hernia.
Ryan A., Gilhooley M., Patel N., Reynolds B.C.
Embase
Neonatology. 117(1) (pp 88-94), 2020. Date of Publication: 01 Apr 2020.
[Article]
AN: 629719716
Background: Congenital diaphragmatic hernia (CDH) often presents with severe cardio-respiratory impairment in the neonatal period. Affected infants may be exposed to multiple nephrotoxic insults, predisposing them to acute kidney injury (AKI). The prevalence of AKI in a CDH cohort has not previously been described.
Objective(s): The primary aim of this study was to quantify the prevalence of AKI in patients with CDH treated in a single national centre. Secondarily, we investigated the association between AKI, select neonatal outcomes, and recognised AKI risk factors.
Method(s): This was a retrospective analysis of all patients with CDH treated at our regional neonatal surgical centre between September 2011 and December 2017. Data was collected on demographics, CDH Study Group stage (size), laboratory and physiological parameters, medications, mortality, and duration of hospitalisation. AKI severity was stratified using the modified paediatric RIFLE criteria, determined by comparing the percentage increase in serum creatinine from baseline. Statistical analysis was performed using Fisher's exact and Pearson's chi2 tests for parametric analysis and Mann-Whitney U testing for non-parametric analysis.
Result(s): Fifty-four CDH patients met the inclusion criteria, 37% of whom developed AKI. The development of AKI was significantly associated with larger CDH defect (type C/D; p = 0.014), extracorporeal membranous oxygenation support (p = 0.003), patch repair (p = 0.004), and exposure to vancomycin, corticosteroids and diuretics (p = 0.004, p = 0.007, and p <= 0.001, respectively). There was no statistical association between AKI and gentamicin administration, umbilical arterial catheter insertion, or significant infection. Prolonged hospitalisation and patient mortality were significantly associated with AKI (p = 0.01 and p = 0.001, respectively).
Conclusion(s): AKI is common in CDH cases treated in our centre and is associated with adverse outcomes. Potentially modifiable risk factors include nephrotoxic medication exposure. Prevention and early recognition of contributory factors for AKI may improve outcomes in CDH.

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Publisher
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1055.

Acute kidney injury and perinephric fluid collection: Answers.
Kurt T., Aydin F., Karabulut B., Bayrakci U.S., Uncu N., Acar B.
Embase
Pediatric Nephrology. 35(6) (pp 983-984), 2020. Date of Publication: 01 Jun 2020.
[Article]
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Publisher
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1056.

Racial and health insurance disparities in pediatric acute kidney injury in the USA.
Bjornstad E.C., Marshall S.W., Mottl A.K., Gibson K., Golightly Y.M., Charles A., Gower E.W.
Embase
Pediatric Nephrology. 35(6) (pp 1085-1096), 2020. Date of Publication: 01 Jun 2020.
[Article]
AN: 2004166743
Background: Acute kidney injury (AKI) significantly increases morbidity and mortality for hospitalized children, yet sociodemographic risk factors for pediatric AKI are poorly described. We examined sociodemographic differences in pediatric AKI amongst a national cohort of hospitalized children.
Method(s): Secondary analysis of the most recent (2012) Kids' Inpatient Database (KID) from the Agency for Healthcare Research and Quality. Study sample weights were used to obtain national estimates of AKI (defined by administrative data). KID is a nationally representative sample of pediatric discharges throughout the USA. Linear risk regression models were used to assess the relationship between our primary exposures (race/ethnicity, health insurance, household urbanization, gender, and age) and the diagnosis of AKI, adjusting for comorbidities.
Result(s): A total of 1,699,841 hospitalizations met our study criteria. In 2012, AKI occurred in approximately 12.3/1000 pediatric hospitalizations, which translates to almost 30,000 children nationally. Asian/Pacific Islander, African-American, and Hispanic children were at slightly increased risk for AKI compared to Caucasian children (adjusted risk difference (RD) 4.5 per 1000 hospitalizations, 95% confidence interval (CI) 2.9-6.0; 2.5/1000 hospitalizations, 95% CI 1.7-3.3; and 1.7/1000 hospitalizations, 95% CI 0.9-2.5, respectively). Uninsured children were more likely to suffer AKI compared to children with any health insurance (e.g., no insurance versus Medicaid_ adjusted RD 14.4/1000 hospitalizations, 95% CI 12.7-16.2). Based on these national estimates, one episode of AKI might be prevented if 70 (95% CI 62-79) hospitalized children without insurance were provided with Medicaid.
Conclusion(s): Pediatric AKI occurs more frequently in racial minority and uninsured children, factors linked to lower socioeconomic status.

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1057.

Identification of Biomarkers of Sepsis-Associated Acute Kidney Injury in Pediatric Patients Based on UPLC-QTOF/MS.
Wang S., Xiao C., Liu C., Li J., Fang F., Lu X., Zhang C., Xu F.
Embase
Inflammation. 43(2) (pp 629-640), 2020. Date of Publication: 01 Apr 2020.
[Article]
AN: 2003839574
Sepsis or septic shock is often accompanied by organ dysfunction, among which acute kidney injury (AKI) is the most frequent event that appears early during sepsis. To harness urinary metabolic profiling to discover potential biomarkers of septic acute kidney injury in pediatric patients at intensive care units, we collected urine samples from 27 septic children with AKI and 30 septic children without AKI. We used ultra-performance liquid chromatography-quadrupole time-of-flight mass spectrometry (UPLC-QTOF/MS) for profiling and multiple regression analysis to explore the potential biomarkers of sepsis with AKI. We identified a clear distinction in the UPLC-QTOF/MS results for septic children with and without AKI after the development of sepsis, specifically 18 and 17 metabolites with different levels at 12 and 24 h, respectively. Metabolic pathways associated with septic AKI included lipid metabolism, particularly processes involving glycerophospholipid metabolism. L-Histidine, DL-indole-3-lactic acid, trimethylamine N-oxide, and caprylic acid were uncovered as potential biomarkers of septic AKI at 12 h, while gentisaldehyde, 3-ureidopropionate, N4-acetylcytidine, and 3-methoxy-4-hydroxyphenylglycol sulfate were identified as potential candidates at 24 h. We further found that combinations of metabolites were more effective diagnostic marker compared with individual metabolites, with an area under the receiver operating characteristics curve of 0.905 and 0.97 at 12 and 24 h, respectively. Our results indicated that metabolomic analysis could be a promising approach for identifying diagnostic biomarkers of pediatric septic AKI and helped elucidate the pathological mechanisms involved.

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Publisher
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Year of Publication
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1058.

Septic arthritis and acute kidney injury: answers.
Becerir T., Yilmaz N., Girisgen I., Yalcin N., Yuksel S.
Embase
Pediatric Nephrology. 35(6) (pp 993-995), 2020. Date of Publication: 01 Jun 2020.
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Publisher
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1059.

Selective head cooling and acute kidney injury in neonates with hypoxic ischemic encephalopathy.
Nour I., Elmaghraby R., Shehata R., El-Refaey A., Aldomiaty H., Mosbah A., Shouman B., Nasef N.

Embase
Journal of Neonatal-Perinatal Medicine. 13(1) (pp 21-30), 2020. Date of Publication: 2020.
[Article]
AN: 631511399
BACKGROUND: The reno-protective effect of therapeutic hypothermia in infants with hypoxic ischemic encephalopathy (HIE) is still debatable. We aimed to study the effect of therapeutic hypothermia on the development and progress of acute kidney injury (AKI) in neonates with HIE.
METHOD(S): Thirty full term infants with HIE were equally distributed between cooling group (selective head cooling) or non-cooling group (late presentation after 6 hours of birth). Serum creatinine, urine output (UOP), serum neutrophil gelatinase-associated lipocalin (NGAL), and serum cystatin C were measured at baseline, day 4 and day 10 of life.
RESULT(S): The incidence of AKI as per Acute Kidney Injury Network (AKIN) criteria was comparable in cooling and non-cooling groups (40% versus 53%, respectively). Serum creatinine and UOP were significantly improved on day-4 and day-10 samples compared to base-line samples in both groups regardless of cooling. Therapeutic hypothermia was associated with a significant reduction in serum NGAL, but not cystatin C, level in day-4 and day-10 samples compared to the non-cooling group. Serum NGAL and cystatin C did not show a significant decline in day-4 and day-10 samples compared to baseline samples in both the cooled and non-cooled groups indicating an ongoing AKI.
CONCLUSION(S): Therapeutic hypothermia was associated with less renal impairment when compared to infants with HIE who were not cooled. Continuing kidney injury may persist in asphyxiated newborns despite improvement in serum creatinine and UOP. Trial Registration Number: NCT02683915.

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Publisher
IOS Press (Nieuwe Hemweg 6B, Amsterdam 1013 BG, Netherlands)
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1060.

Deep learning to distinguish benign from malignant renal lesions based on routine MR imaging.
Xi I.L., Zhao Y., Wang R., Chang M., Purkayastha S., Chang K., Huang R.Y., Silva A.C., Vallieres M., Habibollahi P., Fan Y., Zou B., Gade T.P., Zhang P.J., Soulen M.C., Zhang Z., Bai H.X., Stavropoulos S.W.
Embase
Clinical Cancer Research. 26(8) (pp 1944-1952), 2020. Date of Publication: 15 Apr 2020.
[Article]

AN: 2005588249
Purpose: With increasing incidence of renal mass, it is important to make a pretreatment differentiation between benign renal mass and malignant tumor. We aimed to develop a deep learning model that distinguishes benign renal tumors from renal cell carcinoma (RCC) by applying a residual convolutional neural network (ResNet) on routine MR imaging. Experimental Design: PreoperativeMRimages (T2-weighted and T1-postcontrast sequences) of 1,162 renal lesions definitely diagnosed on pathology or imaging in a multicenter cohort were divided into training, validation, and test sets (70:20:10 split). An ensemble model based on ResNet was built combining clinical variables and T1C and T2WI MR images using a bagging classifier to predict renal tumor pathology. Final model performance was compared with expert interpretation and the most optimized radiomics model.
Result(s): Among the 1,162 renal lesions, 655 were malignant and 507 were benign. Compared with a baseline zero rule algorithm, the ensemble deep learningmodel had a statistically significant higher test accuracy (0.70 vs. 0.56, P = 0.004). Compared with all experts averaged, the ensemble deep learningmodel had higher test accuracy (0.70 vs. 0.60, P = 0.053), sensitivity (0.92 vs. 0.80, P = 0.017), and specificity (0.41 vs. 0.35, P = 0.450). Compared with the radiomics model, the ensemble deep learning model had higher test accuracy (0.70 vs. 0.62, P = 0.081), sensitivity (0.92 vs. 0.79, P = 0.012), and specificity (0.41 vs. 0.39, P = 0.770).
Conclusion(s): Deep learning can noninvasively distinguish benign renal tumors from RCC using conventional MR imaging in a multiinstitutional dataset with good accuracy, sensitivity, and specificity comparable with experts and radiomics.

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Publisher
American Association for Cancer Research Inc.
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1061.

Acute Kidney Injury in Children Based on Electronic Alerts.
Gubb S., Holmes J., Smith G., Geen J., Williams J., Donovan K., Phillips A.O.
Embase
Journal of Pediatrics. 220 (pp 14-20.e4), 2020. Date of Publication: May 2020.
[Article]
AN: 2004623982
Objective: To define the incidence and outcome of acute kidney injury (AKI) in pediatrics using data collected from a national electronic alert system. Study design: A prospective national cohort study was undertaken to collect data on all cases of pediatric AKI, excluding neonates, identified by an e-alert, from April 2015 to March 2019.
Result(s): There were 2472 alerts in a total of 1719 patients, giving an incidence of 77.3 per 100 000 person-years. Of the patients, 84.2% of all AKI were stage 1 and 58.3% occurred with a triggering creatinine within the reference range. The incidence of AKI was associated with measures of social deprivation. Thirty-day mortality was 1.7% but was significantly higher in hospital-acquired AKI (2.1%), compared with community-acquired AKI (0.8%, P < .001) and was associated with the severity of AKI at presentation. A significant proportion of patients had no repeat measure of creatinine (39.8%). This was higher in community-acquired AKI (69.7%) compared with hospital-acquired AKI (43.0%, P < .001), and higher in patients alerting with patients triggering with a creatinine within the reference range (48.4% vs 24.5%, P < .001). The majority of patients (84.7%) experienced only 1 AKI episode. Repeated episodes of AKI were associated with increased 30-mortaltiy (11.6% vs 4.6%, P < .001) and higher residual renal impairment (13.3% vs 5.4%, P < .001).
Conclusion(s): The results suggest that the significance of the alert is missed in many cases reflecting that a large proportion of cases represent modest elevations in serum creatinine (SCr), triggered by a SCr level that may be interpreted as being normal despite a significant increase from the baseline for the patient.

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Publisher
Mosby Inc. (E-mail: customerservice@mosby.com)
Year of Publication
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1062.

Variation in clinical usefulness of biomarkers of acute kidney injury in young children undergoing cardiac surgery.

Baek H.S., Lee Y., Jang H.M., Cho J., Hyun M.C., Kim Y.H., Hwang S.-K., Cho M.H.
Embase
Korean Journal of Pediatrics. 63(4) (pp 151-156), 2020. Date of Publication: 2020.
[Article]
AN: 2004158610
Background: Acute kidney injury (AKI) is one of the most significant postoperative complications of pediatric cardiac sur-gery. Because serum creatinine has limitations as a diagnostic marker of AKI, new biomarkers including neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1), and interleukin-18 (IL-18) are being evaluated to overcome these limitations and detect AKI at an early stage after cardiac surgery.
Purpose(s): This study aimed to investigate the clinical usefulness of these biomarkers in young children.
Method(s): Thirty patients with congenital heart diseases who underwent cardiac surgery using cardiopulmonary bypass (CPB) were selected, and their urine and blood samples were collected at baseline and 6, 24, and 48 hours after surgery. Serum creatin-ine and blood urea nitrogen levels as well as NGAL, KIM-1, and IL-18 levels in urine samples were measured, and clinical parameters were evaluated.
Result(s): Of the 30 patients, 12 developed AKI within 48 hours after cardiac surgery. In the AKI group, 8 of 12 (66.6%) met AKI criteria after 24 hours, and urine KIM-1/creatinine (Cr) level (with adjustment of urine creatinine) peaked at 24 hours with significant difference from baseline level. Additionally, urine KIM-1/Cr level in the AKI group was significantly higher than in the non-AKI group at 6 hours. However, urine NGAL/Cr and IL-18/Cr levels showed no specific trend with time for 48 hours after cardiac surgery.
Conclusion(s): It is suggested that urine KIM-1/Cr concentration could be considered a good biomarker for early AKI prediction after open cardiac surgery using CPB in young children with congenital heart diseases.

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Publisher
Korean Pediatric Society (E-mail: kjpped@gmail.com)
Year of Publication
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1063.

Urinary NMR profiling in pediatric acute kidney injury-a pilot study.
Muhle-goll C., Eisenmann P., Luy B., Kolker S., Tonshoff B., Fichtner A., Westhoff J.H.
Embase
International Journal of Molecular Sciences. 21(4) (no pagination), 2020. Article Number: 1187. Date of Publication: 02 Feb 2020.
[Article]
AN: 2003755266
Acute kidney injury (AKI) in critically ill children and adults is associated with significant short- and long-term morbidity and mortality. As serum creatinine- and urine output-based definitions of AKI

have relevant limitations, there is a persistent need for better diagnostics of AKI. Nuclear magnetic resonance (NMR) spectroscopy allows for analysis of metabolic profiles without extensive sample manipulations. In the study reported here, we examined the diagnostic accuracy of NMR urine metabolite patterns for the diagnosis of neonatal and pediatric AKI according to the Kidney Disease: Improving Global Outcomes (KDIGO) definition. A cohort of 65 neonatal and pediatric patients (0-18 years) with established AKI of heterogeneous etiology was compared to both a group of apparently healthy children (n = 53) and a group of critically ill children without AKI (n = 31). Multivariate analysis identified a panel of four metabolites that allowed diagnosis of AKI with an area under the receiver operating characteristics curve (AUC-ROC) of 0.95 (95% confidence interval 0.86-1.00). Especially urinary citrate levels were significantly reduced whereas leucine and valine levels were elevated. Metabolomic differentiation of AKI causes appeared promising but these results need to be validated in larger studies. In conclusion, this study shows that NMR spectroscopy yields high diagnostic accuracy for AKI in pediatric patients.

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Publisher
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1064.

Dialysis modalities for the management of pediatric acute kidney injury.
de Galasso L., Picca S., Guzzo I.
Embase
Pediatric Nephrology. 35(5) (pp 753-765), 2020. Date of Publication: 01 May 2020.
[Article]
AN: 626831634
Acute kidney injury (AKI) is an increasingly frequent complication among hospitalized children. It is associated with high morbidity and mortality, especially in neonates and children requiring dialysis. The different renal replacement therapy (RRT) options for AKI have expanded from peritoneal dialysis (PD) and intermittent hemodialysis (HD) to continuous RRT (CRRT) and hybrid modalities. Recent advances in the provision of RRT in children allow a higher standard of care for increasingly ill and young patients. In the absence of evidence indicating better survival with any dialysis method, the most appropriate dialysis choice for children with AKI is based on the patient's characteristics, on dialytic modality performance, and on the institutional resources and local practice. In this review, the available dialysis modalities for pediatric AKI will be discussed, focusing on indications, advantages, and limitations of each of them.

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Publisher
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1065.

Impact of acute kidney injury and nephrotoxic exposure on hospital length of stay.
Searns J.B., Gist K.M., Brinton J.T., Pickett K., Todd J., Birkholz M., Soranno D.E.
Embase
Pediatric Nephrology. 35(5) (pp 799-806), 2020. Date of Publication: 01 May 2020.
[Article]
AN: 2004090461
Objective: Acute kidney injury (AKI) is a common occurrence among hospitalized children and leads to increased mortality and prolonged length of stay (LOS) in critically ill patients. Few studies have examined the impact of AKI on LOS for common pediatric conditions. We hypothesized that a diagnosis of AKI would be associated with a longer hospital LOS and increased exposure to nephrotoxic medications for all patients.
Patients and Methods: We performed a multicenter retrospective cross-sectional analysis of 34 children's hospitals in the Pediatric Health Information System (PHIS) database from 1/2009 through 12/2013. Patients were grouped based on primary discharge diagnosis, number of days spent in an intensive care unit, and assignment of a secondary diagnostic code for AKI. Median LOS was compared among different patient groupings. Exposure to commonly used nephrotoxic medications was collected for each admission.
Result(s): A total of 588,884 admissions from 423,337 patients were included in the analysis. The median LOS among non-critically ill patients with and without AKI was 5 days [95% CI 3-10] versus 2 days [95% CI 1-4], respectively. Among critically ill patients, median LOS for those with and without AKI was 12 days [95% CI 7-20] versus 4 days [95% CI 2-7], respectively. Patients who developed AKI were more likely to have significant nephrotoxic exposure.
Conclusion(s): Development of AKI was associated with longer hospital length of stay and increased nephrotoxic medication exposure for all diagnostic categories. Non-critically ill children with AKI were hospitalized the same length or longer than critically ill children without AKI.

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Publisher
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1066.

Risk of Acute Kidney Injury following Contrast-enhanced CT in Hospitalized Pediatric Patients: A propensity score analysis.
Gilligan L.A., Davenport M.S., Trout A.T., Su W., Zhang B., Goldstein S.L., Dillman J.R.
Embase
Radiology. 294(2) (pp 548-556), 2020. Date of Publication: 2020.
[Article]
AN: 2005383770
Background: Acute kidney injury (AKI) remains a concern in hospitalized children undergoing CT with intravenous iodinated contrast material (ICM). Adult studies have shown frequencies of AKI after CT with intravenous ICM to be similar to propensity score-matched ICM-unexposed patient groups; similar data in pediatric patients are lacking.
Purpose(s): To evaluate the association between intravenous ICM exposure and AKI in hospitalized pediatric patients with stable kidney function undergoing contrast material-enhanced CT by comparing with a propensity score-matched ICM-unexposed patient sample undergoing abdominal US.
Material(s) and Method(s): In this retrospective observational study, hospitalized patients aged 18 years or younger with stable kidney function and available serum creatinine (SCr) measurement before and after imaging who underwent CT with intravenous ICM or abdominal US (control group) between January 2009 and November 2018 were identified. The 1:1 propensity score matching was performed by using 23 covariates, stratified by estimated glomerular filtration rate (eGFR) before imaging (>=60 mL/min/1.73 m2 or,60 mL/min/1.73 m2). AKI was defined by using Acute Kidney Injury Network SCr-related criteria. Multivariable logistic regression was performed to identify risk factors for AKI after imaging, including the effects of eGFR and intravenous ICM exposure before imaging.
Result(s): A total of 1850 unique patients were included in the propensity score-matched sample (925 exposed to ICM [mean age 6 standard deviation, 8 years 6 6; 484 female patients]; 925 unexposed to ICM [mean age, 7 years 6 6; 484 female patients]). Frequency of AKI with eGFR greater than or equal to 60 mL/min/1.73 m2 was 2.2% (20 of 889) for CT and US (odds ratio [OR]: 0.98; 95% confidence interval [CI]: 0.52, 1.86; adjusted P = .95) and with eGFR less than 60 mL/min/1.73 m2 was 5.6% (two of 36) and 11.1% (four of 36) for CT and US, respectively (OR: 0.75; 95% CI: 0.11, 5.00; adjusted P = .76). Significant multivariable predictors of AKI included eGFR before imaging (OR: 0.99; 95% CI: 0.98, 0.995; P = .001), body mass index (OR: 1.06; 95% CI: 1.02, 1.10; P = .003), acquired kidney disease (OR: 1.95; 95% CI: 1.004, 3.78; P = .049), and nephrotoxic antibiotic exposure (OR: 2.86; 95% CI: 1.55, 5.25; P , .001). Intravenous ICM exposure was not predictive (OR: 0.91; 95% CI: 0.51, 1.64; P . .05).
Conclusion(s): Hospitalized children with stable kidney function who underwent CT with intravenous iodinated contrast material (ICM) had a similar frequency of acute kidney injury (AKI)

compared with a propensity score-matched ICM-unexposed patient group. In pediatric inpatients with estimated glomerular filtration rate greater than or equal to 60 mL/min/1.73 m2, ICM was not independently associated with AKI.

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1067.

Incidence and epidemiology of acute kidney injury in a pediatric Malawian trauma cohort: A prospective observational study.
Bjornstad E.C., Muronya W., Smith Z.H., Gibson K., Mottl A.K., Charles A., Marshall S.W., Golightly Y.M., Munthali C.K., Gower E.W.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 98. Date of Publication: 14 Mar 2020.
[Article]
AN: 631197738
Background: Acute kidney injury (AKI) is highly associated with mortality risk in children worldwide. Trauma can lead to AKI and is a leading cause of pediatric death in Africa. However, there is no information regarding the epidemiology of pediatric, trauma-associated AKI in Africa.
Method(s): Prospective cohort study of pediatric trauma patients admitted to a tertiary referral hospital in Malawi. Participants enrolled at admission were followed prospectively throughout their hospitalization. AKI was defined by creatinine-only Kidney Disease Improving Global Outcomes criteria. We calculated descriptive statistics and univariate relative risks (RR) for hypothesis-generation of potential risk factors associated with AKI.
Result(s): We analyzed data from 114 participants. Depending on baseline creatinine definition, AKI incidence ranged from 4 to 10%. The new Schwartz equation estimated baseline creatinine values best and yielded an AKI incidence of 9.7%. Almost one in ten children died during hospitalization, but those with AKI (n = 4) were at significantly higher risk of death compared to those without AKI (40.0% vs 6.2%; RR 6.5, 95% CI 2.2-19.1). Burn injuries were most commonly

associated with AKI (63.6%). Other potential AKI risk factors included multiple injuries, trunk or facial injuries, and recent consumption of herbal remedies.
Conclusion(s): AKI occurs in up to 10% of admitted pediatric trauma patients in Malawi and increases the risk of death 7-fold compared to those without AKI. This large unrecognized burden in trauma requires further investment by researchers, clinicians and policymakers to develop evidenced-based triage, recognition, and management approaches to prevent the associated sequelae and potential mortality from AKI.

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1068.

Malaria and acute kidney injury.
Brown D.D., Solomon S., Lerner D., Del Rio M.
Embase
Pediatric Nephrology. 35(4) (pp 603-608), 2020. Date of Publication: 01 Apr 2020.
[Article]
AN: 626237143
Malaria is a parasitic infection transmitted by mosquitos, resulting in significant morbidity and mortality. It affects 212 million worldwide, causing death in up to 303,000 children annually. In the USA, up to 1700 people are affected yearly. Although the prevalence in developed countries is less than in developing countries, travelers from low transmission areas, and those from endemic areas who later return, are very susceptible to malaria and its complications. Severe malaria can cause significant multiorgan dysfunction including acute kidney injury (AKI). The pathogenesis is not clearly understood but proposed mechanisms include acute tubular necrosis (ATN) due to impediments in renal microcirculation, infection-triggered proinflammatory reactions within the kidney, and metabolic disturbances. Providers must consider malarial infection in cases of AKI in someone with a travel history, as early recognition and treatment are crucial to improving

outcomes. This article will review malaria-induced AKI in order to provide a better understanding of this infection's effect on the kidneys.

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Publisher
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1069.

Acute Kidney Injury During Treatment with Intravenous Acyclovir for Suspected or Confirmed Neonatal Herpes Simplex Virus Infection.
Downes K.J., Boge C.L.K., Baro E., Wharton G.T., Liston K.M., Haltzman B.L., Emerson H.M., Doe E., Fulchiero R., Tran V., Yen L., Lieu P., Van Driest S.L., Grisso A.G., Aka I.T., Hale J., Gillon J., Pingel J.S., Coffin S.E., McMahon A.W.
Embase
Journal of Pediatrics. 219 (pp 126-132.e2), 2020. Date of Publication: April 2020.
[Article]
AN: 2004857982
Objective: To describe the epidemiology of and risk factors associated with acute kidney injury (AKI) during acyclovir treatment in neonates and infants. Study design: We conducted a multicenter (n = 4), retrospective cohort study of all hospitalized infants age <60 days treated with intravenous acyclovir (>=1 dose) for suspected or confirmed neonatal herpes simplex virus disease from January 2011 to December 2015. Infants with serum creatinine measured both before acyclovir (baseline) and during treatment were included. We classified AKI based on changes in creatinine according to published neonatal AKI criteria and performed Cox regression analysis to evaluate risk factors for AKI during acyclovir treatment.
Result(s): We included 1017 infants. The majority received short courses of acyclovir (median, 5 doses). Fifty-seven infants (5.6%) developed AKI during acyclovir treatment, with an incidence rate of AKI at 11.6 per 1000 acyclovir days. Cox regression analysis identified having confirmed herpes simplex virus disease (OR, 4.35; P = .002), receipt of >=2 concomitant nephrotoxic medications (OR, 3.07; P = .004), receipt of mechanical ventilation (OR, 5.97; P = .001), and admission to an intensive care unit (OR, 6.02; P = .006) as risk factors for AKI during acyclovir treatment.
Conclusion(s): Among our cohort of infants exposed to acyclovir, the rate of AKI was low. Sicker infants and those exposed to additional nephrotoxic medications seem to be at greater risk for acyclovir-induced toxicity and warrant closer monitoring.

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1070.

Acute Kidney Injury in Critically Ill Children: A Retrospective Analysis of Risk Factors.
De Zan F., Amigoni A., Pozzato R., Pettenazzo A., Murer L., Vidal E.
Embase
Blood Purification. 49(1-2) (pp 1-7), 2020. Date of Publication: 01 Feb 2020.
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AN: 628982603
Children admitted to paediatric intensive care unit (PICU) are at risk of acute kidney injury (AKI). However, few paediatric studies have focused on the identification of factors potentially associated with the development of this condition. The aim of our study was to assess the incidence rate of AKI, identify risk factors, and evaluate clinical outcome in a large sample of critically ill children.
Method(s): This retrospective observational study was conducted including patients admitted to our PICU from January 2014 to December 2016. AKI was defined according to Kidney Disease: Improving Global Outcome criteria.
Result(s): A total of 222 PICU patients out of 811 (27%) had AKI (stage I 39%, stage II 24%, stage III 37%). The most common PICU admission diagnoses in AKI cases were heart disease (38.6%), respiratory failure (16.8%) and postsurgical non-cardiac patients (11%). Hypoxic-ischaemic was the most frequent cause of AKI. Significant risk factors for AKI following multivariate analysis were age >2 months (OR 2.43; 95% CI 1.03-7.87; p = 0.05), serum creatinine at admission >44 mumol/L (OR 2.23; 95% CI 1.26-3.94; p = 0.006), presence of comorbidities (OR 1.84; 95% CI 1.03-3.30; p = 0.04), use of inotropes (OR 2.56; 95% CI 1.23-5.35; p= 0.012) and diuretics (OR 2.78; 95% CI 1.49-5.19; p = 0.001), exposure to nephrotoxic drugs (OR 1.66; 95% CI 1.01-2.91; p= 0.04), multiple organ dysfunction syndrome (OR 2.68; 95% CI 1.43-5.01; p = 0.002), and coagulopathy (OR 1.89; 95% CI 1.05-3.38, p = 0.03). AKI was associated with a significant longer PICU stay (median LOS of 8 days, interquartile range [IQR] 3-

16, versus 4 days, IQR 2-8, in non-AKI patients; p < 0.001). The mortality rate resulted tenfold higher in AKI than non-AKI patients (12.6 vs. 1.2%; p < 0.001).
Conclusion(s): The incidence of AKI in critically ill children is high, with an associated increased length of stay and risk of mortality. In the PICU setting, risk factors of AKI are multiple and mainly associated with illness severity.

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1071.

Diagnosis of Acute Kidney Injury in Children Hospitalized in a Sub-Saharan African Unit by Saliva Urea Nitrogen Dipstick Test.
Hussein R.H., Calice-Silva V., Evans R., Levin N.W., Ellidir R.A., Ali E.M., Bakhiet Y., Ahmed A., Abdelkareem A., Abdelraheem M.B., Kotanko P., Pecoits-Filho R., Raimann J.G.
Embase
Blood Purification. 49(1-2) (pp 185-196), 2020. Date of Publication: 01 Feb 2020.
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AN: 630297488
Acute kidney injury in pediatric patients (pAKI) is common in developing countries and leads to significant morbidity and mortality. Most nephrology services in developing countries are only in larger cities and for that reason many cases remain undiagnosed. We evaluated the performance of a saliva urea nitrogen (SUN) dipstick to diagnose pAKI in Sudan.
Method(s): We collected demographic and clinical information, serum creatinine (SCr), blood urea nitrogen (BUN), SUN, and urine output (UO) in children with pAKI. pAKI was diagnosed based on different criteria (Risk, Injury, Failure, Loss of kidney function, and end-stage kidney disease, Acute Kidney Injury Network and Kidney Disease Improving Global Outcomes). We also recorded hospital and 3-months' mortality and progression to chronic kidney disease (CKD) as outcomes.
Result(s): We studied 81 patients (mean age 10.7 +/- 7 years, 51.9% females) and divided them by age into (a) neonates (<120 days; n = 21; 25.9%); (b) -infants (120-365 days; n = 18; 25.9%); and (c) children (>365 days; n = 42; 53.1%). Diagnosis using different pAKI definitions resulted in differences in AKI staging. SUN reliably reflected BUN over the entire study period, regardless of treatment modality or pAKI severity. Neither pAKI staging, SUN, BUN, nor SCr were associated with mortality or progression to CKD. UO predicted all-cause mortality during the 3-months follow-up.
Conclusion(s): Diagnosis of pAKI using different criteria differs in triage and staging. SUN reflects BUN particularly at higher BUN levels and allows monitoring of treatment responses. Despite the lack of predictive power of SUN to predict hard outcomes, measurement of SUN by dipstick can be used to identify, screen, and monitor pediatric patients with pAKI.

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1072.

A retrospective review of renal injuries and clinical outcomes correlated to AAST grading system at Siriraj Hospital.
Somcharit L., Vachirarojpaisarn T., Na Songkhla N., Kanpittaya J.
Embase
Journal of the Medical Association of Thailand. 103(2) (pp 48-52), 2020. Date of Publication: 2020.
[Article]
AN: 2005256600
Objective: To compare the AAST renal injury grading system of 1989 with the revision of 2011, in the aspect of surgeons' decisions and patient management at Siriraj Hospital. This study also aims to create confidence among radiologists to select the most accurate grading system to analyze renal injuries.
Material(s) and Method(s): A retrospective study of 35 renal trauma patients who visited the Division of Trauma Surgery at Siriraj Hospital from January 2011 to December 2016. Contrast-enhanced MDCT of abdomen were performed and were classified according to the American Association for Surgery of Trauma grading system (AAST). The demographic data, clinical data, trauma score and management considerations also collected for each patient.
Result(s): Twenty-one of 35 patients were managed by non-operative management (NOM). The others were managed by operative procedures including interventional radiology. Grade IV was the most common injury in these two groups. In NOM group, mean Injury Severity Score (ISS), Revised Trauma Score (RTS), survival probability (Ps) by Trauma Injury Severity Score (TRISS) were 18, 7.73 and 97.99%, respectively. In operative and interventional radiology management group, mean ISS, RTS, and Ps of TRISS were 23, 7.64 and 95.03%, respectively. There is no significant statistical difference in hospital stay, number of surgical and interventional radiology management of these two grading systems.
Conclusion(s): The AAST grading systems of 1989 and 2011 are not statistically different from the perspective of management and clinical outcome. However, radiologists need to inform surgeons of MDCT findings, such as extra-luminal contrast extravasation or vascular lesion, which are not addressed in the 1989 or in the 2011 grading systems, for proper management.

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Medical Association of Thailand (E-mail: math@loxinfo.co.th)
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1073.

The use of low doses of methotrexate during peri-cell infusion period may be a risk factor for acute kidney injury in patients subjected to hematopoietic stem cell transplantation.
Ferraz F.T.P., Marra A.R., Hamerschlak N., de Souza Durao Junior M.
Embase
Annals of Hematology. 99(3) (pp 627-633), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 2004116900
Acute kidney injury (AKI) after hematopoietic stem cell transplantation (HSCT) is associated with high mortality rates. To determine the incidence and risk factors associated with AKI in patients undergoing HSCT during the infusion period, patients admitted for HSCT from 2012 to 2015 were studied. AKI was classified according to the KDIGO (Kidney Disease Improving Global Outcomes) criteria. We analyzed the main comorbidities, underlying conditions, types of transplant, preparative regimens, and use of potentially nephrotoxic drugs as risk factors for AKI. Among the 180 patients (median age 53 years), 69 (36.5%) developed AKI (23 KDIGO 1, 28 KDIGO 2, and 18 KDIGO 3), 49 (50.0%) undergoing allogeneic and 20 (22.3%) autologous transplantation, and 18 (9.4%) required dialysis. The main comorbidities were hypertension (38; 19.8%), and diabetes (19; 9.9%). The median pre-transplant creatinine was 0.7 mg/dl. Twenty-one patients died (10.9%). The risk factors for AKI in allogeneic HSCT were as follows: baseline estimated glomerular filtration rate (eGFR) (RR 1.12 (1.02-1.22), p = 0.019), use of vasopressors (RR 3.72 (2.20-6.29), p < 0.001), and use of methotrexate (RR 1.83 (1.08-3.11), p = 0.025). Male gender (RR 5.91 (1.65-21.16), p = 0.006), baseline eGFR (RR 1.22 (1.04-1.43), p = 0.011), and use of aminoglycosides (RR 3.92 (1.06-14.44), p = 0.041) were the risk factors for AKI associated with autologous HSCT. During hospitalization for HSCT, AKI was a common problem. The use of a low dose of methotrexate to prevent graft versus host disease was associated with its occurrence.

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Publisher
Springer
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1074.

Pregnancy-Related Acute Kidney Injury in the United States: Clinical Outcomes and Health Care Utilization.
Shah S., Meganathan K., Christianson A.L., Harrison K., Leonard A.C., Thakar C.V.
Embase
American Journal of Nephrology. 51(3) (pp 216-226), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 631058005
Background: Acute kidney injury (AKI) during pregnancy is a public health problem and is associated with maternal and fetal morbidity and mortality. Clinical outcomes and health care utilization in pregnancy-related AKI, especially in women with diabetes, are not well studied.
Method(s): Using data from the 2006 to 2015 Nationwide Inpatient Sample, we identified 42,190,790 pregnancy-related hospitalizations in women aged 15-49 years. We determined factors associated with AKI, including race/ethnicity, and associations between AKI and inpatient mortality, and between AKI and cardiovascular (CV) events, during pregnancy-related hospitalizations. We calculated health care expenditures from pregnancy-related AKI hospitalizations.
Result(s): Overall, the rate of AKI during pregnancy-related hospitalizations was 0.08%. In the adjusted regression analysis, a higher likelihood of AKI during pregnancy-related hospitalizations was seen in 2015 (OR 2.20; 95% CI 1.89-2.55) than in 2006; in older women aged 36-40 years (OR 1.49; 95% CI 1.36-1.64) and 41-49 years (OR 2.12; 95% CI 1.84-2.45) than in women aged 20-25 years; in blacks (OR 1.52; 95% CI 1.40-1.65) and Native Americans (OR 1.45; 95% CI 1.10-1.91) than in whites, and in diabetic women (OR 4.43; 95% CI 4.04-4.86) than in those without diabetes. Pregnancy-related hospitalizations with AKI were associated with a higher likelihood of inpatient mortality (OR 13.50; 95% CI 10.47-17.42) and CV events (OR 9.74; 95% CI 9.08-10.46) than were hospitalizations with no AKI. The median cost was higher for a delivery hospitalization with AKI than without AKI (USD 18,072 vs. 4,447).
Conclusion(s): The rates of pregnancy-related AKI hospitalizations have increased during the last decade. Factors associated with a higher likelihood of AKI during pregnancy included older age, black and Native American race/ethnicity, and diabetes. Hospitalizations with pregnancy-related AKI have an increased risk of inpatient mortality and CV events, and a higher health care utilization than do those without AKI.

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Publisher
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1075.

"Removal of nitrate and nitrite by hemodialysis in end-stage renal disease and by sustained low-efficiency dialysis in acute kidney injury".
Martinez A.H., Diez G.R., Ferraris V., Coccia P.A., Ferraris J.R., Checa A., Wheelock C.E., Lundberg J.O., Weitzberg E., Carlstrom M., Krmar R.T.
Embase
Nitric Oxide - Biology and Chemistry. 98 (pp 33-40), 2020. Date of Publication: 1 May 2020.
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AN: 2005130461
Background & purpose: It is well established that end-stage renal disease (ESRD) is associated with increased cardiovascular morbidity and mortality both in the adult and pediatric population. Although the underlying molecular mechanisms are poorly understood, compromised nitric oxide (NO) bioactivity has been suggested as a contributing factor. With this in mind, we investigated the effects of hemodialysis on NO homeostasis and bioactivity in blood. Methods & results: Plasma and dialysate samples were obtained before and after hemodialysis sessions from adults (n = 33) and pediatric patients (n = 10) with ESRD on chronic renal replacement therapy, and from critically ill adults with acute kidney injury (n = 12) at their first sustained low-efficiency dialysis session. Levels of nitrate, nitrite, cyclic guanosine monophosphate (cGMP) and amino acids relevant for NO homeostasis were analyzed. We consistently found that nitrate and cGMP levels in plasma were significantly reduced after hemodialysis, whereas post-dialysis nitrite and amino acids coupled to NO synthase activity (i.e., arginine and citrulline) were only significantly reduced in adults with ESRD. The amount of excreted nitrate and nitrite during dialysis were similar to daily endogenous levels that would be expected from endothelial NO synthase activity. Conclusion(s): Our results show that hemodialysis significantly reduces circulating levels of nitrate and cGMP, indicating that this medical procedure may impair NO synthesis and potentially NO signaling pathways.

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1076.

Serum neutrophil gelatinase-associated lipocalin (NGAL) as a biomarker for predicting high dose methotrexate associated acute kidney injury in children with acute lymphoblastic leukemia.
Li H., Xu Q., Wang Y., Chen K., Li J.
Embase
Cancer Chemotherapy and Pharmacology. 85(1) (pp 95-103), 2020. Date of Publication: 01 Jan 2020.
[Article]
AN: 2003531930
Purpose: The present study was aimed at assessing the value of serum NGAL in identifying early acute kidney injury induced by HDMTX.
Method(s): Children aged 1-14 years with newly diagnosed ALL receiving MTX over 3 g/m2 were enrolled. Serum NGAL concentrations, serum creatinine (Scr) and MTX concentrations were measured. The area under the receiver-operating characteristic curve (ROC) was used for evaluating variables' ability of early diagnosis of AKI.
Result(s): A total of 196 courses of 62 patients were assessed, and 22 courses (11.2%) developed AKI. Twenty-four hours serum NGAL concentrations, 24 h Scr ratio, 48 h Scr ratio, CMTX24 h, CMTX48 h, CMTX72 h were significantly higher in patients with AKI. The combination of 24 h Scr ratio and 24 h serum NGAL had higher value for detecting HDMTX induced AKI compared with the 24 h Scr ratio. And the combination had similar value for detecting HDMTX induced AKI compared with the 48 h Scr ratio. After 48 h, CMTX48 h had a satisfying accuracy in predicting AKI. The proportion of post-HDMTX sepsis in patients with AKI was significantly higher than that in patients without AKI.
Conclusion(s): Serum NGAL levels could be used as a marker in identifying the direct kidney tubular damage induced by HDMTX. The combination of 24 h Scr ratio and 24 h serum NGAL had higher value for early diagnosis of HDMTX associated AKI compared with the 24 h Scr ratio.

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Publisher
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1077.

Echocardiographic predictors of acute kidney injury in neonates with a patent ductus arteriosus.
Coffman Z., Steflik D., Chowdhury S.M., Twombley K., Buckley J.
Embase
Journal of Perinatology. 40(3) (pp 510-514), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 2003729285
Objective: To investigate acute kidney injury (AKI) in neonates with a patent ductus arteriosus (PDA) including incidence, risk factors, and possible correlations between PDA-related echocardiographic measurements and AKI incidence. Study design: We conducted a single-center retrospective cohort study of infants admitted to the neonatal intensive care unit with a diagnosis of a PDA between July 2015 and July 2017. Infants were evaluated for development of AKI based on the KDIGO criteria and a multivariable logistic regression analysis was performed. Result(s): A total of 142 neonates with moderate or large PDAs were included, 43 (30%) developed AKI. Patients who developed AKI had longer length of stay, lower birth weights, lengths, and gestational ages. No echocardiographic measurements were predictive of an increased risk for developing AKI.
Conclusion(s): There are no significant differences in commonly measured echocardiographic markers of PDA hemodynamic significance in neonates who develop AKI.

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31767977 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31767977]
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Publisher
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Year of Publication
2020

1078.

Role of tubulointerstitial lesions in predicting renal outcome among pediatric onset lupus nephritis - A retrospective cohort study.
Wu C.-Y., Chien H.-P., Yang H.-Y., Yao T.-C., Tseng M.-H., Yu M.-C., Yeh K.-W., Huang J.-L.
Embase
Journal of Microbiology, Immunology and Infection. 53(1) (pp 33-41), 2020. Date of Publication: February 2020.
[Article]
AN: 619960918
Background: Raising evidence suggested a prognostic utility of tubulointerstitial lesions in lupus nephritis (LN). The exact prevalence of tubulointerstitial abnormalities and its predictive value among pediatric onset systemic lupus erythematous (pSLE) cases, however, remained unknown.
Method(s): Sixty-seven pSLE subjects diagnosed with LN with initial renal samples available were enrolled and followed for an average of 6.49 +/- 3.06 years. Renal histology was evaluated according to the International Society of Nephrology/Renal Pathology Society classification, National Institute of Health classification and tubulointerstitial activity index (TIAI).

Result(s): Tubulointerstitial injuries were observed in 38.81% of all LN cases, including 13.33% with non-proliferative lupus nephritis (nPLN) and 46.15% of with proliferative lupus nephritis (PLN). Tubulointerstitial injuries occurred solitarily in cases with nPLN(13.33%), but always associated glomerular changes and significantly impacted renal survival (p = 0.032) among those with PLN. TIAI associated glomerular abnormalities (p = 0.031) but did not correlate renal performance or subsequent outcome (p = 0.445). Among the chronicity index, it was the chronic tubulointerstitial lesions that provided prognostic information (p = 0.012). None of the individual tubulointerstitial factors, however, reached statistical significance in end-stage renal disease prediction. Finally, considering tubulointerstitial injuries in PLN further discriminated subsequent renal outcome (p = 0.006).
Conclusion(s): Tubulointerstitial abnormalities were found in nearly one-third of all pediatric LN cases. With its importance in early identifying those at risk of renal failure, histologic classification considering tubulointerstitial lesions may potentially assist outcome prediction.

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Publisher
Elsevier Ltd
Year of Publication
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1079.

Acute Kidney Injury and Bronchopulmonary Dysplasia in Premature Neonates Born Less than 32 Weeks' Gestation.
Starr M.C., Boohaker L., Eldredge L.C., Menon S., Griffin R., Mayock D.E., Li L., Askenazi D., Hingorani S., Ambalavanan N., Selewski D.T., Sarkar S., Kent A., Fletcher J., Abitbol C.L., Defreitas M., Duara S., Charlton J.R., Swanson J.R., Guillet R., D'Angio C., Mian A., Rademacher E., Mhanna M.J., Raina R., Kumar D., Jetton J.G., Brophy P.D., Colaizy T.T., Klein J.M., Arikan A.A., Rhee C.J., Goldstein S.L., Nathan A.T., Kupferman J.C., Bhutada A., Rastogi S., Bonachea E., Mahan J., Cole F.S., Davis T.K., Dower J., Milner L., Smith A., Fuloria M., Reidy K., Kaskel F.J., Soranno D.E., Gien J., Gist K.M., Chishti A.S., Hanna M.H., Wong C.S., Joseph C., Dupont T., Ohls R., Staples A., Khokhar S., Perazzo S., Ray P.E., Revenis M., Sethi S.K., Rohatgi S., Mammen C., Synnes A., Wazir S., Wintermark P., Woroniecki R., Sridhar S., Ingraham S., Nada A., Zappitelli M.
Embase
American Journal of Perinatology. 37(3) (pp 341-348), 2020. Date of Publication: 01 Feb 2020.
[Article]
AN: 630986335

Objective This study aimed to evaluate the association between acute kidney injury (AKI) and bronchopulmonary dysplasia (BPD) in infants born <32 weeks of gestational age (GA). Study Design Present study is a secondary analysis of premature infants born at <32 weeks of GA in the Assessment of Worldwide Acute Kidney Injury Epidemiology in Neonates (AWAKEN) retrospective cohort (n = 546). We stratified by gestational age and used logistic regression to determine association between AKI and moderate or severe BPD/mortality. Results Moderate or severe BPD occurred in 214 of 546 (39%) infants, while death occurred in 32 of 546 (6%); the composite of moderate or severe BPD/death occurred in 246 of 546 (45%). For infants born <=29 weeks of gestation, the adjusted odds ratio (OR) of AKI and the primary outcome was 1.15 (95% confidence interval [CI] = 0.47-2.86; p = 0.76). Infants born between 29 and 32 weeks of gestation with AKI had four-fold higher odds of moderate or severe BPD/death that remained after controlling for multiple factors (adjusted OR = 4.21, 95% CI: 2.07-8.61; p < 0.001). Conclusion Neonates born between 29 and 32 weeks who develop AKI had a higher likelihood of moderate or severe BPD/death than those without AKI. Further studies are needed to validate our findings and evaluate mechanisms of multiorgan injury.

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Thieme Medical Publishers, Inc. (E-mail: custserv@thieme.com)
Clinical Trial Number
https://clinicaltrials.gov/show/NCT02443389
Year of Publication
2020

1080.

The Incidence of Paediatric Acute Kidney Injury Identified Using an AKI E-Alert Algorithm in Six English Hospitals.
Bhojani S., Stojanovic J., Melhem N., Maxwell H., Houtman P., Hall A., Singh C., Hayes W., Lennon R., Sinha M.D., Milford D.V.
Embase
Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 29. Date of Publication: 11 Feb 2020.
[Article]
AN: 631015777
Objective: Acute kidney injury (AKI) is a significant cause of morbidity and mortality among hospitalised patients. The objectives in this study were (i) to investigate the incidence of AKI using the National Health Services (NHS) AKI e-alert algorithm as a means of identifying AKI; and (ii) in a randomly selected sub-group of children with AKI identified using the algorithm, to evaluate the recognition and management of AKI.
Patients and Methods: Retrospective cross-sectional study with initial electronic retrieval of creatinine measurements at six hospitals in England over a six-month period. Results were evaluated using the NHS AKI e-alert algorithm with recognition and management of AKI stages 1, 2 and 3 reviewed in a sub-set of randomly selected patient case notes. Patients aged 29 to 17 years were included. AKI stage 1 was defined as a rise of 1.5 - <=2x baseline creatinine level; AKI stage 2 a rise of <= 2.0 and < 3.0; AKI stage 3 a rise of >= 3.0. Urine output was not considered for AKI staging.
Result(s): 57,278 creatinine measurements were analysed. 5,325 (10.8%) AKI alerts were noted in 1,112 patients with AKI 1 (62%), AKI 2 (16%) and AKI 3 (22%). There were 222 (20%) <1y, 432 (39%) 1 <= 6y, 192 (17%) 6 <= 11y, 207 (19%) 11 <= 16y, and 59 (5%) 16-17y. Case notes

of 123 of 1,112 [11.1%] children with AKI alerts were reviewed. Confirmed AKI was recognised with a documented management plan following its identification in n = 32 [26%] patients only. Conclusion(s): In this first multicentre study of the incidence of AKI in children admitted to selected hospitals across England, the incidence of AKI was 10.8% with most patients under the age of 6 years and with AKI stage 1. Recognition and management of AKI was seen in just over 25% children. These data highlight the need to improve recognition of AKI in hospitalised children in the UK.

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Frontiers Media S.A. (E-mail: info@frontiersin.org)
Year of Publication
2020

1081.

Small (< 4 cm) Bosniak renal cysts: association of initial fluid percentage and enhancing solid volume thresholds with future lesion behavior.
Shaish H., Ahmed F., Schreiber J., Hindman N.M.
Embase
Abdominal Radiology. 45(3) (pp 799-806), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 2004131831
Purpose: Evaluate the fluid percentage (FP) and enhancing solid volume (SV) of small (< 4 cm) Bosniak 2F, 3 and 4 renal lesions and the association with Bosniak category at baseline and follow-up.
Method(s): Hospital database was searched from 1/1/2010 to 8/3/2018 for small (< 4 cm) Bosniak 2F, 3 and 4 lesions studied with initial and follow-up C+CT/MRI. Two radiologists blindly assigned Bosniak categories to first and last available studies. One radiologist performed volumetric analysis of each lesion, calculating the FP and SV. Association with Bosniak category was explored.
Result(s): 121 patients (84:37 M:F) were identified with 136 renal lesions (84, 37 and 15 Bosniak category 2F, 3 and 4) and followed for 1-12.3 years (mean 3.5 years). 87% (73/84) of 2F lesions were downgraded or remained stable. 48% (25/52) of 3/4 lesions were downgraded. Higher FP was associated with a lower Bosniak category (p value = 0.0042). Increase in FP was associated with the probability of being downgraded on follow-up (OR 1.03, p value = 0.0036), while increase in fluid volume of lesion was directly associated with change in overall lesion size among lesions that were downgraded (b-estimate = 0.03, p value = 0.0003). All Bosniak 3/4 lesions with initial SV less than 0.05 cc were downgraded.
Conclusion(s): FP and SV are useful quantitative surrogates for Bosniak category and future behavior, respectively. Growth of small renal lesions by an increase in fluid volume and FP leads

to a downgrade in Bosniak category. Initial SV less than 0.05 cc in Bosniak 3/4 lesions suggests possible future downgrade.

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Publisher
Springer
Year of Publication
2020

1082.

Defining pediatric community-acquired acute kidney injury: an observational study.
O'Neil E.R., Devaraj S., Mayorquin L., Starke H.E., Buffone G.J., Loftis L.L., Arikan A.A., Cruz A.T.
Embase
Pediatric Research. 87(3) (pp 564-568), 2020. Date of Publication: 01 Feb 2020.
[Article]
AN: 2003510248
Background: Pediatric acute kidney injury (AKI) is associated with long-term morbidity and mortality; however, outcomes improve when AKI is detected earlier. Current definitions of AKI use baseline creatinine; community-acquired AKI (CA-AKI) is difficult to define and detect in the pediatric emergency department (ED) when no baseline creatinine is available. Our objective was to compare age- and gender-based creatinine norms to the traditional baseline (lowest creatinine in previous 3 months) to diagnose CA-AKI.
Method(s): This was a retrospective cross-sectional study conducted in children 1 month-18 years of age seen in the pediatric ED in whom a creatinine was obtained.
Result(s): Per the Kidney Disease Improving Global Outcomes AKI definition in encounters with baseline creatinine available, 343/2338 (14.7%) had CA-AKI. When the upper limit of the age- and gender-based creatinine norm was applied as a surrogate baseline creatinine, CA-AKI was diagnosed in 1.5% of encounters (239/15,486). Additionally, CA-AKI was diagnosed in 178 cases using the upper limit of age- and gender-based creatinine norms only, as these cases did not have a baseline creatinine.
Conclusion(s): Age- and gender-based creatinine norms can be applied as a surrogate baseline to detect CA-AKI in all children regardless of whether baseline creatinine is available, potentially detecting it earlier.

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31537011 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31537011]
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Publisher
Springer Nature
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1083.

Pediatric Acute Kidney Injury-The Time for Nihilism Is Over.
Goldstein S.L.
Embase
Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 16. Date of Publication: 31 Jan 2020.
[Article]
AN: 630938655
Nihilism has been pervasive in the acute kidney injury field for decades, given that no studies, had been able to reduce AKI rates in hospitalized patients. Furthermore, children with AKI comprise an orphan population, where there is little incentive to develop diagnostics, therapeutics or devices specifically for them. The 3rd International Symposium on Acute Kidney Injury in Children, held in Cincinnati in October 2018, provided a platform to demonstrate the advancements in the diagnosis and treatment of children with, or at-risk for AKI, and also highlighted barriers to advancing care for this population. The progress made in the pediatric AKI since the 2nd International Symposium in 2016, highlighted the positive outcomes emanating from federal agency, private foundation and corporate sponsor investment in pediatric AKI. As a result, the time should be over for nihilism in the pediatric field.

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Publisher
Frontiers Media S.A. (E-mail: info@frontiersin.org)
Year of Publication
2020

1084.

Vancomycin-associated acute kidney injury in Hong Kong in 2012-2016.
Qin X., Tsoi M.-F., Zhao X., Zhang L., Qi Z., Cheung B.M.Y.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 41. Date of Publication: 03 Feb 2020.
[Article]
AN: 630806106

Background: To study the incidence of vancomycin-associated acute kidney injury (VA-AKI) in Hong Kong and identify risk factors for VA-AKI.
Method(s): Patients with vancomycin prescription and blood level measurement in 2012-2016 were identified using the Hong Kong Hospital Authority Clinical Data Analysis and Reporting System. Acute kidney injury was defined using KDIGO criteria. Patients without creatinine measurements, steady-state trough vancomycin level or who had vancomycin treatment < 3 days were excluded. Results were analyzed using SPSS version 22.0. Logistic regression was used to identify the predictors for VA-AKI. Odds ratio and 95% confidence interval were estimated.
Result(s): One thousand four hundred fifty patients were identified as VA-AKI from 12,758 records in Hong Kong in 2012-2016. The incidence was respectively 10.6, 10.9, 11.3, 12.2, 11.2% from 2012 to 2016. The incidence of VA-AKI was 16.3, 12.2, 11.3 and 6.2% in patients aged 1-12, 12-60, elderly aged > 60 and newborn and infants, respectively. Baseline creatinine, serum trough vancomycin level, systematic disease history including respiratory failure, hypertension, congestive heart failure, chronic renal failure, anemia and type II diabetes, and concomitant diuretics, piperacillin-tazobactam (PTZ) and meropenem prescription were significantly higher in VA-AKI patients older than 12 years. Logistic regression showed that older age group, higher baseline creatinine, serum trough vancomycin level, respiratory failure, chronic renal failure and congestive heart failure, concomitant diuretics, PTZ and meropenem prescription, and longer hospital stay were all associated with increased risk of VA-AKI.
Conclusion(s): The incidence of VA-AKI in Hong Kong is low but shows no decline. Patients with higher baseline creatinine, multi-organ diseases and multiple drugs administration should have their vancomycin level monitored to decrease the risk of VA-AKI.

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Publisher
BioMed Central Ltd. (E-mail: info@biomedcentral.com)
Year of Publication
2020

1085.

A prospective multi-center quality improvement initiative (NINJA) indicates a reduction in nephrotoxic acute kidney injury in hospitalized children.
Goldstein S.L., Dahale D., Kirkendall E.S., Mottes T., Kaplan H., Muething S., Askenazi D.J., Henderson T., Dill L., Somers M.J.G., Kerr J., Gilarde J., Zaritsky J., Bica V., Brophy P.D., Misurac J., Hackbarth R., Steinke J., Mooney J., Ogrin S., Chadha V., Warady B., Ogden R., Hoebing W., Symons J., Yonekawa K., Menon S., Abrams L., Sutherland S., Weng P., Zhang F., Walsh K.
Embase

Kidney International. 97(3) (pp 580-588), 2020. Date of Publication: March 2020.
[Article]
AN: 2004671225
Nephrotoxic medication (NTMx) exposure is a common cause of acute kidney injury (AKI) in hospitalized children. The Nephrotoxic Injury Negated by Just-in time Action (NINJA) program decreased NTMx associated AKI (NTMx-AKI) by 62% at one center. To further test the program, we incorporated NINJA across nine centers with the goal of reducing NTMx exposure and, consequently, AKI rates across these centers. NINJA screens all non-critically ill hospitalized patients for high NTMx exposure (over three medications on the same day or an intravenous aminoglycoside over three consecutive days), and then recommends obtaining a daily serum creatinine level in exposed patients for the duration of, and two days after, exposure ending. Additionally, substitution of equally efficacious but less nephrotoxic medications for exposed patients starting the day of exposure was recommended when possible. The main outcome was AKI as defined by the Kidney Disease Improving Global Outcomes (KDIGO) serum creatinine criteria (increase of 50% or 0.3 mg/dl over baseline). The primary outcome measure was AKI episodes per 1000 patient-days. Improvement was defined by statistical process control methodology and confirmed by Autoregressive Integrated Moving Average (ARIMA) modeling. Eight consecutive bi-weekly measure rates in the same direction from the established baseline qualified as special cause change for special process control. We observed a significant and sustained 23.8% decrease in NTMx-AKI rates by statistical process control analysis and by ARIMA modeling; similar to those of the pilot single center. Thus, we have successfully applied the NINJA program to multiple pediatric institutions yielding decreased AKI rates.

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Publisher
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Year of Publication
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1086.

Association between atherogenic index of plasma and subclinical renal damage over a 12-year follow-up: Hanzhong adolescent hypertension study.
Yuan Y., Hu J.-W., Wang Y., Wang K.-K., Zheng W.-L., Chu C., Ma Q., Yan Y., Liao Y.-Y., Mu J.-J.
Embase
European Journal of Clinical Nutrition. 74(2) (pp 278-284), 2020. Date of Publication: 01 Feb 2020.
[Article]
AN: 2003606287
Background: A high atherogenic index of plasma (AIP) is associated with increased cardiovascular risk and higher serum uric acid levels, but whether AIP is a strong risk factor for developing subclinical renal damage (SRD) is unknown. This study aimed to explore the effect of AIP variations on the prevalence of SRD in a 12-year follow-up study.
Method(s): (1) The cross-sectional study enrolled 2485 participants from the Hanzhong cohort in 2017; (2) A total of 202 participants were included in the small longitudinal cohort from 2005 to 2017. Longitudinal analysis was used to determine whether an elevated AIP predicts the development of SRD.
Result(s): In the cross-sectional analysis, the AIP level was correlated with the estimated glomerular filtration rate (eGFR) and urinary albumin-to-creatine ratio (uACR) (P < 0.05). The age-adjusted odds ratio (OR) for prevalent SRD in men in the high AIP group was 1.924 (1.355-2.732) (P < 0.001), while in women, the OR was 1.616 (1.049-2.490) (P = 0.030) in the high AIP group. In the longitudinal analysis, significantly higher uACR levels were found in participants with normal AIP at baseline and elevated AIP in 2013 (P < 0.05). The adjusted OR for prevalent SRD in the incident AIP group was 4.741 (1.668-13.472) (P = 0.003) compared with the control group.
Conclusion(s): Our study indicates that elevated AIP increased the risk of developing SRD and was associated with uACR and eGFR. As a simple marker of CVD risk, AIP may emerge as a novel and reliable indicator of SRD.

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Springer Nature
Clinical Trial Number
https://clinicaltrials.gov/show/NCT02734472
Year of Publication
2020

1087.

Acute kidney injury and renal regional oxygen saturation during pediatric liver transplantation.

Sinner B., Banas M., Brunete-Lorenzo C., Zant R., Knoppke B., Scherer M.N., Graf B.M., Lunz D.
Embase
Annals of Transplantation. 25 (no pagination), 2020. Article Number: e919717. Date of Publication: 2020.
[Article]
AN: 2003750501
Background: Material/Methods: Results:
Conclusion(s): Kidney injury is a complication among children undergoing liver transplantation (pLTx). Cystatin C serum concentration seems to be superior to creatinine-based determination of kidney injury in adults and children. Near-infrared spectroscopy (NIRS) technology provides non-invasive and real-time measurement of renal tissue oxygenation. Here, we compared renal tissue oximetry (rSrO2) with conventional diagnostic criteria cystatin C and creatinine concentration in children undergoing pLTx. rSrO2 was measured intraoperatively in children undergoing pLTx over the left kidney, and was statistically compared with pre-and postoperative serum creatinine and cystatin C concentrations. rSrO2 was affected by hemoglobin concentration, bilirubin concentration, and FiO2. Statistical analysis demonstrated that rSrO2 was significantly reduced in children with preoperative pathologic increased cystatin C concentrations compared to children without (63.7+/-4.3 vs. 53.4+/-4.9, $p<0.05$). We did not detect a significant difference in rSrO2 between children who developed postoperative renal impairment, either determined by increased postoperative cystatin C concentration, creatinine concentration, or the pRIFLE criteria. Intraoperative increase or decrease in rSrO2 did not predict the development of postoperative kidney injury. In children with liver failure undergoing pLTx, a preoperative decrease in rSrO2 indicates compromised renal function. However, intraoperative rSrO2 is not predictive of postoperative kidney injury.

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Publisher
International Scientific Information, Inc. (E-mail: iza.pranga@isl-science.com)
Year of Publication
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1088.

Kidney Disease: Improving Global Outcomes in neonates with acute kidney injury after cardiac surgery.
Ueno K., Shiokawa N., Takahashi Y., Nakae K., Kawamura J., Imoto Y., Kawano Y.
Embase
Clinical and Experimental Nephrology. 24(2) (pp 167-173), 2020. Date of Publication: 01 Feb 2020.
[Article]
AN: 2003536811

Background: Acute kidney injury (AKI) after cardiac surgery (CS-AKI) in children with congenital heart disease is a serious complication closely associated with high morbidity and mortality. Kidney Disease: Improving Global Outcomes (KDIGO) AKI staging demonstrates high sensitivity for detecting AKI and predicting associated in-hospital mortality. However, neonatal-modified KDIGO criteria (n-KDIGO), recently introduced as a standard diagnostic tool, for CS-AKI have not been fully validated. Here, we evaluated the incidence of risk factors and postoperative outcomes of neonatal CS-AKI.
Method(s): We retrospectively studied 114 consecutive neonates who underwent cardiac surgery at the Kagoshima University Hospital. CS-AKI was classified using the n-KDIGO criteria. Risk adjustment in congenital heart surgery (RACHS-1) score was used to predict the complexity-adjusted mortality and % fluid overload (%FO) was used to monitor fluid balance in pediatric cardiac surgery.
Result(s): Among 81 patients, neonatal CS-AKI occurred in 57 (70.4%) patients according to n-KDIGO criteria. Of these, 28 (34.6%) patients reached n-KDIGO 1, 17 (21.0%) reached n-KDIGO 2, and 12 (14.8%) reached n-KDIGO 3. Patients with CS-AKI had significantly higher vasoactive-inotropic score levels, longer operative times, and higher %FO than patients without CS-AKI. Notably, increased duration of cardiopulmonary bypass times and %FO were risk factors for the development of neonatal CS-AKI. The n-KDIGO-based severe AKI grade had higher risk of in-hospital mortality; however, the n-KDIGO-based mild AKI grade was not associated with any postoperative outcomes.
Conclusion(s): CS-AKI based on n-KDIGO criteria is common in neonates and is closely associated with higher mortality, especially in patients with severe CS-AKI.

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Publisher
Springer (Singapore)
Year of Publication
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1089.

Urine Output Assessment in Acute Kidney Injury: The Cheapest and Most Impactful Biomarker.
Goldstein S.L.
Embase
Frontiers in Pediatrics. 7 (no pagination), 2020. Article Number: 565. Date of Publication: 21 Jan 2020.
[Review]
AN: 630797183
Acute kidney injury (AKI) is independently associated with morbidity and mortality in critically ill neonates, children, adolescents, and young adults. AKI occurs commonly in this population, and the vast majority of published studies utilize only a serum creatinine based criteria for AKI diagnosis and staging. While urine output criteria have been a part of all AKI systematic and

multidimensional AKI definitions for the past 15 years, oliguria based on these definitions is difficult to extract from the electronic health record. This manuscript reviews the published data regarding the impact of oliguria on patient outcomes, and the contribution of oliguria to % fluid overload and resultant changes in serum creatinine based epidemiology. The aim of this manuscript is to demonstrate that oliguria is an incredibly valuable biomarker for the management of patients with, or at-risk for, AKI.

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Publisher
Frontiers Media S.A. (E-mail: info@frontiersin.org)
Year of Publication
2020

1090.

European Society of Paediatric Radiology abdominal imaging task force: recommendations for contrast-enhanced ultrasound and diffusion-weighted imaging in focal renal lesions in children.
Damasio M.B., Ording Muller L.-S., Augdal T.A., Avni F.E., Basso L., Bruno C., Kljucevsek D., Littooij A.S., Franchi-Abella S., Lobo L.M., Mentzel H.-J., Napolitano M., Ntoulia A., Riccabona M., Stafrace S., Wozniak M.M.M., Petit P.
Embase
Pediatric Radiology. 50(2) (pp 297-304), 2020. Date of Publication: 01 Feb 2020.
[Article]
AN: 2003751269
Contrast-enhanced ultrasound (CEUS) and diffusion-weighted imaging (DWI) are safe, repeatable imaging techniques. The aim of this paper is to discuss the advantages, technical factors and possible clinical applications of these imaging tools in focal renal lesions in children.

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Publisher
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1091.

Troubleshooting Complex Vascular Cases in the Kidney Graft: Multiple Vessels, Aneurysms, and Injuries During Harvesting Procedures.
Hevia V., Gomez V., Hevia M., Lorca J., Santiago M., Lopez-Plaza J., Alvarez S., Diez V., Gordaliza C., Burgos F.J.
Embase
Current Urology Reports. 21(1) (no pagination), 2020. Article Number: 5. Date of Publication: 01 Jan 2020.
[Review]
AN: 2004171849
Purpose of the Review: To update the most relevant literature regarding complex vascular cases in kidney transplant setting involving the graft, especially during the harvesting procedure and back-table preparation from the subsequent implant. Recent Findings: Challenging situations affecting the kidney graft such as multiple vessels, renal artery aneurysms, kidney anatomical anomalies, or major injuries do not contraindicate the transplant, but require an exhaustive graft viability assessment and several bench surgery techniques. Graft vessel conditioning in the back-table might include simple anastomosis between them, enlarging with venous patch or reconstruction with donor or synthetic grafts. Compared with conventional transplant, literature reports longer warm ischemia time (40 vs 32 min) and slightly increased rates of delayed graft function (10.3% vs 8.2%) and vascular complications (10.8% vs 8.1%), but similar graft and patient survival.
Summary: Kidney graft vascular complex cases require exhaustive assessment, meticulous harvesting, good surgical technique in the bench table, and proper surgery in the recipient. Despite its complexity, vascular complex kidney transplant offers comparable outcomes in the long term to conventional population when technically well performed, with slightly increased rates of vascular complications and delayed graft function.

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Publisher
Springer
Year of Publication
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1092.

Neonatal Acute Kidney Injury: A Survey of Perceptions and Management Strategies Amongst Pediatricians and Neonatologists.
Kumar Sethi S., Agrawal G., Wazir S., Rohatgi S., Iyengar A., Chakraborty R., Jain R., Nair N., Sinha R., Chakrabarti R., Kumar D., Raina R.
Embase
Frontiers in Pediatrics. 7 (no pagination), 2020. Article Number: 553. Date of Publication: 14 Jan 2020.
[Article]
AN: 630725592
Background: Neonatal Acute Kidney Injury (AKI) occurs in 40-70% of critically ill newborn infants and is independently associated with increased morbidity and mortality. Understanding the practice patterns of physicians (neonatologists and pediatricians), caring for neonates in India is important to optimize care and outcomes in neonatal AKI.
Aim(s): The aim of this study was to identify differences in physician's perception and practice variations of diagnosis, management, and follow-up of newborn infants with AKI in India.
Method(s): An online survey of neonatologists and pediatricians in India caring for newborn infants with AKI.
Result(s): Out of 800 correspondents, 257 (135 neonatologists and 122 pediatricians) completed the survey, response rate being 32.1%. Resources available to the respondents included level III NICU (59%), neonatal surgery (60%), dialysis (11%), and extracorporeal membrane oxygenation (ECMO, 3%). Most respondents underestimated the risk of AKI due to various risk factors such as prematurity, asphyxia, sepsis, cardiac surgery, and medications. Less than half the respondents were aware of the AKIN or KDIGO criteria, which are the current standard criteria for defining neonatal AKI. Only half of the respondents were aware of the risk of CKD in preterm neonates and nearly half were unaware of the need to follow up with a pediatric nephrologist.
Conclusion(s): Similar to other regions worldwide, there exists a knowledge gap in early recognition, optimal management and follow up of newborn infants with AKI amongst Indian physicians.

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1093.

Big Data and Pediatric Acute Kidney Injury: The Promise of Electronic Health Record Systems.
Sutherland S.M.
Embase
Frontiers in Pediatrics. 7 (no pagination), 2020. Article Number: 536. Date of Publication: 14 Jan 2020.
[Review]
AN: 630721524
Over the last decade, our understanding of acute kidney injury (AKI) has evolved considerably. The development of a consensus definition standardized the approach to identifying and investigating AKI in children. As a result, pediatric AKI epidemiology has been refined and the consequences of renal injury are better established. Similarly, "big data" methodologies experienced a dramatic evolution and maturation, leading the critical care community to explore potential AKI/big data synergies. One such concept with tremendous potential is electronic health record (EHR) enabled informatics. Much of the promise surrounding these approaches is due to the unique position of the EHR which sits at the intersection of data accumulation and care delivery. EHR data is generated simply via the provision of routine clinical care and should be considered "big" from the standpoint of volume, variety, and velocity as a myriad of diverse elements accumulate rapidly in real time, spontaneously generating an immense dataset. This massive dataset interfaces directly with providers which creates tremendous opportunity. AKI can be diagnosed more accurately, AKI-related care can be optimized, and subsequent outcomes can be improved. Although applying big data concepts to the EHR has proven more challenging than originally thought, we have seen much success and continue to explore its potential. In this review article, we will discuss the EHR in the context of big data concepts, describe approaches applied to date, examine the challenges surrounding optimal application, and explore future directions.

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1094.

Obesity and the survival of critically ill patients with acute kidney injury: A paradox within the paradox?.
Schiffl H.
Embase
Kidney Diseases. 6(1) (pp 13-21), 2020. Date of Publication: 01 Jan 2020.
[Review]
AN: 629638996
The obesity epidemic is reflected by the rising number of obese patients requiring intensive care. Obesity is a recognized risk factor for the development of acute kidney injury (AKI) in critically ill patients. Both acute critical illness and AKI are associated with higher in-hospital mortality rates, and intensive care unit (ICU) patients suffering from AKI have an elevated risk of death. The relationships between obesity and mortality in critically ill paediatric and adult patients with or without AKI are less clear. Conflicting evidence exists regarding the potential impact of body mass index on the mortality of ICU patients with AKI. Some studies looking at the ICU outcomes of critically ill obese patients with AKI show reduced mortality and others show either no association or elevated mortality. Despite a high biologic plausibility of the proposed causal mechanisms, such as a greater haemodynamic stability and the protective cytokine, adipokine, and lipoprotein defence profiles associated with obesity, the inconsistency of the data suggests that the obesity paradox is a statistical fallacy and the result of chance, bias, and residual confounding variables in retrospective cohort analyses. Further prospective randomized trials are essential to elucidate the role of obesity and the mechanisms underlying a potential survival benefit of obesity in critically ill patients with AKI.

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Publisher
S. Karger AG
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1095.

Accidental bladder injury during elective inguinal hernia repair: a preventable complication with high morbidity.
Duess J.W., Schaller M.-C., Lacher M., Sorge I., Puri P., Gosemann J.-H.
Embase
Pediatric Surgery International. 36(2) (pp 235-239), 2020. Date of Publication: 01 Feb 2020.
[Article]
AN: 2003473640
Introduction: Bladder injury (BI) represents a rare complication of inguinal hernia surgery. Protrusions of the urinary bladder through the deep inguinal ring ("bladder ears") have been reported with an incidence of 9% in infants younger than 6 months of age and may be misinterpreted as the hernia sac. This literature review was designed to determine incidence and outcomes of bladder injuries during pediatric inguinal hernia repair.
Method(s): A literature review of the literature (1967-2017) was performed using the keywords "bladder ears", "inguinal hernia", "iatrogenic bladder injury" and "bladder hernia". Publications were reviewed for epidemiology, presentation and extent of injury, treatment and outcome.

Result(s): Thirteen articles reporting on 30 cases of BI during inguinal hernia repair from 1967 to 2017 were included (19 boys, 2 girls, 9 unknown). Median age at herniotomy was 10.5 months (1 month-6 years). Out of 30 children, 14 (47%) experienced mild complications. Sixteen patients (53%) had severe complications after initial surgery and needed revisional surgery. Complications were noticed up to 4 years after the initial surgery. In 9 (56%) of the 16 severe cases, major damage to the bladder wall and impairment of bladder capacity occurred. In seven patients (44%), secondary closure was successful. In ten patients (63%), the bladder was partially resected, and in one child (6%), the entire bladder was removed.
Conclusion(s): The degree of accidental BI during inguinal hernia repair was severe in in the majority of reported cases in the literature. Surgeons should be aware of the high prevalence of "bladder ears" in infants to prevent injury to the urinary tract.

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Publisher
Springer
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1096.

Acute kidney injury in the pediatric intensive care unit at a tertiary care hospital of the Armed Forces: a cross-sectional observational study.
Bajracharya P., Kalra S., Dhingra S., Sood A., Yadav A.K., Kanitkar M.
Embase
Medical Journal Armed Forces India. 76(1) (pp 84-88), 2020. Date of Publication: January 2020.
[Article]
AN: 2002033200
Background: Acute kidney injury (AKI) is shown to be the commonest complication in critically ill children admitted to the pediatric intensive care unit (PICU). Kidney Disease: Improving Global Outcomes (KDIGO) classification and definition are now used universally. We undertook prospective observational study to study the etiology and maximum stage of AKI as defined by KDIGO and its complications and outcomes.
Method(s): All children admitted to the PICU were included in the study. The diagnosis of sepsis and multiorgan dysfunction syndrome (MODS) was made according to the standard international guidelines. The patients were followed up till discharge/death. All children were screened for AKI at admission and subsequently using serum creatinine measured by modified Jaffe's method and urine output measurement.
Result(s): A total of 197 children were admitted to the PICU. 38 (19.28%) developed AKI, and 6 (15.78%) developed stage III AKI. Malignancies, serious neurological and renal disorders, and postsurgery complications accounted for most of the cases with AKI. Six were admitted with primary renal condition. Sepsis with or without MODS was seen in 12 patients with AKI and in 8

without AKI. Twenty-one children with AKI and 3 children without AKI were exposed to nephrotoxic drugs. Twenty-three children with AKI required inotropic support. The average length of stay (ALOS) of children with AKI in the PICU was 9.86 days, whereas ALOS of children without AKI was 6.23 days. Eighteen children with AKI (47.36%) and 36 (21.38%) with no AKI died. Conclusion(s): AKI in children in the PICUs of referral hospitals in the armed forces have varied etiologies and presentations. These children require early identification and management with close monitoring to prevent long-term renal morbidity and mortality.

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Elsevier B.V.
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1097.

Acute Kidney Injury is Associated with Poor Lung Outcomes in Infants Born >=32 Weeks of Gestational Age.
Starr M.C., Menon S., Hingorani S., Boohaker L., Askenazi D., Eldredge L.C., Griffin R., Mayock D.
Embase
American Journal of Perinatology. 37(2) (pp 231-239), 2020. Date of Publication: 2020.
[Article]
AN: 630664460
Objective aThis study aimed to evaluate the association between acute kidney injury (AKI) and lung outcomes in infants born >=32 weeks of gestational age (GA). Study Design aSecondary analysis of infants >=32 weeks of GA in the assessment of worldwide acute kidney injury epidemiology in neonates (AWAKEN) retrospective cohort (n = 1,348). We used logistic regression to assess association between AKI and a composite outcome of chronic lung disease (CLD) or death at 28 days of age and linear regression to evaluate association between AKI and duration of respiratory support. Results aCLD occurred in 82/1,348 (6.1%) infants, while death occurred in 22/1,348 (1.6%); the composite of CLD/death occurred in 104/1,348 (7.7%). Infants with AKI had an almost five-fold increased odds of CLD/death, which remained after controlling for GA, maternal polyhydramnios, multiple gestations, 5-minute Apgar's score, intubation, and hypoxic-ischemic encephalopathy (adjusted odds ratio [OR] = 4.9, 95% confidence interval [CI]: 3.2-7.4; p < 0.0001). Infants with AKI required longer duration of respiratory support (count ratio = 1.59, 95% CI: 1.14-2.23, p = 0.003) and oxygen (count ratio = 1.43, 95% CI: 1.22-1.68, p < 0.0001) compared with those without AKI. Conclusion aAKI is associated with CLD/death and

longer duration of respiratory support in infants born at >=32 weeks of GA. Further prospective studies are needed to elucidate the pathophysiologic relationship.

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Publisher
Thieme Medical Publishers, Inc. (E-mail: custserv@thieme.com)
Clinical Trial Number
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Year of Publication
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1098.

Delayed Umbilical Cord Clamping is Not Associated with Acute Kidney Injury in Very Low Birth Weight Neonates.
Harer M.W., McAdams R.M., Conaway M., Vergales B.D., Hyatt D.M., Charlton J.R.
Embase
American Journal of Perinatology. 37(2) (pp 210-215), 2020. Date of Publication: 2020.
[Article]
AN: 630664453
Objective This study aimed to determine if delayed cord clamping (DCC) is associated with a reduction in neonatal acute kidney injury (AKI). Study Design A retrospective single-center cohort study of 278 very low birth weight (VLBW) neonates was performed to compare the incidence of AKI in the following groups: immediate cord clamping (ICC), DCC, and umbilical cord milking. AKI was diagnosed by the modified neonatal Kidney Diseases and Improving Global Outcomes (KDIGO) definition. Results The incidence of AKI in the first week was 20.1% with no difference between groups (p = 0.78). After adjustment for potential confounders, the odds of developing AKI, following DCC, compared with ICC was 0.93 (confidence interval [CI]: 0.46-1.86) with no reduction in the stage of AKI between groups. Conclusion In this study, DCC was not associated with a reduced rate of AKI in VLBW neonates. However, the data suggest that DCC is also not harmful to the kidneys, further supporting the safety of DCC in VLBW neonates.

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Publisher
Thieme Medical Publishers, Inc. (E-mail: custserv@thieme.com)
Year of Publication
2020

1099.

The use of urinary biomarkers to predict acute kidney injury in children after liver transplant.
Fuhrman D.Y., Kellum J.A., Joyce E.L., Miyashita Y., Mazariegos G.V., Ganoza A., Squires J.E.
Embase
Pediatric Transplantation. 24(1) (no pagination), 2020. Article Number: e13608. Date of Publication: 01 Feb 2020.
[Article]
AN: 2003523857
Background: AKI after pediatric liver transplantation is associated with increased morbidity and mortality. The role of urinary biomarkers for the prediction of AKI in pediatric patients after liver transplantation has not been previously reported. The primary objective of this prospective pilot study was to determine the predictive capabilities of urinary KIM-1, NGAL, TIMP-2, and IGFBP7 for diagnosing AKI.
Method(s): Sixteen children undergoing liver transplantation were enrolled in the study over a 19-month time period. The Kidney Disease Improving Outcomes criteria for urine output and serum creatinine were used to define AKI. Predictive ability was evaluated using the area under the curve obtained by ROC analysis.
Result(s): AKI occurred in 6 (37.5%) of the patients between 2 and 4 days after transplant. There were no differences in any of the biomarkers prior to transplant. When obtained within 6 hours after transplant, the area under the ROC curve for predicting AKI was 0.758 (95% CI: 0.458-1.00) for KIM-1, 0.900 (95% CI: 0.724-1.00) for NGAL, and 0.933 (95% CI: 0.812-1.00) for the product of TIMP-2 and IGFBP7 ([TIMP-2].[IGFBP7]).
Conclusion(s): Our results show that both NGAL and [TIMP-2].[IGFBP7] provide significant discrimination for AKI risk following liver transplant in children. Larger studies are needed to determine the optimal time point for measuring these biomarkers and to validate our findings.

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Publisher
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Year of Publication
2020

1100.

Prognostic role of acute kidney injury on long-term outcome in infants with hypoxic-ischemic encephalopathy.
Cavallin F., Rubin G., Vidal E., Cainelli E., Bonadies L., Suppiej A., Trevisanuto D.
Embase
Pediatric Nephrology. 35(3) (pp 477-483), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 2003857447
Background: The objective of this study was to evaluate the prognostic role of postnatal acute kidney injury (AKI) on neurodevelopmental outcome in infants with hypoxic-ischemic encephalopathy (HIE) receiving therapeutic hypothermia (TH).
Method(s): This is a prospective observational study including all neonates with HIE receiving TH between 2009 and 2016 at a single center. AKI was classified according to the Kidney Disease: Improving Global Outcomes definition modified for neonatal age. Child development was assessed using the Griffiths Mental Development Scales (GMDS). Study outcome was defined as unfavorable outcome (including death or disability according to GMDS) or favorable otherwise, at 12 and 24 months.
Result(s): One-hundred and one neonates (median gestational age 39 weeks) were included. AKI was diagnosed in 10 neonates (10%). Seven patients died within the first year, 35 patients had disability at 12 months, and 45 patients at 24 months. AKI was associated with increased likelihood of unfavorable outcome at 24 months (100% vs. 59% in neonates without AKI; p = 0.01). AKI showed good positive predictive value (1.00, 95% CI 0.71-1.00) and specificity (1.00, 95% CI 0.88-1.00), but poor negative predictive value (0.41, 95% CI 0.30-0.52) and sensitivity (0.19, 95% CI 0.11-0.32) at 24 months.
Conclusion(s): AKI might be a reliable indicator of death or long-term disability in infants with HIE receiving TH, but the absence of AKI does not guarantee a favorable long-term outcome.

PMID
31828471 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31828471]
Status
Embase
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Publisher
Springer
Year of Publication
2020

1101.

Acute kidney injury risk-based screening in pediatric inpatients: a pragmatic randomized trial.
Van Driest S.L., Wang L., McLemore M.F., Bridges B.C., Fleming G.M., McGregor T.L., Jones D.P., Shirey-Rice J., Gatto C.L., Gay J.C., Byrne D.W., Weitkamp A., Roden D.M., Bernard G.
Embase
Pediatric Research. 87(1) (pp 118-124), 2020. Date of Publication: 01 Jan 2020.
[Article]
AN: 2002680171
Background: Pediatric acute kidney injury (AKI) is common and associated with increased morbidity, mortality, and length of stay. We performed a pragmatic randomized trial testing the hypothesis that AKI risk alerts increase AKI screening.
Method(s): All intensive care and ward admissions of children aged 28 days through 21 years without chronic kidney disease from 12/6/2016 to 11/1/2017 were included. The intervention alert displayed if calculated AKI risk was > 50% and no serum creatinine (SCr) was ordered within 24 h. The primary outcome was SCr testing within 48 h of AKI risk > 50%.
Result(s): Among intensive care admissions, 973/1909 (51%) were randomized to the intervention. Among those at risk, more SCr tests were ordered for the intervention group than for controls (418/606, 69% vs. 361/597, 60%, p = 0.002). AKI incidence and severity were the same in intervention and control groups. Among ward admissions, 5492/10997 (50%) were randomized to the intervention, and there were no differences between groups in SCr testing, AKI incidence, or severity of AKI.
Conclusion(s): Alerts based on real-time prediction of AKI risk increased screening rates in intensive care but not pediatric ward settings. Pragmatic clinical trials provide the opportunity to assess clinical decision support and potentially eliminate ineffective alerts.

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31454829 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31454829]
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Publisher
Springer Nature
Clinical Trial Number
https://clinicaltrials.gov/show/NCT02660931

Year of Publication
2020

1102.

A retrospective comparison of preoperative estimated glomerular filtration rate as a predictor of postoperative cardiac surgery associated acute kidney injury.
Reazaul Karim H., Yunus M., Dey S.
Embase
Annals of Cardiac Anaesthesia. 23(1) (pp 53-58), 2020. Date of Publication: January-March 2020.
[Article]
AN: 630647196
Background: Cardiac surgery-associated acute kidney injury (CSA-AKI) remains common with distressingly high mortality. Over time, risk scorings systems have been developed to predict it and preoperative low estimated glomerular filtration rate (eGFR) has been regarded as one of the predicting risk factors.
Objective(s): The present study is aimed at assessing the relation of different ranges of preoperative eGFR with an incidence of CSA-AKI defined by the AKI network (AKIN) criteria.
Material(s) and Method(s): Files of 134 patients with eGFR of >40 cc/min/1.73 m2 body surface area (BSA) who underwent cardiac surgeries on cardiopulmonary bypass were screened for data collection. Occurrences of CSA-AKI were evaluated as per the AKIN criteria over the course of 3 postoperative days. The relationships of different ranges of preoperative eGFR with CSA-AKI were analyzed by appropriate statistical tests using Instat software and P < 0.05 was considered statistically significant.
Result(s): A total of 60 males and 74 females with a mean + standard deviation (SD) age of 37.98 +/- 12.50 years and mean + SD preoperative eGFR of 70.20 +/- 20.89 cc/min/1.73 m2 were analyzed in this study. About 49.25% of patients suffered from CSA-AKI by the 3rd postoperative day. The crude risk of CSA-AKI in patients with eGFR 40-60 cc/min/1.73 m2 was not higher (odds ratio 0.29) as compared to patients in patients with eGFR >100 cc/min/1.73 m2. The CSA-AKI trend with different eGFR was also statistically insignificant (P > 0.05).
Conclusion(s): In patients with preoperative eGFR >40 cc/min/1.73 m2 BSA, a lower preoperative eGFR (40-60 cc/min/1.73 m2) does not predict higher incidence of CSA-AKI as defined by AKIN criteria as compared to higher preoperative eGFR (>100 cc/min/1.73 m2). Lower height is independently associated with higher incidence of CSA-AKI in such patients.

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31929248 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31929248]
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Publisher
Wolters Kluwer Medknow Publications (B9, Kanara Business Centre, off Link Road, Ghatkopar (E), Mumbai 400 075, India)
Year of Publication
2020

1103.

Glyphosate exposures and kidney injury biomarkers in infants and young children.
Trasande L., Aldana S.I., Trachtman H., Kannan K., Morrison D., Christakis D.A., Whitlock K., Messito M.J., Gross R.S., Karthikraj R., Sathyanarayana S.
Embase
Environmental Pollution. 256 (no pagination), 2020. Article Number: 113334. Date of Publication: January 2020.
[Article]
AN: 2003570594
The goal of this study was to assess biomarkers of exposure to glyphosate and assess potential associations with renal function in children. Glyphosate is used ubiquitously in agriculture worldwide. While previous studies have indicated that glyphosate may have nephrotoxic effects, few have examined potential effects on kidney function in children. We leveraged three cohorts across different phases of child development and measured urinary levels of glyphosate. We evaluated associations of glyphosate with three biomarkers of kidney injury: albuminuria (ACR), neutrophil gelatinase-associated lipocalin (NGAL), and kidney injury marker 1 (KIM-1). Multivariable regression analyses examined associations of glyphosate with kidney injury biomarkers controlling for covariates. We identified glyphosate in 11.1% of the total participants. The herbicide was detected more frequently in the neonate population (30%). Multivariable regression models failed to identify significant associations of log-transformed glyphosate with any of the kidney injury biomarkers, controlling for covariates age, sex, and maternal education. While we confirm detectability of glyphosate in children's urine at various ages and stages of life, there is no evidence in this study for renal injury in children exposed to low levels of glyphosate. Further studies of larger sample size are indicated to better understand putative deleterious effects of the herbicide after different levels of exposure. Glyphosate is detectable is the urine of 11% of infants and young children (30% of neonates). However, there is no association with albuminuria or biomarkers of renal tubular injury.

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31677874 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31677874]
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Publisher
Elsevier Ltd
Year of Publication
2020

1104.

Traumatic kidney injuries: A systematic review and meta-analysis.
Petrone P., Perez-Calvo J., Brathwaite C.E.M., Islam S., Joseph D.K.
Embase
International Journal of Surgery. 74 (pp 13-21), 2020. Date of Publication: February 2020.
[Article]
AN: 2004409623
Background: Traumatic kidney injury is an infrequent event with a wide range of injury patterns. The aim of this paper is to review the incidence, mechanisms of injury, diagnostic methods, and therapeutic indications of renal injury according to the most recent evidence and to perform an analysis of mortality rates on these patients.
Objective(s): To perform a systematic review of the literature and a meta-analysis on traumatic kidney injuries. Data sources: A literature search was performed using PubMed, Embase, and Scopus databases. Articles published in English, French and Spanish were selected from 1963 to 2018. MeSH terms utilized were renal trauma, kidney trauma, blunt renal trauma, and penetrating renal trauma. Study participants: The eligibility criteria included only original and human subject articles. Articles not involving human patients, cancer related, review articles, surveys, iatrogenic injuries, pediatric patients, and case reports were excluded from this search.
Result(s): Forty-six articles met the inclusion criteria of which 48,660 patients were identified and included in this review. Gender was reported in 32,918 cases, of which 75.3% of patients were male with a mean age of 33 years. Of the 44,865 patients where the mechanism of injury was described, we identified 36,086 (80.5%) patients that sustained blunt trauma, while 8,779 (19.5%) were due to penetrating mechanisms. Twenty one series with a total of 31,689 patients included the mortality rate. Overall mortality rate with exact binomial 95% confidence interval estimated via random effects model was 6.4% (4.8%-8.4%).
Conclusion(s): Non-operative management has become the standard in renal trauma management with good results in morbidity and mortality. This has resulted in a decrease in the number of unnecessary iatrogenic nephrectomies and potential improvement in a patient's quality of life. When an invasive treatment is necessary, angioembolization for active bleeding or nephrorrhaphy is usually sufficient.

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31870753 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31870753]
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Publisher
Elsevier Ltd
Year of Publication
2020

1105.

Acute kidney injury in hospitalized children: consequences and outcomes.
Uber A.M., Sutherland S.M.
Embase
Pediatric Nephrology. 35(2) (pp 213-220), 2020. Date of Publication: 01 Feb 2020.
[Review]
AN: 624774028
Over the past decade, the nephrology and critical care communities have adopted a consensus approach to diagnosing acute kidney injury (AKI) and, as a result, we have seen transformative changes in our understanding of pediatric AKI epidemiology. The data regarding outcomes among neonates and children who develop AKI have become far more robust and AKI has been clearly linked with an increased need for mechanical ventilation, longer inpatient stays, and higher mortality. Though AKI was historically thought to be self-limited, we now know that renal recovery is far from universal, particularly when AKI is severe; the absence of recovery from AKI also carries longitudinal prognostic implications. AKI survivors, especially those without full recovery, are at risk for chronic renal sequelae including proteinuria, hypertension, and chronic kidney disease. This review comprehensively describes AKI-related outcomes across the entire pediatric age spectrum, using the most rigorous studies to identify the independent effects of AKI events.

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30386936 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30386936]
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Publisher
Springer
Year of Publication
2020

1106.

Resuscitation Bundle in Pediatric Shock Decreases Acute Kidney Injury and Improves Outcomes.
Akcan Arikan A., Williams E.A., Graf J.M., Kennedy C.E., Patel B., Cruz A.T.
Embase
Journal of Pediatrics. (pp 1301-1305.e1), 2020. Date of Publication: 2020.
[Conference Paper]
AN: 607319971
Objective: To investigate the impact of an early emergency department (ED) protocol-driven resuscitation (septic shock protocol [SSP]) on the incidence of acute kidney injury (AKI). Study design: This was a retrospective pediatric cohort with clinical sepsis admitted to the pediatric intensive care unit (PICU) from the ED before (2009, PRE) and after (2010, POST) implementation of the SSP. AKI was defined by pRIFLE (pediatric version of the Risk of renal dysfunction; Injury to kidney; Failure of kidney function; Loss of kidney function, End-stage renal disease creatinine criteria).
Result(s): A total of 202 patients (PRE, n = 98; POST, n = 104) were included (53% male, mean age 7.7 +/- 5.6 years, mean Pediatric Logistic Organ Dysfunction [PELOD] 8.9 +/- 12.7, mean Pediatric Risk of Mortality score 5.3 +/- 13.9). There were no differences in demographics or

illness severity between the PRE and POST groups. POST was associated with decreased AKI (54% vs 29%, P < .001), renal-replacement therapy (4 vs 0, P = .04), PICU, and hospital lengths of stay (LOS) (1.9 +/- 2.3 vs 4.5 +/- 7.6, P < .01; 6.3 +/- 5.1 vs 15.3 +/- 16.9, P < .001, respectively), and mortality (10% vs 3%, P = .037). The SSP was independently associated with decreased AKI when we controlled for age, sex, and PELOD (OR 0.27, CI 0.13-0.56). In multivariate analyses, the SSP was independently associated with shorter PICU and hospital LOS when we controlled for AKI and PELOD (P = .02, P < .001, respectively).
Conclusion(s): A protocol-driven implementation of a resuscitation bundle in the pediatric ED decreased AKI and need for renal-replacement therapy, as well as PICU and hospital LOS and mortality.

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26411864 [https://www.ncbi.nlm.nih.gov/pubmed/?term=26411864]
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Article-in-Press
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Publisher
Mosby Inc.
Year of Publication
2020

1107.

Acute kidney injury and vancomycin/piperacillin/tazobactam in adult patients: a systematic review.
Ciarambino T., Giannico O.V., Campanile A., Tirelli P., Para O., Signoriello G., Giordano M.
Embase
Internal and emergency medicine. 15(2) (pp 327-331), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 630887688
The aim of this systematic review was to assess AKI (acute kidney injury) in adult patients, treated with vancomycin (V)+piperacillin/tazobactam (PT) compared to V monotherapy. Studies were found in Pubmed, Web of Science and Scopus databases. Articles not in English, pediatric studies and case reports were excluded. A study is eligible for inclusion if the adjusted Odds ratio (aOR) for AKI in V+PT compared to V monotherapy groups, could be extracted or determined from available data. Six retrospective cohort studies were eligible for inclusion criteria and so they were included in the analysis. All studies separately showed a significant higher risk of developing AKI (OR>1, p<0.05) in V+PT group compared to V monotherapy group. Considering the methodological difference of included studies, a random effect model was preferred. The model showed a pooled significant higher risk of developing AKI [OR 2.77 (95% CI 1.94, 3.96), p<0.0001] in V+PT group compared to V group. Association of V and PT appears to be associated with a greater risk of AKI compared to V in monotherapy. These results may serve as the impetus for further evaluation into true mechanisms behind this additive nephrotoxic effect and its potential implications on mortality.
PMID
32040830 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32040830]

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Publisher
NLM (Medline)
Year of Publication
2020

1108.

NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN AS AN EARLY BIOMARKER OF ACUTE KIDNEY INJURY IN NEWBORNS.
Naunova-Timovska S., Cekovska S., Sahpazova E., Tasic V.
Embase
Acta clinica Croatica. 59(1) (pp 55-62), 2020. Date of Publication: 01 Mar 2020.
[Article]
AN: 632480786
The aim of the study was to determine the incidence, risk factors and efficiency of the neutrophil gelatinase-associated lipocalin (NGAL) biomarker in early diagnosis of acute kidney injury (AKI) in newborns. The study was designed as a prospective, clinical, epidemiological investigation conducted in the period of three years, which included 50 newborns with AKI hospitalized in the Neonatal Intensive Care Unit, University Children's Hospital in Skopje. The estimated prevalence of AKI was 6.4%, while the prevalence according to RIFLE classification was 8.7%. Perinatal asphyxia was a common predisposing factor associated to kidney injury. The mortality rate was 32% and was significantly higher in the group of newborns with congenital heart diseases. There was a significant difference between NGAL values and creatinine values on the day of admission. There was a significant difference in NGAL values between newborns with AKI and lethal outcome and newborns without lethal outcome ($p<0.001$). In conclusion, AKI is a life-threatening condition. It is an independent contributor to mortality. Urinary NGAL is an early predictive biomarker of AKI in critically ill newborns.
PMID
32724275 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32724275]
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Publisher
NLM (Medline)
Year of Publication
2020

1109.

Correction to: An adolescent male with acute kidney injury: questions (Pediatric Nephrology, (2020), 10.1007/s00467-020-04497-4).
Dixon A., Styres C., Ashoor I., Craver R.
Embase
Pediatric Nephrology. (no pagination), 2020. Date of Publication: 2020.
[Erratum]
AN: 2005445484
The authors regret that the name of the author Randall Craver was incorrectly rendered as "Randall Carver." The original article has been corrected.

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32607772 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32607772]
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Article-in-Press
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Publisher
Springer
Year of Publication
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1110.

Correction to: An adolescent male with acute kidney injury: answers (Pediatric Nephrology, (2020), 35, 9, (1623-1624), 10.1007/s00467-020-04498-3).
Dixon A., Styres C., Ashoor I., Craver R.
Embase
Pediatric Nephrology. 35(9) (pp 1799), 2020. Date of Publication: 01 Sep 2020.
[Erratum]
AN: 2005283395
The authors regret that the name of the author Randall Craver was incorrectly rendered as "Randall Carver." The original article has been corrected.

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32572577 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32572577]
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Publisher
Springer
Year of Publication
2020

1111.

Corrigendum: The Application of External Ureteral Catheters in Children With Acute Kidney Injury Caused by Ceftriaxone-Induced Urolithiasis (Frontiers in Pediatrics, (2020), 8, 10.3389/fped.2020.00200).
Lin H., Geng H., Xu G., Fang X., He L., Xu M.
Embase
Frontiers in Pediatrics. 8 (no pagination), 2020. Article Number: 513. Date of Publication: 02 Sep 2020.
[Erratum]
AN: 632858736
The order of the authors was incorrectly listed as Maosheng Xu, Hongquan Geng, Guofeng Xu,Xiaoliang Fang, Lei He and Houwei Lin. The correct order is Houwei Lin, Hongquan Geng, Guofeng Xu, Xiaoliang Fang, Lei He and Maosheng Xu. The correct corresponding author is Maosheng Xu xumaosheng@xinhuamed.com.cn. The authors apologize for this error and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

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Publisher
Frontiers Media S.A. (E-mail: info@frontiersin.org)
Year of Publication
2020

1112.

Erratum: Short-term outcome associated with disease severity and electrolyte abnormalities among critically ill children with acute kidney injury (BMC Nephrology (2019) 20 (89) DOI: 10.1186/s12882-019-1278-1).
Safdar O.Y., Alhasan K.A., Shalaby M.A., Khathlan N., Al Rezgan S.A., Albanna A.S., Kari J.A.
Embase
BMC Nephrology. 21(1) (no pagination), 2020. Article Number: 137. Date of Publication: 16 Apr 2020.
[Erratum]
AN: 631656672
Following publication of the original article [1], we have been notified that there is a typo in the name of the first author. Incorrect: Osama Y Safder. Correct: Osama Y Safdar.

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32299381 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32299381]
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Publisher
BioMed Central Ltd. (E-mail: info@biomedcentral.com)
Year of Publication
2020

1113.

Novel biomarkers for prediction of acute kidney injury in acute heart failure.
Dankova M., Minarikova Z., Danko J., Gergel J., Pontuch P., Goncalvesova E.
Embase
Bratislavske lekarske listy. 121(5) (pp 321-324), 2020. Date of Publication: 2020.
[Article]
AN: 632869580
BJECTIVES: Acute kidney injury (AKI) is a frequent event in patients with an acute heart failure (AHF) and is associated with a poor short and long-term outcome. The aim of this study was to describe diagnostic yield of selected novel biomarkers in prediction of AKI in patients admitted for AHF.
METHOD(S): We performed a prospective cohort study of 72 consecutive patients (46/26 M/F) aged 69+/-10,3 years admitted for AHF. Renal damage was defined according to KDIGO guidelines. Patients were divided into the two groups: AKI- (without renal injury, n=52) and AKI+ (with renal injury, n=20). Urine samples for AKI biomarkers measurements (NGAL, TIMP2, IGFBP7) were collected at the admission. The ROC and linear logistic regression of new biomarkers and selected clinical variables was performed for the evaluation of the AKI prediction.
RESULT(S): The patients with AKI+ were older (median age: 75 vs 64 years, p=0.01), had lower BMI (median: 28 vs 29.5 kg/m2, p=0.04), were with a higher proportion of patients with HF with a reduced ejection fraction (55 % vs 23.1 %, p=0.01) and a higher level of serum NTproBNP. Urinary NGAL at admission was significantly higher in the AKI+ compared to the AKI - group (152 vs 19.5 ng/mL, p<0.0001); also median of u-TIMP-2 and u-IGFBP-7 in the AKI+ patients was significantly higher: 194.1 versus 42.5 ng/mL (p<0.0001) and 379 versus 92.4 pg/mL (p<0.0001) resp. Age, u-NGAL, u-TIMP2, u-IGFBP7, s-haemoglobin, NTproBNP and LVEF were associated with the development of AKI. Urine concentration of IGFBP-7 was measured, which is the best marker for the prediction of AKI (AUC 0.94).
CONCLUSION(S): Urine concentrations of NGAL, TIMP2, IGFBP7 at the time of admission for AHF predicted a development of AKI. Age, NTproBNP, LVEF and s-haemoglobin were also associated with AKI in AHF patients (Tab. 3, Fig. 3, Ref. 22). Text in PDF www.elis.sk Keywords: biomarkers, cardiorenal syndrome, acute heart failure.
PMID
32356427 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32356427]
Publisher
NLM (Medline)
Year of Publication
2020

1114.

Renal outcomes among snake-envenomed patients with acute kidney injury in southern India.
George TK, Toms AG, Fenn BN, Kumar V, Kavitha R, Georgy JT, Abraham G, Zachariah A
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
National Medical Journal of India. 32(1):5-8, 2019 Jan-Feb.
[Journal Article. Multicenter Study]
UI: 31823930
Background: . Acute kidney injury (AKI) is a common complication of snake envenomation. However, the long-term renal outcomes of such patients are not well defined. We aimed to determine the proportion of patients who developed AKI, characterize the presenting syndromes and ascertain the long-term resolution of AKI.
Methods: . We did a cohort study with prospective follow- up from two centres in southern India. All admitted patients >15 years of age with snake envenomation and serum creatinine >=1.5 mg/dl over the past 10 years were identified through their discharge summaries. These patients were prospectively contacted, interviewed telephonically and requested to come for a hospital review.
Results: . Of the 866 patients screened, 1 84 developed AKI (21.2%). Among these, 53% had combined renal, haematological and neurological manifestations; 33.6% required admission to the intensive care unit and 38% were dialysed. On follow-up of hospital records the creatinine of 49% of patients had normalized. Of those admitted, 36% were contacted and none had a known renal disease or were on dialysis. Among these, 16 patients came to the hospital for review and only 2 had an elevated creatinine. The total mortality was 1 4.
Conclusion: . AKI is an important cause of morbidity with snake envenomation and a proportion will require dialysis. The mortality in our study was low and long-term renal outcomes were relatively good.
Version ID
1
Status
MEDLINE
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Year of Publication
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1115.

Baseline tubular biomarkers in young adults with congenital heart disease as compared to healthy young adults: Detecting subclinical kidney injury.
Fuhrman DY, Nguyen L, Hindes M, Kellum JA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Congenital Heart Disease. 14(6):963-967, 2019 Nov.
[Journal Article]
UI: 31793232
BACKGROUND: There are significant implications for kidney disease in young adults with congenital heart disease. Prior investigations have not focused on the use of urinary tubular biomarkers for the early identification of kidney disease in this growing patient group.
OBJECTIVE: Determine if young adults with congenital heart disease have differences in the baseline concentration of urinary tubular biomarkers when compared to healthy young adults.
DESIGN/METHODS: In a pilot case control study, 30 patients from 18 to 35 years of age with congenital heart disease and a normal serum creatinine were recruited during a routine follow-up visit. In the same age group, 30 control subjects without history of heart or kidney disease were recruited. Urine samples were obtained to measure beta 2-microglobin, alpha 1-microglobin, N-acetyl-B-D-glucosaminidase, liver fatty acid binding protein, kidney injury molecule-1, insulin-like growth factor binding protein 7, and tissue inhibitor of metalloproteinases-2. Comparisons were done using Wilcoxon rank-sum or Fisher's exact test.
RESULTS: No study participants had proteinuria on urine dipstick. Median concentrations of kidney injury molecule-1 were higher (P = .01) and concentrations of insulin-like growth factor binding protein 7 (P = .001) and tissue inhibitor of metalloproteinases-2 (P = .009) were lower in the subjects with congenital heart disease when compared to the control subjects. There were no significant differences between the groups with respect to the other biomarkers.
CONCLUSION: Our data suggest that young adults with congenital heart disease may have subclinical kidney dysfunction. Lower levels of insulin-like growth factor binding protein 7 and tissue inhibitor of metalloproteinases-2 may indicate an impaired ability to respond to injury, while higher levels of kidney injury molecule-1 may reflect early tubular injury.

Version ID
1
Status
MEDLINE
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Year of Publication
2019

1116.

Acute kidney injury in children after cardiac surgery: Risk factors and outcomes. A retrospective, cohort study. Lesion renal aguda en ninos poscirugia cardiaca: factores de riesgo e impacto evolutivo. Estudio de cohorte retrospectiva. <Lesion renal aguda en ninos poscirugia cardiaca: factores de riesgo e impacto evolutivo. Estudio de cohorte retrospectiva.>
Graziani MP, Moser M, Bozzola CM, Galvez HM, Irman Garrido J, Alvarez PG, Fernie ML
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Archivos Argentinos de Pediatria. 117(6):e557-e567, 2019 12 01.
[Journal Article. Observational Study]
UI: 31758882
INTRODUCTION: Acute kidney injury (AKI) has been described as a common complication of cardiac surgery in pediatric patients, whose impact on morbidity and mortality has been documented. Its incidence has been estimated to be approximately 40 % in this patient group. The objective of this study was to estimate the incidence of AKI in patients who underwent cardiovascular surgery and to define associated risk factors and the impact of AKI on the parameters of the postoperative course.
POPULATION AND METHODS: This was a retrospective, observational study of pediatric patients who underwent cardiovascular surgery between January 2015 and December 2017 at Hospital Britanico de Buenos Aires. The incidence of AKI was defined as per the Kidney Disease: Improving Global Outcomes criteria, based on pre- and post-operative blood creatinine levels and urine output.
RESULTS: A total of 125 patients were included. Of them, 35 % developed AKI. The analysis of risk factors showed a statistically significant difference for the administration of vancomycin and thiazide diuretics, red blood cell transfusion requirement, extracorporeal circulation pump time, clamp time, maximal intraoperative lactate level, minimum temperature, and delayed chest closure. In relation to the parameters of the post-operative course, we observed a longer hospital stay, higher inotropic requirement, more days of mechanical ventilation, bleeding, and neurological complications.
CONCLUSION: In this study, the incidence of AKI was 35 %. Modifiable and non-modifiable associated risk factors were defined and a greater rate of complications was observed in patients who developed AKI.

Version ID
1
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Collaborator Alias
plain-language-summary
Introduccion. La lesion renal aguda (LRA) ha sido descrita como una complicacion frecuente de las cirugias cardiacas en pacientes pediatricos, con impacto documentado en la morbimortalidad. Se estima una incidencia de alrededor del 40 % en este grupo de pacientes. El objetivo del trabajo fue calcular la incidencia de LRA en pacientes que tuvieron cirugia cardiovascular, definir los factores de riesgo asociados y el impacto de la LRA en los parametros de evolucion posquirurgica. Poblacion y metodos: Se realizo un estudio retrospectivo observacional sobre pacientes pediatricos con cirugias cardiovasculares, operados entre enero de 2015 y diciembre de 2017 en el Hospital Britanico de Buenos Aires. Se definio la incidencia de LRA segun los criterios de Kidney Disease: Improving Global Outcomes, considerando los valores de creatininemia y ritmo diuretico pre- y posquirurgicos. Resultados. Se incluyeron un total de 125 pacientes. Un 35 % desarrollo LRA. Al analizar los factores de riesgo, se observo una diferencia estadisticamente significativa para administracion de vancomicina, diureticos tiazidicos, requerimiento transfusional de globulos rojos, tiempo de bomba de circulacion extracorporea, de clampeo, lactato maximo intraquirurgico, temperatura minima y cierre diferido del torax. Entre los parametros de evolucion posquirurgica, se observo un incremento en la duracion de la internacion, requerimiento de inotropicos, dias de asistencia respiratoria mecanica, sangrado y complicaciones neurologicas. Conclusion. La incidencia de LRA en este estudio fue del 35 %. Se pudieron definir factores de riesgo modificables y no modificables asociados, y se detecto una mayor incidencia de complicaciones en aquellos pacientes que desarrollaron LRA.
Language: Spanish
Year of Publication
2019

1117.

EPILAT-IRA Study: A contribution to the understanding of the epidemiology of acute kidney injury in Latin America.
Lombardi R, Ferreiro A, Claure-Del Granado R, Burdmann EA, Rosa-Diez G, Yu L, Younes-Ibrahim M, Carlino C, Chavez-Iniguez JS, Pereira MB, Varela CF, Zamoner W, Janiques D, Lecueder S, Cerron-Millan V, Cueto-Manzano A
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
PLoS ONE [Electronic Resource]. 14(11):e0224655, 2019.
[Clinical Trial. Journal Article. Multicenter Study. Observational Study. Research Support, Non-U.S. Gov't]
UI: 31725746
INTRODUCTION: Epidemiology of acute kidney injury (AKI) is highly dependent on patient characteristics, context and geography. Considering the limited information in Latin America and the Caribbean, we performed a study with the aim to contribute to improve its better understanding.

METHODS: Observational, prospective, longitudinal, multinational cohort study addressed to determine risk factors, clinical profile, process of care and outcomes of AKI in the region. Patients meeting KDIGO AKI definition were included over a 9-month period and designated community or hospital-acquired. De-identified clinical and lab data were entered in a specifically designed on-line platform. Co-variables potentially linked to AKI onset, in-hospital and 90-days mortality, were recorded and correlated using a multiple logistic regression model.
RESULTS: Fifty-seven physicians from 15 countries provided data on 905 patients, most with acceptable basic needs coverage. Median age 64 (50-74) yrs; most of them were male (61%) and mestizos (42%). Comorbidities were present in 77%. AKI was community-acquired in 62%. Dehydration, shock and nephrotoxic drugs were the commonest causes. During their process of care, 77% of patients were assessed by nephrologists. Kidney replacement therapy (KRT) was performed in 29% of cases. In-hospital mortality was 26.5% and independently associated to older age, chronic liver disease, hypotension, shock, cardiac disturbances, hospital-acquired sepsis, KRT and mechanical ventilation. At 90-days follow up partial or complete renal recovery was 81% and mortality 24%.
CONCLUSIONS: AKI was mainly community-acquired, in patients with comorbidities and linked to fluid loss and nephrotoxic drugs. Mortality was high and long-term follow up poor. Notwithstanding, the study shows partially the situation in the participant countries rather than the actual epidemiology of AKI in Latin America and Caribbean, a pending and needed task.
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1
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Clinical Trial Number
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6855418
Year of Publication
2019

1118.

Longitudinal associations of active renal disease with irreversible organ damage accrual in systemic lupus erythematosus.
Kandane-Rathnayake R, Kent JR, Louthrenoo W, Luo SF, Wu YJ, Lateef A, Golder V, Sockalingam S, Navarra SA, Zamora L, Hamijoyo L, Katsumata Y, Harigai M, Chan M, O'Neill S, Goldblatt F, Lau CS, Hoi A, Nikpour M, Morand E
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Lupus. 28(14):1669-1677, 2019 Dec.
[Journal Article. Multicenter Study]
UI: 31718467
OBJECTIVE: To examine longitudinal associations of active lupus nephritis with organ damage accrual in patients with systemic lupus erythematosus (SLE).
METHODS: This study was performed using data from a large multinational prospective cohort. Active lupus nephritis at any visit was defined by the presence of urinary casts, proteinuria, haematuria or pyuria, as indicated by the cut-offs in the SLE Disease Activity Index (SLEDAI)-2K, collected at each visit. Organ damage accrual was defined as a change of SLICC-ACR Damage Index (SDI) score >0 units between baseline and final annual visits. Renal damage accrual was defined if there was new damage recorded in renal SDI domains (estimated glomerular filtration rate <50%/proteinuria >3.5 g per 24 h/end-stage kidney disease). Time-dependent hazard regression analyses were used to examine the associations between active lupus nephritis and damage accrual.
RESULTS: Patients (N = 1735) were studied during 12,717 visits for a median (inter-quartile range) follow-up period of 795 (532, 1087) days. Forty per cent of patients had evidence of active lupus nephritis at least once during the study period, and active lupus nephritis was observed in 3030 (24%) visits. Forty-eight per cent of patients had organ damage at baseline and 14% accrued organ damage. Patients with active lupus nephritis were 52% more likely to accrue any organ damage compared with those without active lupus nephritis (adjusted hazard ratio = 1.52 (95% confidence interval (CI): 1.16, 1.97), $p < 0.02$). Active lupus nephritis was strongly associated with damage accrual in renal but not in non-renal organ domains (hazard ratios = 13.0 (95% CI: 6.58, 25.5) $p < 0.001$ and 0.96 (95% CI: 0.69, 1.32) $p = 0.8$, respectively). There was no effect of ethnicity on renal damage accrual, but Asian ethnicity was significantly associated with reduced non-renal damage accrual.
CONCLUSION: Active lupus nephritis measured using the SLEDAI-2K domain cut-offs is associated with renal, but not non-renal, damage accrual in SLE.
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Year of Publication
2019

1119.

Intravascular Iodinated Contrast Is an Independent Cause of Acute Kidney Injury Following Coronary Angiography.
Tandukar S, Rondon-Berrios H, Weisbord SD
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Southern Medical Journal. 112(10):541-546, 2019 10.
[Journal Article]
UI: 31583416
OBJECTIVES: Recent studies have questioned whether intravascular iodinated contrast remains an independent cause of acute kidney injury (AKI). We sought to assess whether iodinated contrast administered during coronary angiography is an independent cause of AKI.
METHODS: We identified all of the patients who underwent coronary angiography between July 1, 2015 and June 30, 2017 with a discharge diagnosis of AKI that developed within 7 days following angiography. Using chart review, we categorized patients as having multifactorial AKI if >=1 insults other than intravascular contrast potentially contributed to kidney injury or contrast-

induced AKI (CI-AKI) if the only insult was contrast administration. We compared the severity of AKI and renal function upon discharge between patients with CI-AKI and multifactorial AKI. RESULTS: We identified 78 patients who experienced AKI within 7 days following angiography, 10 (13%) of whom had CI-AKI and 68 of whom (87%) experienced multifactorial AKI. Nine (90%) patients with CI-AKI manifested stage 1 disease, 1 (10%) had stage 2 disease, and 9 (90%) experienced full recovery of kidney function. More patients with multifactorial AKI developed stage 2 or 3 disease (42% vs 10%, chi2 = 3.73, P = 0.05) and experienced either partial recovery of kidney function or persistent kidney impairment compared with patients with CI-AKI (25% vs 10%, chi2 = 1.9, P = 0.17), although the latter comparison was not statistically significant. CONCLUSIONS: The intravascular administration of iodinated contrast remains an independent cause of AKI. Compared with those with multifactorial AKI, patients with CI-AKI appear to be more likely to experience mild decrements in kidney function that recover completely.
Version ID
1
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Year of Publication
2019

1120.

Renal trauma: a 6-year retrospective review from a level 1 trauma center in Denmark.
Maibom SL, Holm ML, Rasmussen NK, Germer U, Joensen UN
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Scandinavian Journal of Urology. 53(6):398-402, 2019 Dec.
[Journal Article]
UI: 31578115
Background: Management of renal trauma injuries is shifting towards more conservative approaches in hemodynamically stable adult patients, even for high grade and/or penetrating trauma. The objective of this study was to analyze the patterns of injury, management and complications in renal trauma patients at a Danish university hospital with a level 1 trauma center. Method: Patients diagnosed with renal trauma at Rigshospitalet, Copenhagen, Denmark, between January 2010 and December 2015 were identified retrospectively by the ICD-10 code. Data were collected from electronic patient records. Imaging was classified by radiologists. Results: Out of 107 patients identified, blunt injuries comprised 93%. Median age was 28. The distribution of injury grade according to AAST was 20% grade I, 4% grade II, 33% grade III, 33% grade IV and 10% grade V. All patients with grade I-III were managed conservatively. Two patients were treated with angioembolization (1 with grade IV and 1 with grade V). Five patients with grade IV were treated with an internal ureteral stent and one patient with grade IV blunt trauma had an emergency nephrectomy performed. Overall complication rate was 7%. No patient died due to their renal injury. Renal function was normal in all patients at discharge, assessed by eGFR measurement. Of the 50% of patients who were followed up with a renography, none developed obstruction due to the renal trauma. Conclusion: The vast majority of renal injuries

were due to blunt trauma. Hemodynamically stable patients, even with penetrating and/or high-grade blunt trauma, were managed non-operatively and there was a low rate of complications.
Version ID
1
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Year of Publication
2019

1121.

Cathelicidin attenuates hyperoxia-induced kidney injury in newborn rats.
Chou HC, Chen CM
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Renal Failure. 41(1):733-741, 2019 Nov.
[Journal Article]
UI: 31424299
Aim: Supplemental oxygen is often used to treat neonates with respiratory disorders. Human and animal studies have demonstrated that neonatal hyperoxia increases oxidative stress and induces damage and collagen deposition in kidney during the perinatal period. Cathelicidin LL-37 is one important group of human antimicrobial peptides which exhibits antioxidant activity and its overexpression resists hyperoxia-induced oxidative stress. This study was designed to evaluate the protective effects of cathelicidin in hyperoxia-induced kidney injury in newborn rats.
Methods: Sprague-Dawley rat pups were reared in either room air (RA) or hyperoxia (85% O2) and were randomly treated with low-dose (4 mg/kg) and high-dose (8 mg/kg) cathelicidin in normal saline (NS) administered intraperitoneally on postnatal days 1-6. The following six groups were obtained: RA + NS, RA + low-dose cathelicidin, RA + high-dose cathelicidin, O2 + NS, O2 + low-dose cathelicidin, and O2 + high-dose cathelicidin. Kidneys were taken for Western blot and histological analyses on postnatal day 7.
Results: The hyperoxia-reared rats exhibited significantly lower body weights and anti-inflammatory M2 macrophages, but the kidney injury scores, oxidative stress marker 8-hydroxy-2'-deoxyguanosine (8-OHdG)-positive cells, pro-inflammatory M1 macrophages, collagen deposition, and NF-kappaB expression were higher than did the RA-reared rats.
Conclusions: Cathelicidin treatment attenuated kidney injury as evidenced by lower kidney injury scores, 8-OHdG-positive cells, collagen deposition, and reversion of hyperoxia-induced M1/M2 macrophage polarization. The role of Cathelicidin in ameliorates kidney injury of the hyperoxia newborn rats was accompanied by decreased NF-kappaB expression, which probably through the modulating NF-kappaB activity in the kidney.
Version ID
1
Status
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6713131
Year of Publication
2019

1122.

Create a predictive model for neurogenic bladder patients: upper urinary tract damage predictive nomogram.
Wang W, Fang H, Xie P, Cao Q, He L, Cai W
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
International Journal of Neuroscience. 129(12):1240-1246, 2019 Dec.
[Journal Article]
UI: 31401918
Objective: To create a nomogram to evaluate the risk of upper urinary tract damage (UUTD) in patients with neurogenic bladder (NGB) Methods: A retrospective analysis was conducted on 301 patients with NGB who were admitted to certain hospitals. Data collected included clinical symptoms, patients' characteristics, laboratory parameters, imaging findings, and urodynamic parameters. The least absolute shrinkage and selection operator(LASSO)regression model was used to optimise the selection of predictors. Multivariate logistic regression analysis was performed to develop a UUTD risk predictive model. Validation was performed by bootstrap. Results: The predictors included in the nomogram included sex, duration of disease, history of UTI, bladder compliance, and fecal incontinence. The model presented good discrimination with a C-index value of 0.796 (95% confidence interval: 0.74896-0.84304) and good calibration. The C-index value of the interval validation was 0.7872112. The results of decision curve analysis (DCA) demonstrated that the UUTD-risk predictive nomogram was clinically useful. Conclusion: The nomogram incorporating the sex, duration of disease, history of UTI, bladder compliance, and fecal incontinence could be an important tool of UUTD risk prediction in NGB patients.
Version ID
1
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Year of Publication
2019

1123.

Impact of total body weight on rate of acute kidney injury in patients treated with piperacillin-tazobactam and vancomycin.
Rutter WC, Hall RG, Burgess DS
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
American Journal of Health-System Pharmacy. 76(16):1211-1217, 2019 Aug 01.
[Journal Article]
UI: 31369116
PURPOSE: Results of a study to determine whether obesity is associated with acute kidney injury (AKI) among patients receiving combination therapy with piperacillin-tazobactam and vancomycin are reported.
METHODS: A retrospective, single-center cohort study of patients who received combination therapy for at least 48 hours was conducted using data from the University of Kentucky Center for Clinical and Translational Science's Enterprise Data Trust. Patients with chronic kidney disease, baseline creatinine clearance of less than 30 mL/min, cystic fibrosis, or missing height or weight information were excluded.
RESULTS: A total of 8,125 patients were included in the cohort. Among the variables evaluated, total body weight of 91 kg or more was the variable most predictive of AKI. Patients with a weight of 91 kg or higher were more likely than lower-weight patients to have diabetes (39% versus 21%, $p < 0.00001$), hypertension (64% versus 47%, $p < 0.00001$), and heart failure (15% versus 13%, $p = 0.007$). The median daily vancomcyin dose was lower in patients with a weight of less than 91 kg (2,000 mg versus 3,000 mg, $p < 0.00001$); however, weight-based doses were lower in patients weighing 91 kg or more (25.5 mg/kg/day versus 27.9 mg/kg/day, $p < 0.00001$). AKI was more common in patients weighing 91 kg or more (24% versus 18%, $p < 0.00001$; adjusted odds ratio, 1.46 [95% confidence interval, 1.28-1.66]).
CONCLUSION: Increased total body weight increased the rate of AKI among patients concurrently treated with piperacillin-tazobactam and vancomycin independent of clinically important confounders, with an important breakpoint occurring at 91 kg.

Version ID
1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6669404
Year of Publication
2019

1124.

A clinically applicable approach to continuous prediction of future acute kidney injury.
Tomasev N, Glorot X, Rae JW, Zielinski M, Askham H, Saraiva A, Mottram A, Meyer C, Ravuri S, Protsyuk I, Connell A, Hughes CO, Karthikesalingam A, Cornebise J, Montgomery H, Rees G, Laing C, Baker CR, Peterson K, Reeves R, Hassabis D, King D, Suleyman M, Back T, Nielson C, Ledsam JR, Mohamed S
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Nature. 572(7767):116-119, 2019 08.
[Journal Article]
UI: 31367026
The early prediction of deterioration could have an important role in supporting healthcare professionals, as an estimated 11% of deaths in hospital follow a failure to promptly recognize and treat deteriorating patients1. To achieve this goal requires predictions of patient risk that are continuously updated and accurate, and delivered at an individual level with sufficient context and enough time to act. Here we develop a deep learning approach for the continuous risk prediction of future deterioration in patients, building on recent work that models adverse events from electronic health records2-17 and using acute kidney injury-a common and potentially life-threatening condition18-as an exemplar. Our model was developed on a large, longitudinal dataset of electronic health records that cover diverse clinical environments, comprising 703,782 adult patients across 172 inpatient and 1,062 outpatient sites. Our model predicts 55.8% of all inpatient episodes of acute kidney injury, and 90.2% of all acute kidney injuries that required subsequent administration of dialysis, with a lead time of up to 48 h and a ratio of 2 false alerts for every true alert. In addition to predicting future acute kidney injury, our model provides confidence assessments and a list of the clinical features that are most salient to each prediction, alongside predicted future trajectories for clinically relevant blood tests9. Although the recognition and prompt treatment of acute kidney injury is known to be challenging, our approach may offer opportunities for identifying patients at risk within a time window that enables early treatment.
Version ID
1
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MEDLINE
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1125.

Association between simple renal cyst and kidney damage in a Chinese cohort study.
Chen J, Ma X, Xu D, Cao W, Kong X
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Renal Failure. 41(1):600-606, 2019 Nov.
[Journal Article]
UI: 31282239
Background: The presence of simple renal cyst (SRC) has been associated to renal dysfunction, but the results were inconsistent. Accordingly, we conducted a longitudinal cohort study to explore the association between SRC and kidney damage.
Methods: A total of 4274 adults (aged 45.4 +/- 13.6 years) without chronic kidney disease at baseline were enrolled in 2008. SRC was assessed by ultrasonography. Logistic regression analysis were applied to explore the relationships between SRC and indicators of kidney damage (proteinuria and renal insufficiency), and also with relatively rapid decline in renal function (defined as the lowest quartile of eGFR). Results: During 5 years of follow-up, participants in the SRC group had higher incidence of proteinuria (5.2% versus 2.4%, p = 0.004) and renal insufficiency (3.8% versus 0.97%, p < 0.001) compared with control group. SRC was correlated with proteinuria (OR 2.24; 95% CI 1.34-3.75) and renal insufficiency (OR 4.0; 95% CI 2.11-7.58) in univariable analysis, despite that the correlation was not significant after adjusted for traditional

kidney disease risk factors. Furthermore, after adjusted for potential confounders, maximum diameter of the cyst (>=2.2 cm) was significantly associated with rapid decline in renal function (OR 2.19; 95% CI 1.24-3.87). Conclusions: Participants with SRC may be associated with higher incidence of proteinuria and renal insufficiency. This relationship may be obscured by age and other traditional risk factors. Higher diameter of the cysts contributed to more rapid decline in renal function of SRC participants.
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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6691781
Year of Publication
2019

1126.

Mortality of leptospirosis associated acute kidney injury (LAKI) & predictors for its development in adults: A systematic review.
Al Hariri YK, Sulaiman SAS, Khan AH, Adnan AS, Al Ebrahem SQ
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Infection and Public Health. 12(6):751-759, 2019 Nov - Dec.
[Journal Article. Systematic Review]
UI: 31281106
Leptospirosis is the most widely spread zoonosis and Leptospirosis Associated Acute Kidney Injury (LAKI) is common and fatal if not properly and swiftly treated. The aim of this review is to evaluate the mortality of LAKI and to identify the risk factors for its development. An electronic search was performed to identify the studies included LAKI patients series. Only studies which investigated mortality or risk factors for LAKI development in adults were included. Twenty-three studies with 24 patients series were included in the final analysis and included 1698 patients. The median series mortality was 10.05% (range 0-33.3%) with a total of 223 death. Only four studies identified the independent risk factors for LAKI development which were oliguria, jaundice, arrhythmia, crackles, elevated direct bilirubin level, elevated activated prothrombin time, hyperbilirubinemia and leukocytosis. Although the mortality of LAKI is high, its predictors are not studied enough in literature.

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1

Status
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Year of Publication
2019

1127.

Evaluation of Benzene Exposure and Early Biomarkers of Kidney Damage in Children Exposed to Solvents Due to Precarious Work in Ticul, Yucatan, Mexico.
Perez-Herrera N, Diaz de Leon-Martinez L, Flores-Ramirez R, Barbier O, Ortega-Romero M, May-Euan F, Saldana-Villanueva K, Perera-Rios J, Perez-Vazquez FJ
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Annals of Global Health. 85(1), 2019 07 03.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 31276330
BACKGROUND: The child labor situation has been associated with precarious job conditions and poor health conditions because children are often exposed to unsafe work environments, stressful psycho-social work conditions, scarce or no access to protective services, and heavy work burdens.
OBJECTIVE: The aim of the study was to evaluate markers of exposure to benzene through the exposure biomarker trans, trans-muconic acid (tt-MA), and biomarkers of early renal damage in children who work in sites that are under precarious job conditions.
METHOD: Samples of urine were obtained from children (aged 6-12 years old) who resided in Ticul, Yucatan, Mexico. Exposure to benzene was assessed through trans, trans-muconic acid (t,t-MA). Evaluated renal damage biomarkers were: Cystatin-C (Cys-C), Osteopontin (OPN), alpha1-Microglobulin (alpha1-MG) and Neutrophil Gelatinase-Associated Lipocalin (NGAL).
FINDINGS: Children who live where the workplace is inside the dwelling presented higher mean levels of tt-MA (0.59 mg/g creatinine) compared with those who live away from the workshops (0.19 mg/g creatinine). Likewise, mean levels of NGAL (4.7, 5.2 ng/ml), albuminuria (10, 10 ng/ml), Cys-C (11.8, 7.5 ng/ml), OPN (224.4, 226.5 ng/ml) and alpha1-MG (96.6, 73.6 ng/ml) were found in children where the workplace was inside the dwelling and outside, respectively.
CONCLUSION: Our data indicate that the children who work under precarious job conditions are exposed to benzene, and they exhibit protein levels that suggest renal damage in a population in precarious working conditions. Therefore, the child population should be considered as the most vulnerable and susceptible to suffer adverse health effects.

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1
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6634607
Year of Publication
2019

1128.

Biomarker Predictors of Adverse Acute Kidney Injury Outcomes in Critically Ill Patients: The Dublin Acute Biomarker Group Evaluation Study.
McMahon BA, Galligan M, Redahan L, Martin T, Meaney E, Cotter EJ, Murphy N, Hannon C, Doran P, Marsh B, Nichol A, Murray PT
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
American Journal of Nephrology. 50(1):19-28, 2019.
[Journal Article. Multicenter Study. Observational Study. Research Support, Non-U.S. Gov't]
UI: 31203271
BACKGROUND: The Dublin Acute Biomarker Group Evaluation (DAMAGE) Study is a prospective 2-center observational study investigating the utility of urinary biomarker combinations for the diagnostic and prognostic assessment of acute kidney injury (AKI) in a heterogeneous adult intensive care unit (ICU) population. The objective of this study is to

evaluate whether serial urinary biomarker measurements, in combination with a simple clinical model, could improve biomarker performance in the diagnostic prediction of severe AKI and clinical outcomes such as death and need for renal replacement therapy (RRT).
METHODS: Urine was collected daily from patients admitted to the ICU, for a total of 7 post-admission days. Urine biomarker concentrations (neutrophil gelatinase-associated lipocalin [NGAL], alpha-glutathione S-transferase [GST], pi-GST, kidney injury molecule-1 [KIM-1], liver-type fatty acid-binding protein [L-FABP], Cystatin C, creatinine, and albumin) were measured. Urine biomarkers were combined with a clinical prediction of AKI model, to determine ability to predict AKI (any stage, within 2 days or 7 days of ICU admission), or a -30-day composite clinical outcome (RRT - or death).
RESULTS: A total of 257 (38%) patients developed AKI within 7 days of ICU admission. Of those who developed AKI, 106 (41%) patients met stage 3 AKI within 7 days of ICU admission and 208 patients of the entire study cohort (31%) met the composite clinical endpoint of in-hospital mortality or RRT within 30 days of ICU admission. The addition of urinary NGAL/albumin to the clinical model modestly improved the prediction of AKI, in particular severe stage 3 AKI (area under the curve [AUC] of 0.9 from 0.87, p = 0.369) and the prediction of 30-day RRT or death (AUC 0.83 from 0.79, p = 0.139).
CONCLUSION: A clinical model incorporating severity of illness, patient demographics, and chronic illness with currently available clinical biomarkers of renal function was strongly predictive of development of AKI and associated clinical outcomes in a heterogeneous adult ICU population. The addition of urinary NGAL/albumin to this simple clinical model improved the prediction of severe AKI, need for RRT and death, but not at a statistically or clinically significant level, when compared to the clinical model alone.

Version ID
1
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Year of Publication
2019

1129.

Acute Kidney Injury With Ventricular Assist Device Placement: National Estimates of Trends and Outcomes.
Walther CP, Winkelmayer WC, Niu J, Cheema FH, Nair AP, Morgan JA, Fedson SE, Deswal A, Navaneethan SD
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
American Journal of Kidney Diseases. 74(5):650-658, 2019 11.
[Journal Article. Multicenter Study]
UI: 31160142
RATIONALE & OBJECTIVE: Ventricular assist devices (VADs) are used for end-stage heart failure not amenable to medical therapy. Acute kidney injury (AKI) in this setting is common due to heart failure decompensation, surgical stress, and other factors. Little is known about national trends in AKI diagnosis and AKI requiring dialysis (AKI-D) and associated outcomes with VAD implantation. We investigated national estimates and trends for diagnosed AKI, AKI-D, and associated patient and resource utilization outcomes in hospitalizations in which implantable VADs were placed.
STUDY DESIGN: Cohort study of 20% stratified sample of US hospitalizations.
SETTING & PARTICIPANTS: Patients who underwent implantable VAD placement in 2006 to 2015.
EXPOSURE: No AKI diagnosis, AKI without dialysis, AKI-D.
OUTCOMES: In-hospital mortality, length of stay, estimated hospitalization costs.
ANALYTICAL APPROACH: Multivariate logistic and linear regression using survey design methods to account for stratification, clustering, and weighting.
RESULTS: An estimated 24,140 implantable VADs were placed, increasing from 853 in 2006 to 3,945 in 2015. AKI was diagnosed in 56.1% of hospitalizations and AKI-D occurred in 6.5%. AKI diagnosis increased from 44.0% in 2006 to 2007 to 61.7% in 2014 to 2015; AKI-D declined from 9.3% in 2006 to 2007 to 5.2% in 2014 to 2015. Mortality declined in all AKI categories but this varied by category: those with AKI-D had the smallest decline. Adjusted hospitalization costs were 19.1% higher in those with diagnosed AKI and 39.6% higher in those with AKI-D, compared to no AKI.
LIMITATIONS: Administrative data; timing of AKI with respect to VAD implantation cannot be determined; limited pre-existing chronic kidney disease ascertainment; discharge weights not derived for subpopulation of interest.
CONCLUSIONS: A decreasing proportion of patients undergoing VAD implantation experience AKI-D, but mortality among these patients remains high. AKI diagnosis with VAD implantation is increasing, possibly reflecting changes in AKI surveillance, awareness, and coding.

Version ID
1
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MEDLINE
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Year of Publication
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1130.

Multiparametric Functional Magnetic Resonance Imaging for Evaluating Renal Allograft Injury. [Review]
Yu YM, Ni QQ, Wang ZJ, Chen ML, Zhang LJ
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Korean Journal of Radiology. 20(6):894-908, 2019 06.
[Journal Article. Review]
UI: 31132815
Kidney transplantation is the treatment of choice for patients with end-stage renal disease, as it extends survival and increases quality of life in these patients. However, chronic allograft injury continues to be a major problem, and leads to eventual graft loss. Early detection of allograft injury is essential for guiding appropriate intervention to delay or prevent irreversible damage. Several advanced MRI techniques can offer some important information regarding functional changes such as perfusion, diffusion, structural complexity, as well as oxygenation and fibrosis. This review highlights the potential of multiparametric MRI for noninvasive and comprehensive assessment of renal allograft injury.

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1
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Comments
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2019

1131.

PPARalpha contributes to protection against metabolic and inflammatory derangements associated with acute kidney injury in experimental sepsis.
Iwaki T, Bennion BG, Stenson EK, Lynn JC, Otinga C, Djukovic D, Raftery D, Fei L, Wong HR, Liles WC, Standage SW
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Physiological Reports. 7(10):e14078, 2019 05.
[Comparative Study. Journal Article. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 31102342
Sepsis-associated acute kidney injury (AKI) is a significant problem in critically ill children and adults resulting in increased morbidity and mortality. Fundamental mechanisms contributing to sepsis-associated AKI are poorly understood. Previous research has demonstrated that peroxisome proliferator-activated receptor alpha (PPARalpha) expression is associated with reduced organ system failure in sepsis. Using an experimental model of polymicrobial sepsis, we demonstrate that mice deficient in PPARalpha have worse kidney function, which is likely related to reduced fatty acid oxidation and increased inflammation. Ultrastructural evaluation with electron microscopy reveals that the proximal convoluted tubule is specifically injured in septic PPARalpha deficient mice. In this experimental group, serum metabolomic analysis reveals unanticipated metabolic derangements in tryptophan-kynurenine-NAD+ and pantothenate pathways. We also show that a subgroup of children with sepsis whose genome-wide expression profiles are characterized by repression of the PPARalpha signaling pathway has increased incidence of severe AKI. These findings point toward interesting associations between sepsis-associated AKI and PPARalpha-driven fatty acid metabolism that merit further investigation.

Version ID
1
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2019

1132.

Finasteride-Induced Inhibition of 5alpha-Reductase Type 2 Could Lead to Kidney Damage-Animal, Experimental Study.
Baig MS, Kolasa-Wolosiuk A, Pilutin A, Safranow K, Baranowska-Bosiacka I, Kabat-Koperska J, Wiszniewska B
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
International Journal of Environmental Research & Public Health [Electronic Resource]. 16(10), 2019 05 16.

[Journal Article. Research Support, Non-U.S. Gov't]
UI: 31100850
In the pharmacological treatment of prostate cancer, benign prostatic hyperplasia and androgenetic alopecia finasteride is commonly used. This drug inhibits 5alpha-reductase type 2, which is why finasteride affects androgen homeostasis, since testosterone (T) cannot be reduced to dihydrotestosterone (DHT). As studies on sex-related renal injuries suggest a high probability of androgen-induced renal dysfunction, the aim of this study was to determine the potential harmful effects of finasteride on the kidneys of rats. The study was performed on sexually mature male Wistar rats given finasteride. Histological sections of the kidneys were used for immunohistochemical visualization of the androgen receptor (AR), junctional proteins (occluding (Occ); E-cad, N-cad, E-/N-cadherin; beta-cat, beta-catenin; connexin 43 (Cx43)), proliferating cell nuclear antigen (PCNA), IL-6, and lymphocyte markers (CD3 for T cell, CD19 for B cell). The TUNEL method was used for cell apoptosis identification, and picro sirius red staining was used to assess collagen fibers thickness. The levels of T, DHT and estradiol (E2) were determined in blood serum. It was shown that finasteride treatment affected steroid hormone homeostasis, altered the expression of AR and intracellular junction proteins, changed the ratio between cell apoptosis and proliferation, and caused lymphocyte infiltration and an increase of IL-6. The thickening of collagen fibers was observed as tubular fibrosis and glomerulosclerosis. Summarizing, finasteride-induced hormonal imbalance impaired the morphology (i.e., dysplastic glomeruli, swollen proximal convoluted tubules) and physiology (changed level of detected proteins/markers expression) of the kidneys. Therefore, it is suggested that patients with renal dysfunction or following renal transplantation, with androgen or antiandrogen supplementation, should be under special control and covered by extended diagnostics, because the adverse negative effect of DHT deficiency on the progression of kidney disease cannot be ignored.
Version ID
1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6572442
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1133.

Assessment of chronic renal injury in patients with chronic myeloid leukemia in the chronic phase receiving tyrosine kinase inhibitors.
Ren X, Qin Y, Huang X, Zuo L, Jiang Q
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Annals of Hematology. 98(7):1627-1640, 2019 Jul.
[Clinical Trial. Comparative Study. Journal Article]
UI: 31089794
We aimed to evaluate the incidence of chronic renal injury in patients with chronic myeloid leukemia in the chronic phase (CML-CP) receiving tyrosine kinase inhibitors (TKIs) and to identify the associated factors. Data for CML-CP patients with normal estimated glomerular filtration rate (eGFR) at baseline and receiving TKI therapy >= 3 months were retrospectively reviewed. The CRAE (chronic renal adverse event, defined as a 30% eGFR reduction from baseline or eGFR < 60 ml/min/1.73 m2 >= 90 days whichever occurred first)-free survival rates at 3 years in the imatinib cohort (n = 360) were significantly lower than those in the nilotinib cohort (n = 100) (55% versus 77%, P = 0.001) as a first-line TKI therapy. In multivariate analyses, imatinib, male sex, increasing age, and previous non-TKI treatment were associated with poor CRAE-free survival. In newly diagnosed patients who received imatinib treatment (n = 40), 24-h urine protein levels significantly increased after 6 months, and urinary beta2-microglobulin values significantly increased compared to those in the nilotinib cohort (n =15) at 36 months (P = 0.042) and 42 months (P = 0.039). There was no significant difference in CRAE-free survival rates at 3 years between the nilotinib (n = 65) and dasatinib (n = 74) cohorts (67% versus 83%, P = 0.832) as second- or third-line TKI therapies. In multivariate analyses, previous non-TKI treatment was associated with poor CRAE-free survival. We concluded that imatinib was significantly correlated to chronic renal injury, possibly associated with glomerulus and renal tubular injury, compared with nilotinib as a first-line TKI therapy in CML-CP patients. However, nilotinib and dasatinib had similar mild adverse impacts on renal function as second- or third-line therapies.
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1
Status
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Year of Publication
2019

1134.

Predictive Biomarkers for Acute Kidney Injury in Burn Patients.
Emami A, Javanmardi F, Rajaee M, Pirbonyeh N, Keshavarzi A, Fotouhi M, Hosseini SM
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Journal of Burn Care & Research. 40(5):601-605, 2019 08 14.
[Journal Article]
UI: 31077290
Acute kidney injury (AKI) is an independent and complicated risk factor in burn patients, which cause high mortality and morbidity rate. Diagnosing the biomarkers and early detection of AKI may be helpful in treatment and control the stability of these patients. In this study, we aim to identify predictive biomarkers in order to prevent AKI incidence and sudden death in burn victims. In this retrospective study, 258 burn patients who were admitted to burn center in Shiraz, Iran were evaluated during January 2016 to February 2018. Demographic characteristics, biochemical biomarkers, length of hospital stay, and mortality information were obtained from patient registries program and evaluated the biomarkers in identifying AKI patients into early and late groups. Receiver operating characteristic curve, area under the curve (AUC), univariate, and multivariate logistic regression analysis were used to diagnose the performance of biomarkers in order to predict the AKI. Of 258 patients, 40 (15.50%) were detected as AKI, with estimated mortality rate of 76.9%. Among all the variables, total BSA (P = .01), blood urea nitrogen (BUN; P = .001), potassium (P = .02), and mortality (P = .03) were significantly different in AKI developing. Moreover, AUC of serum creatinin, albumin, and BUN as predictive biomarkers were 0.73, 0.44, and 0.707, respectively. Among all variables, BUN marker was independently associated with AKI developing. Following burn shock, AKI is a common complication that causes increasing mortality and morbidity. Early diagnosis and identifying the biomarkers is preventing sudden death in burn patients and develop appropriate treatments in these victims.

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1
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Year of Publication
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1135.

Incidence of and risk factors for delayed acute kidney injury in patients undergoing colorectal surgery.
Kee YK, Kim H, Jhee JH, Han SH, Yoo TH, Kang SW, Park JT
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
American Journal of Surgery. 218(5):907-912, 2019 11.
[Journal Article. Observational Study]
UI: 31018901
BACKGROUND: The risk of delayed AKI (AKI development beyond the perioperative period) in patients undergoing colorectal surgery is greater than that in patients undergoing other major operations. However, the characteristics of and risk factors for delayed AKI are unclear.
METHODS: We investigated 683 patients who underwent colorectal surgery with intestinal resection at a single tertiary hospital. All patients were followed-up for a year postoperatively. The primary outcome was the development of AKI during follow-up.
RESULTS: AKI occurred in 177 (25.9%) during the first postoperative year. Patients who developed AKI were significantly older, showed a lower body mass index, and significantly lower preoperative hemoglobin and serum albumin levels. AKI occurred most commonly during the first 3 months postoperatively. However, AKI occurred persistently even after this initial period. Older age, lower preoperative serum albumin levels, and late ostomy closure were independently associated with a higher risk of delayed AKI.
CONCLUSION: AKI commonly occurs beyond the perioperative period. Careful risk stratification and modification of risk factors may prevent delayed AKI in patients undergoing colorectal cancer surgery.

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1
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Year of Publication
2019

1136.

Kidney Disease Awareness and Knowledge among Survivors ofAcute Kidney Injury.
Siew ED, Parr SK, Wild MG, Levea SL, Mehta KG, Umeukeje EM, Silver SA, Ikizler TA, Cavanaugh KL
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
American Journal of Nephrology. 49(6):449-459, 2019.
[Journal Article. Research Support, N.I.H., Extramural. Research Support, U.S. Gov't, Non-P.H.S.]
UI: 30995659
BACKGROUND: Acute kidney injury (AKI) survivors are at risk for chronic kidney disease, recurrent AKI, and cardiovascular disease. The transition from hospital to ambulatory care is an opportunity to reduce these sequelae by launching self-care plans through effective patient education. How well AKI survivors are informationally prepared to apply kidney-specific self-care is unknown. The purpose of this study was to identify awareness and disease-specific knowledge among AKI survivors.
METHODS: We performed a cross-sectional survey of AKI-related awareness and knowledge in 137 patients with Kidney Disease Improving Global Outcomes Stage II or III AKI near the time of hospital discharge. Patients were asked (1) "Did you experience AKI while in the hospital?" and (2) "Do you have a problem with your kidney health?" Objective knowledge of AKI was evaluated with a 15-item adapted version of the validated Kidney Knowledge Survey that included topics such as common causes, risk factors, and how AKI is diagnosed.
RESULTS: Median age was 54 (interquartile range 43-63) and 81% were white. Eighty percent of patients were unaware that they had experienced AKI and 53% were both unaware they had experienced AKI or had a "problem with their kidneys." Multivariable logistic regression identified being male and lack of nephrology consult as predictors of unawareness with ORs of 3.92 (95% CI 1.48-10.33) and 5.10 (95% CI 1.98-13.13), respectively. Less than 50% recognized nonsteroidal anti-inflammatory drugs, contrast, or phosphate-based cathartics as risk factors for AKI. Two-thirds of patients did not agree that they knew a lot about AKI and more than 80% desired more information.
CONCLUSIONS: Most patients with moderate to severe AKI are unaware of their condition, lack understanding of risk factors for recurrent AKI, and desire more information. Patient-centered communication to optimize awareness, understanding, and care will require coordinated educational strategies throughout the continuum of AKI care.

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1
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2019

1137.

Long-term renal outcomes in patients with traumatic renal injury after nephrectomy: A nationwide cohort study.
Wang SY, Lin KJ, Chen SW, Cheng CT, Chang CH, Wu YT, Liao CA, Liao CH, Fu CY, Lin JR, Hsieh CH
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
International Journal Of Surgery. 65:140-146, 2019 May.
[Journal Article. Observational Study]
UI: 30974184
BACKGROUND: The long-term renal outcomes of patients who underwent nephrectomy for traumatic renal injury (TRI) have rarely been reported. Therefore, we investigated the impact of nephrectomy for TRI on long-term renal outcomes.
METHODS AND MATERIALS: We extracted data from the National Health Insurance Research Database (NHIRD) of Taiwan from 1999 to 2013 and identified patients with TRI. Adverse kidney outcomes (AKOs), including lifelong dialysis and chronic kidney disease (CKD), were chosen as endpoints of the study.
RESULTS: A total of 16,320 eligible patients were identified in the NHIRD. The incidence of lifelong dialysis was 0.6% (99/15,789) for patients without nephrectomy, while the incidence was 1.1% (6/531) for nephrectomized patients. Overall, the incidence of AKOs was 2.1% (11/531) in the group that underwent nephrectomy and 1.1% (166/15,789) in the group without nephrectomy.

Before matching, differences in overall AKO incidence between the groups were significant, while propensity score matching eliminated this significance.
CONCLUSIONS: The results of our study did not indicate that AKOs would occur in patients with TRI who underwent nephrectomy.

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1
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MEDLINE
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Year of Publication
2019

1138.

Myocardial function in fetuses with lower urinary tract obstruction: Is there a cardiac remodeling effect due to renal damage?.
Graupner O, Enzensberger C, Gotte M, Wolter A, Muller V, Kawecki A, Weber S, Degenhardt J, Herrmann J, Axt-Fliedner R
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Prenatal Diagnosis. 39(7):495-504, 2019 06.
[Journal Article]

UI: 30957256
OBJECTIVES: Cardiac remodeling due to renal dysfunction may have an impact on myocardial function (MF) of fetuses with lower urinary tract obstruction (LUTO). The aim was to identify possible differences in MF in LUTO fetuses compared with healthy controls and to look for interactions between urine biochemistry and MF indices.
METHODS: This is a cohort study consisting of 31 LUTO fetuses and 45 healthy controls. Subgroups were generated according to intrauterine therapy (group 1: LUTO after therapy, group 2: LUTO without therapy at the time of examination, and group 3: controls). MF indices were measured using pulsed wave tissue Doppler imaging and M-mode. Furthermore, results of fetal urine biochemistry were gathered retrospectively.
RESULTS: Among other findings, right ventricular (RV) e'/a' ratio was lower in group 1 compared with group 3 (p = .050). According to gestational age (GA) level-dependent analysis, RV isovolumetric relaxation time was significantly longer in group 2 compared with group 1 and group 3 at GA level 1 (19 wk of gestation). A significant positive correlation between RV e'/a' ratio and beta-2-microglobulin as well as alpha-1-microglobulin and potassium could be observed.
CONCLUSION: We observed differences in MF and an association between ventricular filling pattern and renal protein secretion in LUTO fetuses. This can be interpreted as a sign of intrauterine cardiac remodeling.

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1
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MEDLINE
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Year of Publication
2019

1139.

Acute kidney injury in infective endocarditis: A retrospective analysis.
Gagneux-Brunon A, Pouvaret A, Maillard N, Berthelot P, Lutz MF, Cazorla C, Tulane C, Fuzellier JF, Verhoeven PO, Fresard A, Duval X, Lucht F, Botelho-Nevers E
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Medecine et Maladies Infectieuses. 49(7):527-533, 2019 Oct.
[Journal Article]
UI: 30955847
BACKGROUND: Acute kidney injury (AKI) is associated with high case fatality in infective endocarditis (IE), but epidemiological data on the frequency of AKI during IE is scarce. We aimed to describe the frequency and risk factors for AKI during the course of IE using Kidney Disease: Improving Global Outcomes consensual criteria.
METHODS: Using the French hospital discharge database (French acronym PMSI), we retrospectively reviewed the charts of 112 patients presenting with a first episode of probable or definite IE between January 2010 and May 2015.
RESULTS: Seventy-seven patients (68.8%) developed AKI. In univariate analysis, risk factors for AKI were cardiac surgery for IE (n=29, 37.7% vs. n=4, 1.4%, P<0.0005), cardiac failure (n=29, 36.7% vs. n=1, 2.9%, P<0.0005), diabetes mellitus (n=14, 18.2% vs. n=1, 0.9%, P=0.034), and prosthetic valve IEs (n=24, 31.2% vs. n=4, 11.4%). No differences were observed for gentamicin exposure (n=57, 64% vs. n=32, 86.5%, P=0.286). Prosthetic valve IE, cardiac failure, and vancomycin exposure were independently associated with AKI with respective odds ratio of 5.49 (95% CI 1.92-17.9), 4.37 (95% CI 4.37-465.7), and 1.084 (1.084-16.2). Mean length of hospital stay was significantly longer in patients presenting with AKI than in controls (respectively 52.4+/-22.1 days vs. 39.6+/-12.6, P<0.005).
CONCLUSION: AKI is very frequent during IE, particularly in patients with prosthetic valve IE, cardiac failure, and those receiving vancomycin.

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1
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MEDLINE
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Year of Publication
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1140.

A Clinical Score to Predict Severe Acute Kidney Injury in Chinese Patients after Cardiac Surgery.
Che M, Wang X, Liu S, Xie B, Xue S, Yan Y, Zhu M, Lu R, Qian J, Ni Z, Zhang W, Wang B
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Nephron. 142(4):291-300, 2019.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 30897580
BACKGROUND/AIMS: Cardiac surgery-associated severe acute kidney injury (SAKI) is associated with high mortality and poor quality of life. A prognostic score for SAKI may enable prevention of complications.
METHODS: This observational study of 2,552 patients undergoing cardiac surgery from January 2006 to December 2011 in our institution established associations between predictor variables and postoperative SAKI from a cohort of 1,692 patients and developed a clinical score that was assessed in a validation cohort of 860 patients.
RESULTS: Postoperative SAKI occurred in 262 -patients (10.3%). We identified 7 independent and significant risk factors in the derivation model (adjusted OR 95% CI): age >=81 years (vs. age < 40 years, 4.30, 1.52-12.21), age 61-80 years (vs. age < 40 years, 2.84, 1.24-6.52), age 41-60 years (vs. age < 40 years, 1.62, 0.68-3.87), hypertension (1.65, 1.13-2.39), previous cardiac surgery (3.62, 1.27-10.32), -hyperuricemia (2.02, 1.40-2.92), prolonged operation time (1.32, 1.17-1.48), postoperative central venous pressure < 6 mm H2O (3.53, 2.38-5.23), and low postoperative cardiac output (4.78, 2.97-7.69). The 7-variable risk prediction model had acceptable performance characteristics in the validation cohort (C statistic 0.80, 95% CI 0.74-0.85). The difference in the C statistic was 0.21 (95% CI 0.12-0.29, p < 0.001) compared with the Cleveland Clinic score.
CONCLUSION: We developed and validated a practical risk prediction model for SAKI after cardiac surgery based on routinely available perioperative clinical and laboratory data. The prediction model can be easily applied at the bedside and provides a simple and interpretable estimation of risk.

Version ID
1

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MEDLINE
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Year of Publication
2019

1141.

Association of serum total and ionized calcium with all-cause mortality incritically ill patients with acute kidney injury.
Wang B, Li D, Gong Y, Ying B, Cheng B
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Clinica Chimica Acta. 494:94-99, 2019 Jul.
[Journal Article]
UI: 30890398
BACKGROUND: There have been no epidemiological studies exploring the prognostic ability of serum total and ionized calcium (tCa and iCa) in critically ill patients with acute kidney injury (AKI). We assessed the association of admission tCa and iCa concentrations with all-cause mortality in these patients.
METHODS: We extracted clinical data from the MIMIC-III V1.4 database. Only the data for the first intensive care unit (ICU) admission of each patient were used and baseline data were extracted within 24h after ICU admission. Cox proportional hazards models and subgroup analyses were used to determine the relationship between tCa and iCa concentrations and 30, 90 and 365-day all-cause mortality in critically ill patients with AKI. A total of 10,207 eligible patients were studied. In multivariate analysis, adjusted for age, ethnicity and gender, both low-tCa (<

7.9mg/dl) and low-iCa (<1.06mmol/l) concentrations were significant predictors of risk of all-cause mortality. Furthermore, after adjusting for more confounding factors, low-iCa concentrations remained a significant predictor of all-cause mortality at 30days, 90days, 365days (HR, 95% CI: 1.19, 1.06-1.33; 1.15, 1.05-1.27; 1.10, 1.01-1.20).
CONCLUSIONS: Low-iCa concentrations were independent predictors of all-cause mortality in critically ill patients with AKI.

Version ID
1
Status
MEDLINE
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Year of Publication
2019

1142.

Acute Kidney Injury Induced by Bothrops Venom: Insights into the Pathogenic Mechanisms.
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OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Toxins. 11(3), 2019 03 05.
[Journal Article. Observational Study. Research Support, Non-U.S. Gov't]
UI: 30841537
Acute kidney injury (AKI) following snakebite is common in developing countries and Bothrops genus is the main group of snakes in Latin America. To evaluate the pathogenic mechanisms associated with Bothrops venom nephrotoxicity, we assessed urinary and blood samples of patients after hospital admission resulting from Bothrops snakebite in a prospective cohort study in Northeast Brazil. Urinary and blood samples were evaluated during hospital stay in 63 consenting patients, divided into AKI and No-AKI groups according to the KDIGO criteria. The AKI group showed higher levels of urinary MCP-1 (Urinary monocyte chemotactic protein-1) (median 547.5 vs. 274.1 pg/mgCr; p = 0.02) and urinary NGAL (Neutrophil gelatinase-associated lipocalin) (median 21.28 vs. 12.73 ng/mgCr; p = 0.03). Risk factors for AKI included lower serum sodium and hemoglobin levels, proteinuria and aPTT (Activated Partial Thromboplastin Time) on admission and disclosed lower serum sodium (p = 0.01, OR = 0.73, 95% CI: 0.57-0.94) and aPTT

(p = 0.031, OR = 26.27, 95% CI: 1.34-512.11) levels as independent factors associated with AKI. Proteinuria showed a positive correlation with uMCP-1 (r = 0.70, p < 0.0001) and uNGAL (r = 0.47, p = 0.001). FENa (Fractional Excretion of sodium) correlated with uMCP-1 (r = 0.47, P = 0.001) and uNGAL (r = 0.56, p < 0.0001). sCr (serum Creatinine) showed a better performance to predict AKI (AUC = 0.85) in comparison with new biomarkers. FEK showed fair accuracy in predicting AKI (AUC = 0.92). Coagulation abnormality was strongly associated with Bothrops venom-related AKI. Urinary NGAL and MCP-1 were good biomarkers in predicting AKI; however, sCr remained the best biomarker. FEK (Fractional Excretion of potassium) emerged as another diagnostic tool to predict early AKI. Positive correlations between uNGAL and uMCP-1 with proteinuria and FENa may signal glomerular and tubular injury. Defects in urinary concentrations highlighted asymptomatic abnormalities, which deserve further study.

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1
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2019

1143.

Histopathology and Long-Term Outcome of Kidneys Transplanted From Donors With Severe Acute Kidney Injury.
Cima L, Nacchia F, Ghimenton C, Valotto G, Boschiero L, Gobbo S, Zaza G, Neil D, Mescoli C, Vanzo F, D'Errico A, Ghimenton C, Rugge M, Casartelli-Liviero M, Brunelli M, Novelli L, Eccher A
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Progress in Transplantation. 29(1):36-42, 2019 03.
[Comparative Study. Journal Article. Research Support, Non-U.S. Gov't]
UI: 30832558
BACKGROUND: Acute kidney injury is a treatable entity although difficult to recognize without diagnostic biopsy. We investigated the potential association between clinically defined deceased donors and acute kidney injury with preimplantation histological findings and recipient outcomes.
METHODS: Kidney biopsies from donors were classified using the Acute Kidney Injury Network criteria and assessed for percentage glomerulosclerosis, tubular atrophy, interstitial fibrosis, and vascular narrowing with the Remuzzi score and for acute tubular necrosis. Differences in incidence rates of delayed graft function (DGF) and cumulative rejection episodes were compared between recipients transplanted with normal and 3 levels of acute kidney injury using the analysis of variance with Bonferroni correction (P = .0012).
RESULTS: Sixteen out of 335 donors showed a severe acute kidney injury level 3 with a median serum creatinine of 458 micromol/L. Fourteen (88%) had 0-3 Remuzzi score and were used for single kidney transplantation and 2 (12%) were used for dual kidney transplantation (score: 4-6). Recipients who received a kidney from a donor with level 3 acute kidney injury had a higher percentage of DGF (47%) without statistical significance (P = .008). The rate of cumulative rejection (45%) at 2 years was not significantly increased (P = .09).
CONCLUSIONS: Recipients receiving level 3 acute kidney injury kidneys, selected with Remuzzi histopathological score and acute tubular necrosis assessment, had a greater incidence of DGF but a similar long-term cumulative rejection compared to no injury and level 1 and level 2 acute kidney injury donors. The application of the histopathological examination allowed expansion of the kidney donor pool.
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Year of Publication
2019

1144.

Disparate outcomes observed within Kidney Disease: Improving Global Outcomes (KDIGO) acute kidney injury stage 1.
Sparrow HG, Swan JT, Moore LW, Gaber AO, Suki WN
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Kidney International. 95(4):905-913, 2019 04.
[Journal Article]
UI: 30819553
The 2012 Kidney Disease: Improving Global Outcomes (KDIGO) clinical practice guideline classifies acute kidney injury (AKI) into 3 stages defined by serum creatinine elevation or urine output decline. We evaluated the potential impact of further categorizing AKI stage 1 into two stages based on serum creatinine criteria, with a focus on how the resulting 4-stage classification would affect the association of AKI stages with clinical outcomes. We defined AKI stage 1a as an absolute increase in serum creatinine of 0.3 mg/dl within 48 hours and stage 1b as a 50% relative increase in serum creatinine within 7 days. We screened all admissions to 5 hospitals from 2012 to 2014 using standardized inclusion and exclusion criteria and included 81,651 admissions in this retrospective cohort study. The incidence of in-hospital AKI was 7.5% for stage 1a, 4.9% for stage 1b, 1.5% for stage 2, and 0.9% for stage 3. Length of stay following the first incidence of AKI was 3.9 days for stage 1a, 6.2 days for stage 1b, 8.8 days for stage 2, and 12.0 days for stage 3. Compared to patients with no AKI, the odds of in-hospital mortality were progressively higher for patients with higher AKI stages (odds ratio 4.3 for patients with stage 1a, 10.9 for stage 1b, 40.6 for stage 2, and 60.0 for stage 3 AKI). Patients with AKI stages 1a and 1b experienced clinically meaningful and statistically significant differences in length of stay and mortality. This

study suggests that a modified 4-stage version of the KDIGO AKI classification may provide additional prognostic information.

Version ID
1
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Comments
Comment in (CIN)
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1145.

Postoperative Acute Kidney Injury in Young Adults With Congenital Heart Disease.
Fuhrman DY, Nguyen LG, Sanchez-de-Toledo J, Priyanka P, Kellum JA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Annals of Thoracic Surgery. 107(5):1416-1420, 2019 May.
[Journal Article]
UI: 30763561
BACKGROUND: There is an increasing number of young adults living with congenital heart disease (CHD). The goal of this study was to ascertain the frequency of acute kidney injury (AKI) as well as the risk factors and outcomes associated with AKI in young adults with CHD after a surgical procedure.
METHODS: This was a single-center retrospective cohort study including all patients 18 to 40 years of age with a diagnosis of CHD admitted to a quaternary care children's hospital cardiac intensive care unit postoperatively from 2004 to 2015. We defined AKI using the Kidney Disease Improving Global Outcomes criteria for serum creatinine. We explored potential susceptibilities and exposures for AKI using multivariable logistic regression and determined the association of AKI with duration of mechanical ventilation and length of stay using Poisson regression.
RESULTS: In 699 consecutively admitted patients AKI occurred in 13.2%. Suspected sepsis (odds ratio [OR], 2.87; 95% confidence interval [CI], 1.17 to 7.05), exposure to calcineurin inhibitors (OR, 5.80; 95% CI, 1.06 to 31.59), vancomycin (OR, 3.35; 95% CI, 1.11 to 10.14), and piperacillin-tazobactam (OR, 4.12; 95% CI, 1.23 to 13.78) increased the odds of AKI even after controlling for age, ejection fraction, recent cardiac catheterization, repeat cardiopulmonary bypass, bypass time, cross-clamp time, and other potential nephrotoxic medications. AKI was

associated with a longer duration of mechanical ventilation (OR, 1.47; 95% CI, 1.15 to 1.89) and intensive care unit length of stay (OR, 1.50; 95% CI, 1.30 to 1.72).
CONCLUSIONS: AKI is common in young adults with CHD postoperatively and is associated with negative outcomes. The results highlight the importance future research and clinical efforts aimed at prevention and improved management of AKI in this patient group.

Version ID
1
Status
MEDLINE
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Year of Publication
2019

1146.

Computed Tomography with Intravenous Contrast Is Not Associated with Development of Acute Kidney Injury in Severely Injured Pediatric Patients.
Paul K M 2nd, Johnson J, Garwe T, Sarwar Z, Motghare P, Daly W, Letton R
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
American Surgeon. 85(1):e1-e5, 2019 Jan 01.
[Journal Article]
UI: 30760357
Data for the incidence of acute kidney injury (AKI) related to intravenous contrast administration in the pediatric trauma population are limited. Obtaining a creatinine value before elective CT scans is a relatively accepted standard of care. We sought to determine whether there was any significant difference in the incidence of AKI between severely injured patients who received IV contrast and those who did not. We reviewed data from the trauma registry at our Level I pediatric trauma center. We limited the patients to severely injured pediatric traumas (<15 years old) directly transported from the scene of injury with a creatinine level measured on arrival. Two hundred and eleven patients were included in the study. AKI was defined by the criteria of the AKI Network. We then compared incidence of AKI in those who received a CT scan with IV contrast with those who did not receive IV contrast. The two groups were comparable in age, gender, Glasgow Coma Scale, Injury Severity Score, mean creatinine on arrival, and mean creatinine post-CT scan/arrival. There was no significant difference in AKI between the two. In a subgroup

analysis of patients presenting in shock, there was no significant difference in AKI. Our study suggests that IV contrast is not associated with the development of AKI in severely injured pediatric trauma patients. Although obtaining a creatinine value before exposure is ideal, a CT scan with IV contrast in severely injured children should not be delayed to obtain a creatinine value.
Version ID
1
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Paul K, McGaha 2nd, Johnson, Jeremy, Garwe, Tabitha, Sarwar, Zoona, Motghare, Prasenjeet, Daly, William, Letton, Robert
Year of Publication
2019

1147.

Renal trauma: a 3-year audit from a Gold Coast trauma centre.
Mansbridge MM, Ryan J, Hill DC, Wullschleger M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
ANZ Journal of Surgery. 89(4):339-344, 2019 04.
[Journal Article]
UI: 30699462
BACKGROUND: Limited data Exists ? on the Australian epidemiology of renal trauma, with very few studies published in the literature. The authors aim to detail the trends of renal trauma in the coastal city of the Gold Coast.
METHODS: Retrospective data collection yielded 81 patients who sustained renal trauma from our 3-year period. Data included information on demographics, mechanism, American Association for the Surgery of Trauma (AAST) grade, presence of haematuria, associated injuries, management, and complications.
RESULTS: Male patients accounted for 83% (n = 67) of cases, and the average age of all injuries was 36 years. Low-grade AAST Grade I-III injuries comprised of 76% (n = 62) of injuries, AAST Grade IV contributed to 20% (n = 16) and 4% (n = 3) of injuries were AAST Grade V. The most common mechanism of injury was road accidents accounting for 35% (n = 28) followed by fall-related injuries (26%, n = 21). Other mechanisms included sport-related (13.5%, n = 11), non-motorized bicycle injuries (8.5%, n = 7), alleged assault (8.5%, n = 7), pedestrian injuries (5%, n = 4) and horse-related injuries (2%, n = 2). Ninety-six percent (n = 78) of kidney injuries were managed conservatively. Of the patients requiring intervention, all were AAST Grade V kidney injuries.
CONCLUSION: Males accounted for the majority of renal trauma cases, similar to the 3:1 ratio of male-to-female injuries found in other studies. In line with other studies, renal trauma reviewed on the Gold Coast also revealed road trauma as the leading cause, closely followed by falls. The majority of high-grade renal trauma was managed conservatively.

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Year of Publication
2019

1148.

Kidney Injury by Variants in the COL4A5 Gene Aggravated by Polymorphisms in Slit Diaphragm Genes Causes Focal Segmental Glomerulosclerosis.
Frese J, Kettwig M, Zappel H, Hofer J, Grone HJ, Nagel M, Sunder-Plassmann G, Kain R, Neuweiler J, Gross O
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
International Journal of Molecular Sciences. 20(3), 2019 Jan 26.
[Journal Article]
UI: 30691124
Kidney injury due to focal segmental glomerulosclerosis (FSGS) is the most common primary glomerular disorder causing end-stage renal disease. Homozygous mutations in either glomerular basement membrane or slit diaphragm genes cause early renal failure. Heterozygous carriers develop renal symptoms late, if at all. In contrast to mutations in slit diaphragm genes, hetero- or hemizygous mutations in the X-chromosomal COL4A5 Alport gene have not yet been recognized as a major cause of kidney injury by FSGS. We identified cases of FSGS that were unexpectedly diagnosed: In addition to mutations in the X-chromosomal COL4A5 type IV collagen gene, nephrin and podocin polymorphisms aggravated kidney damage, leading to FSGS with ruptures of the basement membrane in a toddler and early renal failure in heterozygous girls. The results of our case series study suggest a synergistic role for genes encoding basement membrane and slit diaphragm proteins as a cause of kidney injury due to FSGS. Our results demonstrate that the molecular genetics of different players in the glomerular filtration barrier can be used to evaluate causes of kidney injury. Given the high frequency of X-chromosomal carriers of Alport genes, the analysis of genes involved in the organization of podocyte architecture, the glomerular basement membrane, and the slit diaphragm will further improve our understanding of the pathogenesis of FSGS and guide prognosis of and therapy for hereditary glomerular kidney diseases.
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1
Status
MEDLINE
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Year of Publication
2019

1149.

Lanosterol Synthase Genetic Variants, Endogenous Ouabain, and Both Acute and Chronic Kidney Injury.
Iatrino R, Lanzani C, Bignami E, Casamassima N, Citterio L, Meroni R, Zagato L, Zangrillo A, Alfieri O, Fontana S, Macrina L, Delli Carpini S, Messaggio E, Brioni E, Dell'Antonio G, Manunta P, Hamlyn JM, Simonini M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
American Journal of Kidney Diseases. 73(4):504-512, 2019 04.
[Journal Article. Observational Study]
UI: 30660405
RATIONALE & OBJECTIVE: Studies of humans and animals have suggested that endogenous ouabain (EO) and related genes are mediators of acute (AKI) and chronic kidney injury. We sought to examine the relationship among EO levels, genetic variants in lanosterol synthase (LSS; an enzyme that catalyzes synthesis of cholesterol, a precursor of EO), and both AKI and chronic kidney injury.
STUDY DESIGN: 2 prospective observational cohort studies and a cross-sectional study of kidney tissue.
SETTING & PARTICIPANTS: (1) A prospective cohort study of patients undergoing cardiovascular surgery, (2) measurement of EO concentration in kidney tissue removed because of an adjacent tumor, and (3) a prospective cohort study of patients with newly diagnosed essential hypertension.
EXPOSURE: Missense variant in LSS (A instead of C allele at rs2254524), which leads to a valine to leucine substitution at amino acid 642.

OUTCOMES: Development of postoperative AKI in the cardiovascular surgery cohort, EO concentration in kidney tissue, and estimated glomerular filtration rate (eGFR) reductions in the essential hypertension cohort.
ANALYTICAL APPROACH: Logistic regression for analysis of postoperative AKI, analysis of variance for EO concentration in kidney tissue, and generalized linear models for changes in eGFR over time.
RESULTS: AKI incidence following cardiovascular surgery was greater among those with the LSS rs2254524 AA genotype (30.7%) than in those with the CC genotype (17.4%; P=0.001). LSS rs2254524 AA kidneys had higher EO concentrations than CC kidneys (2.14+/-0.29 vs 1.25+/-0.08ng/g; P<0.001). In the longitudinal study of patients with essential hypertension (median follow-up, 4 years; range, 1-15 years), eGFR decline was greater among the LSS rs2254524 AA genotype group (-4.39+/-1.18mL/min/1.73m2 per year) than in the AC or CC genotype groups (-1.07+/-0.55 and -2.00+/-0.45mL/min/1.73m2 per year respectively; P = 0.03).
LIMITATIONS: These associations do not necessarily represent causal relationships; LSS rs2254524 variants may have effects on other steroid hormones.
CONCLUSIONS: These findings support the potential value of LSS rs2254524 genotype-based risk stratification to identify patients at high risk for AKI before cardiovascular surgery, as well as predict accelerated eGFR in the setting of hypertension. These findings also suggest that LSS may in part drive EO-mediated kidney damage. EO may represent a new potential therapeutic target for the prevention of AKI and slowing of kidney damage in the setting of hypertension.

Version ID
1
Status
MEDLINE
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Year of Publication
2019

1150.

Looking for a better definition and diagnostic strategy for acute kidney injury: a new proposal. En busqueda de una mejor definicion y estrategia diagnostica para la lesion renal aguda: una nueva propuesta. <En busqueda de una mejor definicion y estrategia diagnostica para la lesion renal aguda: una nueva propuesta.>
Musso CG, Terrasa S, Ciocchini M, Gonzalez-Torres H, Aroca-Martinez G
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Archivos Argentinos de Pediatria. 117(1):4-5, 2019 02 01.
[Journal Article]
UI: 30652439
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1
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Year of Publication
2019

1151.

Optimizing the AKI definition during first postnatal week using Assessment of Worldwide Acute Kidney Injury Epidemiology in Neonates (AWAKEN) cohort.
Askenazi D, Abitbol C, Boohaker L, Griffin R, Raina R, Dower J, Davis TK, Ray PE, Perazzo S, DeFreitas M, Milner L, Ambalavanan N, Cole FS, Rademacher E, Zappitelli M, Mhanna M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Research. 85(3):329-338, 2019 02.
[Journal Article. Observational Study. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 30643188
BACKGROUND: Neonates with serum creatinine (SCr) rise >=0.3 mg/dL and/or >=50% SCr rise are more likely to die, even when controlling for confounders. These thresholds have not been tested in newborns. We hypothesized that different gestational age (GA) groups require different SCr thresholds.
METHODS: Neonates in Assessment of Worldwide Acute Kidney Epidemiology in Neonates (AWAKEN) with >=1 SCr on postnatal days 1-2 and >=1 SCr on postnatal days 3-8 were assessed. We compared the mortality predictability of SCr absolute (>=0.3 mg/dL) vs percent (>=50%) rise. Next, we determine usefulness of combining absolute with percent rise. Finally, we determined the optimal absolute, percent, and maximum SCr thresholds that provide the highest mortality area under curve (AUC) and specificity for different GA groups.
RESULTS: The >=0.3 mg/dL rise outperformed >=50% SCr rise. Addition of percent rise did not improve mortality predictability. The optimal SCr thresholds to predict AUC and specificity were >=0.3 and >=0.6 mg/dL for <=29 weeks GA, and >=0.1 and >=0.3 mg/dL for >29 week GA. The maximum SCr value provides great specificity.
CONCLUSION: Unique SCr rise cutoffs for different GA improves outcome prediction. Percent SCr rise does not add value to the neonatal AKI definition.
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1
Status
MEDLINE
Clinical Trial Number
Neonatal Kidney Collaborative
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6377843
Year of Publication
2019

1152.

Characteristics and associated factors of acute kidney injury among adult dengue patients: A retrospective single-center study.
Diptyanusa A, Phumratanaprapin W, Phonrat B, Poovorawan K, Hanboonkunupakarn B, Sriboonvorakul N, Thisyakorn U
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
PLoS ONE [Electronic Resource]. 14(1):e0210360, 2019.
[Clinical Trial. Journal Article. Research Support, Non-U.S. Gov't]
UI: 30615667
Severe dengue cases have been increasingly reported in Thailand, and the under-reporting of acute kidney injury (AKI) in cases of dengue viral infection has become an obstacle in obtaining an accurate description of the true nature and epidemiology of AKI. Because AKI may lead to patient morbidity and mortality, an early diagnosis is important in preventing its onset in dengue patients. This study aimed to determine the prevalence, clinical and laboratory characteristics, and associated factors of AKI among adult dengue patients. This retrospective study reviewed admission data from the medical records of adult dengue patients admitted to the Bangkok Hospital for Tropical Diseases between January 2012 and November 2017 and stratified these patients into AKI and non-AKI groups using the Kidney Disease Improving Global Outcomes criteria (KDIGO). A total of 1,484 patients were included in the study, with 71 categorized into the AKI group. The prevalence of AKI was 4.8%. In the AKI group, the predominant age range was 18-40 years (71.8%), with a female to male ratio of 1:2.7. These patients showed significantly ($P < 0.05$) higher proportions of altered consciousness, dyspnea, low mean arterial blood pressure, high-grade fever, major bleeding, severe thrombocytopenia, hypoalbuminemia, severe transaminitis, coagulopathy, metabolic acidosis, rhabdomyolysis, proteinuria, hematuria, and pyuria. Our study established that older age, male sex, diabetes mellitus, obesity, severe dengue, and coexisting bacterial infection were significant associated factors for AKI in dengue by multivariate analysis. A total of 10 (14.1%) patients with AKI received dialysis, among which 9 (12.7%) patients from the AKI group died. Our findings suggest that an awareness of AKI, its early diagnosis, and evaluation of clinical and laboratory characteristics of dengue patients will help clinicians to initiate appropriate therapy for dengue-associated AKI.
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1
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6322747
Year of Publication
2019

1153.

Late onset neonatal acute kidney injury: results from the AWAKEN Study.
Charlton JR, Boohaker L, Askenazi D, Brophy PD, Fuloria M, Gien J, Griffin R, Hingorani S, Ingraham S, Mian A, Ohls RK, Rastogi S, Rhee CJ, Revenis M, Sarkar S, Starr M, Kent AL
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Research. 85(3):339-348, 2019 02.
[Journal Article. Observational Study. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 30546043
BACKGROUND: Most studies of neonatal acute kidney injury (AKI) have focused on the first week following birth. Here, we determined the outcomes and risk factors for late AKI (>7d).
METHODS: The international AWAKEN study examined AKI in neonates admitted to an intensive care unit. Late AKI was defined as occurring >7 days after birth according to the KDIGO criteria. Models were constructed to assess the association between late AKI and death or length of stay. Unadjusted and adjusted odds for late AKI were calculated for each perinatal factor.
RESULTS: Late AKI occurred in 202/2152 (9%) of enrolled neonates. After adjustment, infants with late AKI had higher odds of death (aOR:2.1, p = 0.02) and longer length of stay (parameter estimate: 21.9, p < 0.001). Risk factors included intubation, oligo- and polyhydramnios, mild-moderate renal anomalies, admission diagnoses of congenital heart disease, necrotizing enterocolitis, surgical need, exposure to diuretics, vasopressors, and NSAIDs, discharge diagnoses of patent ductus arteriosus, necrotizing enterocolitis, sepsis, and urinary tract infection.
CONCLUSIONS: Late AKI is common, independently associated with poor short-term outcomes and associated with unique risk factors. These should guide the development of protocols to screen for AKI and research to improve prevention strategies to mitigate the consequences of late AKI.
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1

Status
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Clinical Trial Number
Neonatal Kidney Collaborative (NKC)
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Charlton, Jennifer R, Boohaker, Louis, Askenazi, David, Brophy, Patrick D, Fuloria, Mamta, Gien, Jason, Griffin, Russell, Hingorani, Sangeeta, Ingraham, Susan, Mian, Ayesa, Ohls, Robin K, Rastogi, Shantanu, Rhee, Christopher J, Revenis, Mary, Sarkar, Subrata, Starr, Michelle, Kent, Alison L
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6438709
Year of Publication
2019

1154.

CT reconstruction algorithms affect histogram and texture analysis: evidence for liver parenchyma, focal solid liver lesions, and renal cysts.
Ahn SJ, Kim JH, Lee SM, Park SJ, Han JK
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
European Radiology. 29(8):4008-4015, 2019 Aug.
[Journal Article]
UI: 30456584
PURPOSE: To determine the effects of different reconstruction algorithms on histogram and texture features in different targets.
MATERIALS AND METHODS: Among 3620 patients, 480 had normal liver parenchyma, 494 had focal solid liver lesions (metastases = 259; hepatocellular carcinoma = 99; hemangioma = 78;

abscess = 32; and cholangiocarcinoma = 26), and 488 had renal cysts. CT images were reconstructed with filtered back-projection (FBP), hybrid iterative reconstruction (HIR), and iterative model reconstruction (IMR) algorithms. Computerized histogram and texture analyses were performed by extracting 11 features.
RESULTS: Different reconstruction algorithms had distinct, significant effects. IMR had a greater effect than HIR. For instance, IMR had a significant effect on five features of liver parenchyma, nine features of focal liver lesions, and four features of renal cysts on portal-phase scans and four, eight, and four features, respectively, on precontrast scans ($p < 0.05$). Meanwhile, different algorithms had a greater effect on focal liver lesions (six in HIR and nine in IMR on portal-phase, three in HIR, and eight in IMR on precontrast scans) than on liver parenchyma or cysts. The mean attenuation and standard deviation were not affected by the reconstruction algorithm ($p > .05$). Most parameters showed good or excellent intra- and interobserver agreement, with intraclass correlation coefficients ranging from 0.634 to 0.972.
CONCLUSIONS: Different reconstruction algorithms affect histogram and texture features. Reconstruction algorithms showed stronger effects in focal liver lesions than in liver parenchyma or renal cysts.
KEY POINTS: * Imaging heterogeneities influenced the quantification of image features. * Different reconstruction algorithms had a significant effect on histogram and texture features. * Solid liver lesions were more affected than liver parenchyma or cysts.
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1
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Year of Publication
2019

1155.

Plasma cytokines as potential biomarkers of kidney damage in patients with systemic lupus erythematosus.
Pacheco-Lugo L, Saenz-Garcia J, Navarro Quiroz E, Gonzalez Torres H, Fang L, Diaz-Olmos Y, Garavito de Egea G, Egea Bermejo E, Aroca Martinez G

OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Lupus. 28(1):34-43, 2019 Jan.
[Journal Article]
UI: 30453818
BACKGROUND: Systemic lupus erythematosus is a heterogeneous chronic inflammatory autoimmune disorder characterized by an exacerbated expression of cytokines and chemokines in different tissues and organs. Renal involvement is a significant contributor to the morbidity and mortality of systemic lupus erythematosus, and its diagnosis is based on renal biopsy, an invasive procedure with a high risk of complications. Therefore, the development of alternative, non-invasive diagnostic tests for kidney disease in patients with systemic lupus erythematosus is a priority.
AIM: To evaluate the plasma levels of a panel of cytokines and chemokines using multiplex xMAP technology in a cohort of Colombian patients with active and inactive systemic lupus erythematosus, and to evaluate their potential as biomarkers of renal involvement.
RESULTS: Plasma from 40 systemic lupus erythematosus non-nephritis patients and 80 lupus nephritis patients with different levels of renal involvement were analyzed for 39 cytokines using Luminex xMAP technology. Lupus nephritis patients had significantly increased plasma eotaxin, TNF-alpha, interleukin-17-alpha, interleukin-10, and interleukin-15 as compared to the systemic lupus erythematosus non-nephritis group. Macrophage-derived chemokine, growth regulated oncogene alpha, and epidermal growth factor were significantly elevated in systemic lupus erythematosus non-nephritis patients when compared to lupus nephritis individuals. Plasma eotaxin levels allowed a discrimination between systemic lupus erythematosus non-nephritis and lupus nephritis patients, for which we performed a receiver operating characteristic curve to confirm. We observed a correlation of eotaxin levels with active nephritis (Systemic Lupus Erythematosus Disease Activity Index). Our data indicate that circulating cytokines and chemokines could be considered good predictors of renal involvement in individuals with systemic lupus erythematosus.
Version ID
1
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MEDLINE
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Year of Publication
2019

1156.

Urinary Neutrophil Gelatinase Associated Lipocalins (NGALs) predict acute kidney injury post liver transplant.
Robertson FP, Yeung AC, Male V, Rahman S, Mallett S, Fuller BJ, Davidson BR
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
HPB. 21(4):473-481, 2019 04.
[Journal Article]
UI: 30385051
BACKGROUND: Acute Kidney Injury, a common complication of liver transplant, is associated with a significant increase in the risk of morbidity, mortality and graft loss. Current diagnostic criteria leaves a delay in diagnosis allowing further potential irreversible damage. Early biomarkers of renal injury are of clinical importance and Neutrophil Gelatinase Associated Lipocalins (NGALs) and Syndecan-1 were investigated.
METHODS: AKI was defined according to the Acute Kidney Injury Network criteria. Urine and blood samples were collected pre-operatively, immediately post-op and 24 h post reperfusion to allow measurement of NGAL and Syndecan-1 levels.
RESULTS: 13 of 27 patients developed an AKI. Patients who developed AKI had significantly higher peak transaminases. Urinary NGAL, plasma NGAL and Syndecan-1 levels were significantly elevated in all patients post reperfusion. Urinary NGAL levels immediately post-op were significantly higher in patients who developed an AKI than those that didn't [1319 ng/ml vs 46.56 ng/ml, p <= 0.001]. ROC curves were performed and urinary NGAL levels immediately post-op were an excellent biomarker for AKI with an area under the curve of 0.948 (0.847-1.00).
CONCLUSIONS: Urinary NGAL levels measured immediately post-op accurately predict the development of AKI and their incorporation into clinical practise could allow early protocols to be developed to treat post transplant AKI.

Version ID
1
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MEDLINE
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Year of Publication
2019

1157.

Incidence and Prognosis of Acute Kidney Injury After Cardiac Arrest in Children.
Canete P, Fernandez A, Solis A, Del Castillo J, Fernandez S, Lopez-Herce J
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Nephron. 141(1):18-23, 2019.
[Journal Article. Observational Study]
UI: 30343292
BACKGROUND/AIMS: The incidence of acute kidney injury (AKI) after cardiac arrest (CA) in adults is associated with a high mortality, but there are few data about the incidence and prognosis of AKI after CA in children. The aim of our study was to analyze the incidence of AKI in children who have experienced an in-hospital CA and its association with mortality.
METHODS: A retrospective observational study in a prospective database was performed including children between the ages 1 month and 16 years, who had undergone an in-hospital CA. Information on clinical, analytical, and monitorization data, treatment, mortality and cause of death were recorded.
RESULTS: Fifty-six children were included in the study (57.6% males). Return of spontaneous circulation (ROSC) was achieved in 49 children (87.7%). Thirty-one patients (55.3%) survived. Four patients (8.1%) were being treated with continuous renal replacement therapies (CCRT) before CA. After ROSC, 7 other children (14.3%) had severe acute kidney injury requiring CRRT. Mortality of children who required CRRT after CA (57.1%) was not significantly higher than that in children who did not (26.3%; p = 0.18). But mortality of patients who need CRRT before or after CA (72.7%) was significantly higher than the remaining patients (26.3%; p = 0.03).
CONCLUSIONS: The frequency of AKI in children after recovering a CA is moderate. AKI that needs CCRT before or after CA is associated with a higher mortality.

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1
Status
MEDLINE
Clinical Trial Number
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Year of Publication
2019

1158.

A clinical predictive model of renal injury in children with congenital solitary functioning kidney.

Poggiali IV, Simoes E Silva AC, Vasconcelos MA, Dias CS, Gomes IR, Carvalho RA, Oliveira MCL, Pinheiro SV, Mak RH, Oliveira EA
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 34(3):465-474, 2019 03.
[Journal Article. Research Support, N.I.H., Extramural. Research Support, Non-U.S. Gov't]
UI: 30324507
BACKGROUND: Solitary functioning kidney (SFK) is an important condition in the spectrum of congenital anomalies of the kidney and urinary tract. The aim of this study was to describe the risk factors for renal injury in a cohort of patients with congenital SFK.
METHODS: In this retrospective cohort study, 162 patients with SFK were systematically followed up (median, 8.5 years). The primary endpoint was time until the occurrence of a composite event of renal injury, which includes proteinuria, hypertension, and chronic kidney disease (CKD). A predictive model was developed using Cox proportional hazards model and evaluated by c statistics.
RESULTS: Among 162 children with SFK included in the analysis, 132 (81.5%) presented multicystic dysplastic kidney, 20 (12.3%) renal hypodysplasia, and 10 (6.2%) unilateral renal agenesis. Of 162 patients included in the analysis, 10 (6.2%) presented persistent proteinuria, 11 (6.8%) had hypertension, 9 (5.6%) developed CKD stage >= 3, and 18 (11%) developed the composite outcome. After adjustment by the Cox model, three variables remained as independent predictors of the composite event: creatinine (HR, 3.93; P < 0.001), recurrent urinary tract infection (UTI) (HR, 5.05; P = 0.002), and contralateral renal length at admission (HR, 0.974; P = 0.002). The probability of the composite event at 10 years of age was estimated as 3%, 11%, and 56% for patients assigned to the low-risk, medium-risk, and high-risk groups, respectively (P < 0.001).
CONCLUSION: Our findings have shown an overall low risk of renal injury for most of infants with congenital SFK. Nevertheless, our prediction model enabled the identification of a subgroup of patients with an increased risk of renal injury over time.
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Year of Publication
2019

1159.

Individual Histologic Lesions and Composite Scores in Implant Biopsies Affect Short-Term and Long-Term Kidney Allograft Function.
Trailin AV, Nykonenko TN, Ostapenko TI, Vildanov SR, Nykonenko OS
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Experimental & Clinical Transplantation: Official Journal of the Middle East Society for Organ Transplantation. 17(4):435-449, 2019 08.
[Journal Article]
UI: 30119615
OBJECTIVES: Our aim was to evaluate which histologic lesions in a donor kidney were associated with graft function up to 5 years and with its dynamics.
MATERIALS AND METHODS: We retrospectively investigated the association between acute and chronic individual histologic lesions and composite scores in preimplant and postreperfusion biopsies from deceased-donor (n = 101) and living-donor (n = 29) kidneys with initial graft function and function at discharge, at 6 months, and at 5 years and slopes of estimated glomerular filtration rate from discharge to 6 months and from 6 months to 5 years.
RESULTS: A high frequency of chronic and acute histologic lesions in donor kidneys is characteristic of our population of donors with high cardiovascular risk. Glomerulitis in preimplant biopsies predicted delayed graft function. Arteriolar hyalinosis predicted impaired initial graft function. Arteriolar hyalinosis and arteriosclerosis both predicted lower estimated glomerular filtration rate at discharge and >= 25% drop in function after 6 months. Glomerulosclerosis affected the estimated glomerular filtration rate at discharge and at 6 months; percentage of changed glomeruli predicted lower function at discharge and at 5 years. Glomerular thrombi in preimplant and postreperfusion biopsies predicted negative slope in estimated glomerular filtration rate from discharge to 6 months and a >= 25% drop in function after 6 months, respectively. Fibrinoid necrosis in glomeruli in preimplant biopsies predicted decline in function of >= 5 mL/min/1.73m2 every year after 6 months. Chronic and total preimplant and posttransplant Banff scores predicted lower estimated glomerular filtration rate at discharge and at 6 months, with >= 25% drop in function after 6 months.

CONCLUSIONS: Intraoperative biopsies are important in identifying patients at risk for worse graft function, especially concerning absence of gain of function early after transplant and loss of function late after transplant.
Version ID
1
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MEDLINE
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Year of Publication
2019

1160.

Bladder emptying method is the primary determinant of urinary tract infections in patients with spinal cord injury: results from a prospective rehabilitation cohort study.
Anderson CE, Chamberlain JD, Jordan X, Kessler TM, Luca E, Mohr S, Pannek J, Schubert M, Brinkhof MWG
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
BJU International. 123(2):342-352, 2019 02.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 30113757
OBJECTIVE: To understand the occurrence of and risk factors for urinary tract infections (UTIs) in patients with spinal cord injury (SCI) undergoing specialized SCI rehabilitation in Switzerland.
PATIENTS AND METHODS: This study used data collected from 369 patients, who participated in a nationwide rehabilitation cohort for SCI in Switzerland between 2013 and 2017. Information on UTIs as well as their potential determinants, including demographics, lesion characteristics, and time-updated data on functional independence and bladder management, was used. Multivariable regression methods were applied to perform a time-updated evaluation of determinants of UTI risk.
RESULTS: The crude incidence rate (IR) of UTIs was 0.55 UTIs per 100 person-days (95% confidence interval [CI] 0.49-0.62), the cumulative IR was 43%, and the median length of stay was 122 days. The bladder emptying method at discharge was largely determined by 28 days after admission. Among those using indwelling or assisted intermittent catheterization (IC), the likelihood of self-IC at discharge was positively related to the level of self-care independence, negatively related to age at injury, and lower in women than men. Catheter users consistently had higher adjusted IRs for UTI than spontaneous voiders. The IR ratios were: indwelling catheter: 5.97 (95% CI 2.63-13.57); assisted IC: 6.05 (95% CI 2.63-13.94); self-IC: 5.16 (95% CI 2.31-11.52); test for differences across catheter groups: P = 0.82. Lesion severity and previous UTI had additional but smaller effect sizes.
CONCLUSIONS: Bladder emptying method was identified as the main risk factor for UTI in patients with SCI. As spontaneous voiders had the lowest UTI rate, further research is warranted to reduce voiding dysfunction, for instance using neuromodulation procedures.

Version ID

1
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Comments
Comment in (CIN)
Year of Publication
2019

1161.

Clinical characteristics of self-reported nocturia in patients with interstitial cystitis, and effects of bladder hydrodistention (with fulguration of Hunner lesions) on nocturia.
Otsuka A, Suzuki T, Aki R, Matsushita Y, Tamura K, Motoyama D, Ito T, Sugiyama T, Miyake H
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Luts. 11(2):O141-O146, 2019 Apr.
[Journal Article]
UI: 30010251
OBJECTIVE: The aim of this study was to investigate the clinical characteristics of nocturia in patients with interstitial cystitis (IC), and the effects of bladder hydrodistention (with fulguration of Hunner lesions) on nocturia.
METHODS: The records of 81 patients who were diagnosed with IC were reviewed. Clinical characteristics were evaluated using the Interstitial Cystitis Symptom Index (ICSI), a visual analogue scale (VAS), and bladder diary data. Differences in characteristics between Hunner-

and non-Hunner-type IC were compared. Correlations between nocturia and other clinical variables were assessed. Stepwise multiple regression analysis was performed to identify factors associated with nocturia. Further, changes in nocturia before and after hydrodistention (with fulguration of Hunner lesions) were analyzed.
RESULTS: The mean (+/- SD) age of patients was 62.2 +/- 15.3 years. Significant differences in nocturia were observed between Hunner- and non-Hunner-type IC. Nocturia was positively correlated with age, urgency score (ICSI and VAS), mean number of urgency episodes per 24 hours and the nocturnal polyuria (NP) index, and negatively correlated with average voided volume. Age, NP index, average voided volume, and the presence of Hunner lesions were independent factors associated with nocturia. Bladder hydrodistention significantly decreased nocturia in non-Hunner type IC without NP. In addition, regardless of the presence or absence of NP, bladder hydrodistention with fulguration of Hunner lesions significantly decreased nocturia in Hunner-type IC.
CONCLUSIONS: The severity of nocturia is associated with age, NP, average voided volume, and the presence of Hunner lesions in IC patients. Bladder hydrodistention (with fulguration of Hunner lesions) has the potential to decrease nocturia.

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Year of Publication
2019

1162.

Risk of acute kidney injury following community prescription of antibiotics: self-controlled case series.
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OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Nephrology Dialysis Transplantation. 34(11):1910-1916, 2019 11 01.
[Journal Article. Research Support, Non-U.S. Gov't]
UI: 29961876
BACKGROUND: Development of acute kidney injury (AKI) following the use of antibiotics such as sulphonamides, trimethoprim and aminoglycosides is a frequently described phenomenon. More recently, an association between fluoroquinolone use and AKI has been suggested. The aim of this study was to evaluate the risk of AKI as an unintended consequence of commonly prescribed antibiotics in a large community cohort using a method that fully adjusts for underlying patient characteristics, including potential unmeasured confounders.
METHODS: A self-controlled case study was conducted and included all individuals aged 18 years and over in the Tayside region of Scotland who had a serum creatinine measured between 1 January 2004 and 31 December 2012. AKI episodes were defined using the Kidney Disease: Improving Global Outcomes definition. Data on oral community-prescribed antibiotics (penicillins, cephalosporins, fluoroquinolones, sulphonamides and trimethoprim, macrolides and nitrofurantoin) were collected for all individuals. Incidence rate ratios (IRRs) for AKI associated with antibiotic exposure versus time periods without antibiotic exposure were calculated.
RESULTS: Combined use of sulphonamides, trimethoprim and nitrofurantoin rose by 47% and incidence of community-acquired AKI rose by 16% between 2008 and 2012. During the study period 12 777 individuals developed 14 900 episodes of AKI in the community, of which 68% was AKI Stage 1, 16% Stage 2 and 16% Stage 3. The IRR of AKI during any antibiotic use was 1.16 [95% confidence interval (CI) 1.10-1.23], and this was highest during sulphonamides or trimethoprim use; IRR 3.07 (95% CI 2.81-3.35). Fluoroquinolone and nitrofurantoin use was not associated with a significantly increased rate of AKI; IRR 1.13 (95% CI 0.94-1.35) and 1.16 (95% CI 0.91-1.50), respectively.
CONCLUSIONS: Incidence of AKI rose by 16% between 2008 and 2012. In the same period the use of sulphonamides, trimethoprim and nitrofurantoin increased by 47%. A significant increased risk of AKI was seen with the use of sulphonamides and trimethoprim, but not with fluoroquinolones or nitrofurantoin.

Version ID
1
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Year of Publication
2019

1163.

Prospective Study on Several Urinary Biomarkers as Indicators of Renal Damage in Children with CAKUT.
Bartoli F, Pastore V, Cale I, Aceto G, Campanella V, Lasalandra C, Magaldi S, Niglio F, Basile A, Cocomazzi R
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
European Journal of Pediatric Surgery. 29(2):215-222, 2019 Apr.
[Journal Article. Multicenter Study]
UI: 29727865
PURPOSE: The aim of the study was to investigate urinary levels of monocyte chemotactic protein-1 (MCP-1), epidermal growth factor (EGF), beta-2-microglobulin (beta2M), and FAS-ligand (FAS-L) in children with congenital anomalies of kidney and urinary tract (CAKUT) disease at risk of developing glomerular hyperfiltration syndrome. For this reason, we selected patients with multicystic kidney, renal agenesia and renal hypodysplasia, or underwent single nephrectomy.
MATERIALS AND METHODS: This prospective, multicentric study was conducted in collaboration between the Pediatric Surgery Unit in Foggia and the Pediatric Nephrology Unit in Bari, Italy. We enrolled 80 children with CAKUT (40 hypodysplasia, 22 agenetic; 10 multicystic; 8 nephrectomy) who underwent extensive urological and nephrological workup. Exclusion criteria were recent urinary tract infections or pyelonephritis, age > 14 years, presence of systemic disease, or hypertension. A single urine sample was collected in a noninvasive way and processed for measuring by enzyme-linked immunosorbent assay urine levels of MCP-1, EGF, beta2M, and FAS-L. As control, urine samples were taken from 30 healthy children.Furthermore, we evaluated the urinary ratios uEGF/uMCP-1 (indicator of regenerative vs inflammatory response) and uEGF/ubeta2M (indicator of regenerative response vs. tubular damage).
RESULTS: These results suggest that urinary levels of MCP-1 are overexpressed in CAKUT patients. Furthermore, our findings clearly demonstrated that both uEGF/uMCP-1 and uEGF/ubeta2M ratios were significantly downregulated in all patient groups when compared with the control group.
CONCLUSION: These findings further support that CAKUT patients may, eventually, experience progressive renal damage and poor regenerative response. The increased urinary levels of MCP-1 in all groups of CAKUT patients suggested that the main factor responsible for the above effects is chronic renal inflammation mediated by local monocytes.

Version ID
1
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MEDLINE
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Year of Publication
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1164.

Paediatric acute kidney injury: can we match therapy with resources around the world?.
Deep A, Symons JM, McCulloch M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Intensive Care Medicine. 45(1):86-88, 2019 01.
[Journal Article]
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Year of Publication
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1165.

Bladder management during pregnancy in women with spinal-cord injury: an observational, multicenter study.
Andretta E, Landi LM, Cianfrocca M, Manassero A, Risi O, Artuso G
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
International Urogynecology Journal. 30(2):293-300, 2019 Feb.
[Journal Article. Multicenter Study. Observational Study]
UI: 29600402
INTRODUCTION AND HYPOTHESIS: Pregnancy in women with spinal-cord injury (SCI) poses a clinical challenge. We hypothesized that changes in the management of neurogenic bladder during pregnancy are commonly required and should receive more attention.
METHODS: Data were collected by retrospective analysis of medical records and via cross-sectional survey of 52 women with SCI, representing 67 pregnancies, at ten Italian neurourological clinics. All participants provided informed consent.

RESULTS: Between 1976 and 2013, 39 participants had one child, 11 had two children, and two had three children. Mean age at the time of SCI was 18 years and at the time of first pregnancy was 30 years. Delivery occurred from weeks 32 to 40 in 98% of first and second pregnancies, and 94% of neonates were healthy. Oxybutynin was used by four women during five pregnancies, which resulted in delivery of healthy babies. Intermittent catheterization was used before 54% of first pregnancies and 39% of second pregnancies. Bladder management was altered during 45% of these pregnancies, and the most common changes were increased use or frequency of intermittent catheterization or use of an indwelling catheter. Urinary tract infections occurred in 48% of pregnancies, and an irregular course was reported in 13% of pregnancies mainly related to tetraplegia and urological complications.
CONCLUSIONS: Pregnancy in women with SCI generally has good outcomes and limited risks but frequently necessitates changes in the management of neurogenic bladder. High levels of awareness and focused monitoring of bladder issues are recommended.
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1
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Year of Publication
2019

1166.

Urine KIM-1 as a Potential Biomarker of Acute Renal Injury After Circulatory Collapse in Children.
Assadi F, Sharbaf FG
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Emergency Care. 35(2):104-107, 2019 Feb.
[Journal Article]
UI: 27741065
OBJECTIVES: Serum creatinine (SCr) is a late marker of acute kidney injury (AKI) due to the lag time between initiating injury and loss of function. We assessed the ability of urinary interleukin-18 (IL-18), kidney injury molecule-1 (KIM-1), and neutrophil gelatinase-associated lipocalin (NGAL) to predict AKI in critically ill children with circulatory collapse.
METHODS: Serum creatinine, estimated creatinine clearance (eCrCL), urine IL-18, KIM-1, and NGAL values were measured in 86 children with circulatory collapse on the day of admission, and the results were compared with those obtained 6 days later. Acute kidney injury was defined as a decrease in eCrCL of greater than 25% within the first 48 hours of enrollment. Areas under the

curve (AUC) for receiver operating characteristic curve were calculated for the early detection of AKI.
RESULTS: Mean SCr concentration did not differ significantly during the first 6 days of hospital admission. In contrast, mean urine concentrations of IL-18, KIM-1, and NGAL rose significantly from day of admission to the sixth day of hospital stay (P < 0.001). Urinary KIM-1 emerged as having the strongest performance for the early detection of AKI, followed by NGAL, IL-18, and eCrCL. Urinary KIM-1 displayed the highest AUC of 0.81 (95% confidence interval [CI], 0.76-0.93; P < 0.001) for the early detection of AKI after circulatory collapse, followed by NGAL (0.77% CI, 0.70-0.84) and IL-18 (0.69% CI, 0.48-0.64).
CONCLUSIONS: Of a panel of 3 promising urinary biomarkers, KIM-1 demonstrated the best performance in predicting AKI in children with circulatory collapse before a change in SCr or eCrCL becomes apparent.
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Year of Publication
2019

1167.

Near-Infrared-Based Cerebral Oximetry for Prediction of Severe Acute Kidney Injury in Critically Ill Children After Cardiac Surgery.
Flechet M, Guiza F, Scharlaeken I, Vlasselaers D, Desmet L, Van den Berghe G, Meyfroidt G
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Critical Care Explorations. 1(12):e0063, 2019 Dec.
[Journal Article]
UI: 32166244
Cerebral oximetry by near-infrared spectroscopy is used frequently in critically ill children but guidelines on its use for decision making in the PICU are lacking. We investigated cerebral near-infrared spectroscopy oximetry in its ability to predict severe acute kidney injury after pediatric cardiac surgery and assessed its additional predictive value to routinely collected data.
DESIGN: Prospective observational study. The cerebral oximeter was blinded to clinicians.
SETTING: Twelve-bed tertiary PICU, University Hospitals Leuven, Belgium, between October 2012 and November 2015.
PATIENTS: Critically ill children with congenital heart disease, younger than 12 years old, were monitored with cerebral near-infrared spectroscopy oximetry from PICU admission until they were successfully weaned off mechanical ventilation.
INTERVENTIONS: None.
MEASUREMENTS AND MAIN RESULTS: The primary outcome was prediction of severe acute kidney injury 6 hours before its occurrence during the first week of intensive care. Near-infrared spectroscopy-derived predictors and routinely collected clinical data were compared and combined to assess added predictive value. Of the 156 children included in the analysis, 55 (35%) developed severe acute kidney injury. The most discriminant near-infrared spectroscopy-derived predictor was near-infrared spectroscopy variability (area under the receiver operating characteristic curve, 0.68; 95% CI, 0.67-0.68), but was outperformed by a clinical model including

baseline serum creatinine, cyanotic cardiopathy pre-surgery, blood pressure, and heart frequency (area under the receiver operating characteristic curve, 0.75; 95% CI, 0.75-0.75; p < 0.001). Combining clinical and near-infrared spectroscopy information improved model performance (area under the receiver operating characteristic curve, 0.79; 95% CI, 0.79-0.80; p < 0.001). CONCLUSIONS: After pediatric cardiac surgery, near-infrared spectroscopy variability combined with clinical information improved discrimination for acute kidney injury. Future studies are required to identify whether supplementary, timely clinical interventions at the bedside, based on near-infrared spectroscopy variability analysis, could improve outcome.

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1168.

Paediatric acute kidney injury hospital admissions in England 1997-2014: burden and risk factors.
Henderson A, Iwagami M, Bottomley C, Tomlinson L, Mansfield K, Nitsch D
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Clinical Kidney Journal. 12(6):859-860, 2019 Dec.
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1169.

Arterial Hypertension and Unusual Ascending Aortic Dilatation in a Neonate With Acute Kidney Injury: Mechanistic Computer Modeling.
Altamirano-Diaz L, Kassay AD, Serajelahi B, McIntyre CW, Filler G, Kharche SR
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Frontiers in Physiology. 10:1391, 2019.
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UI: 31780955
BACKGROUND: Neonatal asphyxia caused kidney injury and severe hypertension in a newborn. An unusually dilatated ascending aorta developed. Dialysis and pharmacological treatment led to partial recovery of the ascending aortic diameters. It was hypothesized that the aortic dilatation may be associated with aortic stiffening, peripheral resistance, and cardiovascular changes. Mathematical modeling was used to better understand the potential causes of the hypertension, and to confirm our clinical treatment within the confines of the model's capabilities.
METHODS: The patient's systolic arterial blood pressure showed hypertension. Echocardiographic exams showed ascending aorta dilatation during hypertension, which partially normalized upon antihypertensive treatment. To explore the underlying mechanisms of the aortic dilatation and hypertension, an existing lumped parameter hemodynamics model was deployed. Hypertension was simulated using realistic literature informed parameter values. It was also simulated using large parameter perturbations to demonstrate effects. Simulations were designed to permit examination of causal mechanisms. The hypertension inducing effects of aortic stiffnesses, vascular resistances, and cardiac hypertrophy on blood flow and pressure were simulated. Sensitivity analysis was used to stratify causes.
RESULTS: In agreement with our clinical diagnosis, the model showed that an increase of aortic stiffness followed by augmentation of peripheral resistance are the prime causes of realistic hypertension. Increased left ventricular elastance may also cause hypertension. Ascending aortic pressure and flow increased in the simultaneous presence of left ventricle hypertrophy and augmented small vessel resistance, which indicate a plausible condition for ascending aorta

dilatation. In case of realistic hypertension, sensitivity analysis showed that the treatment of both the large vessel stiffness and small vessel resistance are more important in comparison to cardiac hypertrophy.
CONCLUSION AND DISCUSSION: Large vessel stiffness was found to be the prime factor in arterial hypertension, which confirmed the clinical treatment. Treatment of cardiac hypertrophy appears to provide significant benefit but may be secondary to treatment of large vessel stiffness. The quantitative grading of pathophysiological mechanisms provided by the modeling may contribute to treatment recommendations. The model was limited due to a lack of data suitable to permit model identification.

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1
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1170.

Acute Kidney Injury in Pediatric Patients on Extracorporeal Membrane Oxygenation: A Systematic Review and Meta-analysis.

Hansrivijit P, Lertjitbanjong P, Thongprayoon C, Cheungpasitporn W, Aeddula NR, Salim SA, Chewcharat A, Watthanasuntorn K, Srivali N, Mao MA, Ungprasert P, Wijarnpreecha K, Kaewput W, Bathini T
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Medicines. 6(4), 2019 Nov 01.
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UI: 31683968
Background: Acute kidney injury (AKI) is a well-established complication of extra-corporal membrane oxygenation (ECMO) in the adult population. The data in the pediatric and neonatal population is still limited. Moreover, the mortality risk of AKI among pediatric patients requiring ECMO remains unclear. Thus, this meta-analysis aims to assess the incidence of AKI, AKI requiring renal replacement therapy and AKI associated mortality in pediatric/neonatal patients requiring ECMO.
Methods: A literature search was performed utilizing MEDLINE, EMBASE, and the Cochrane Database from inception through June 2019. We included studies that evaluated the incidence of AKI, severe AKI requiring renal replacement therapy (RRT) and the risk of mortality among pediatric patients on ECMO with AKI. Random-effects meta-analysis was used to calculate the pooled incidence of AKI and the odds ratios (OR) for mortality.
Results: 13 studies with 3523 pediatric patients on ECMO were identified. Pooled incidence of AKI and AKI requiring RRT were 61.9% (95% confidence interval (CI): 39.0-80.4%) and 40.9% (95%CI: 31.2-51.4%), respectively. A meta-analysis limited to studies with standard AKI definitions showed a pooled estimated AKI incidence of 69.2% (95%CI: 59.7-77.3%). Compared with patients without AKI, those with AKI and AKI requiring RRT while on ECMO were associated with increased hospital mortality ORs of 1.70 (95% CI, 1.38-2.10) and 3.64 (95% CI: 2.02-6.55), respectively.
Conclusions: The estimated incidence of AKI and severe AKI requiring RRT in pediatric patients receiving ECMO are high at 61.9% and 40.9%, respectively. AKI among pediatric patients on ECMO is significantly associated with reduced patient survival.
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1171.

Impact of an Antibiotic Stewardship Program on the Incidence of Vancomycin-Associated Acute Kidney Injury in Hospitalized Children.
Hsu AJ, Tamma PD
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
The Journal of Pediatric Pharmacology & Therapeutics. 24(5):416-420, 2019 Sep-Oct.
[Journal Article]
UI: 31598105
OBJECTIVE: Vancomycin causes considerable acute kidney injury (AKI) in children, particularly in the setting of troughs of 15 to 20 mg/L. We sought to determine whether the addition of prospective audit and feedback to a preauthorization and therapeutic drug monitoring (TDM) program further reduces the incidence of AKI.
METHODS: We conducted a quasiexperimental study of children admitted to The Johns Hopkins Hospital receiving vancomycin for >=48 hours. The incidence of AKI was compared between the preintervention and intervention periods. Additional risk factors for vancomycin-associated AKI were also explored.
RESULTS: A total of 386 courses of vancomycin therapy met eligibility criteria (200 in the preintervention vs 186 in the intervention period). The incidence of vancomycin-associated AKI did not differ between the preintervention and intervention periods, 8% vs 9%, respectively. On multivariable analysis, the number of concurrent nephrotoxins was found to be an independent predictor of vancomycin-associated AKI, with each additional nephrotoxin increasing the risk of AKI by 40% (adjusted OR, 1.40; 95% CI, 1.06-1.85; p = 0.019). Specific nephrotoxins that increased the risk of vancomycin-associated AKI included piperacillin/tazobactam, liposomal amphotericin B, and ibuprofen.
CONCLUSION: The addition of prospective audit and feedback to a preauthorization and TDM program did not result in further AKI reduction. Prospective audit and feedback is a resource-

intensive intervention. If preauthorization restrictions and TDM are already in place, our findings suggest stewardship efforts may be more effective if redirected to focus on other modifiable risk factors for vancomycin-associated AKI, such as minimizing additional nephrotoxins.

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1172.

The Burden of Acute Kidney Injury in Indian Pediatric Intensive Care Units.
Ali U
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Indian Journal of Critical Care Medicine. 23(8):349, 2019 Aug.
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1173.

APOL1 Risk Genotypes Are Associated With Early Kidney Damage in Children in Sub-Saharan Africa.
Ekulu PM, Nkoy AB, Betukumesu DK, Aloni MN, Makulo JRR, Sumaili EK, Mafuta EM, Elmonem MA, Arcolino FO, Kitetele FN, Lepira FB, van den Heuvel LP, Levtchenko EN

OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
KI Reports. 4(7):930-938, 2019 Jul.
[Journal Article]
UI: 31317115
INTRODUCTION: Apolipoprotein-L1 (APOL1) risk variants G1 and G2 increase the risk of chronic kidney disease (CKD), including HIV-related CKD, among African Americans. However, such data from populations living in Africa, especially children, remain limited. Our research aimed to determine the prevalence of APOL1 risk variants and to assess the association between these variants and early-stage CKD in the general pediatric population and HIV-infected children.
METHODS: In a cross-sectional study, we enrolled 412 children from the general population and 401 HIV-infected children in Kinshasa, Democratic Republic of Congo (DRC). APOL1 high-risk genotype (HRG) was defined by the presence of 2 risk variants (G1/G1, G2/G2, or G1/G2), and low-risk genotype (LRG) by the presence of 0 or 1 risk variants. The main outcome was elevated albuminuria, defined as a urinary albumin/creatinine ratio >=30 mg/g.
RESULTS: APOL1 sequence analysis revealed that in the general population, 29 of 412 participants (7.0%) carried HRG, 84 of 412 (20.4%) carried the G1/G0 genotype, and 61 of 412 (14.8%) carried the G2/G0 genotype. In HIV-infected children, 23 of 401 (5.7%) carried HRG, and the same trend as in the general population was observed in regard to the prevalence of LRG. Univariate analysis showed that in the general population, 5 of 29 participants (17.2%) carrying HRG had elevated albuminuria, compared with 35 of 383 (9.0%) with LRG (odds ratio [OR] 2.1, 95% confidence interval [CI] 0.6-6.0; P = 0.13). In HIV-infected children, participants who carried APOL1 HRG had almost 22-fold increased odds of albuminuria compared to those with LRG.
CONCLUSION: The APOL1 risk variants are prevalent in children living in DRC. HRG carriers have increased odds of early kidney disease, and infection with HIV dramatically increases this probability.
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6612006
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1174.

Acute kidney injury in an infant with severe combined immunodeficiency: Questions.
Malakasioti G, Alders N, Lucchini G, Cheng IL, Bockenhauer D
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 34(12):2539-2540, 2019 12.
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Year of Publication
2019

1175.

Identification of Maltase Glucoamylase as a Biomarker of Acute Kidney Injury in Patients with Cirrhosis.
Awdishu L, Tsunoda S, Pearlman M, Kokoy-Mondragon C, Ghassemian M, Naviaux RK, Patton HM, Mehta RL, Vijay B, RamachandraRao SP
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Critical Care Research & Practice. 2019:5912804, 2019.
[Journal Article]
UI: 31179128
BACKGROUND: Acute kidney injury (AKI) is a frequent complication of decompensated cirrhosis with increased mortality. Traditional biomarkers such as serum creatinine are not sensitive for detecting injury without functional change. We hypothesize that urinary exosomes potentially carry markers that differentiate the type of kidney injury in cirrhotic patients.
METHODS: This is a prospective, single-center, and observational study of adult patients with cirrhosis. The patient groups included healthy normal controls, compensated cirrhosis with normal kidney function, decompensated cirrhosis with normal kidney function, and decompensated cirrhosis with AKI. Data were extracted from the electronic health record including etiology of liver disease, MELD score, history of decompensation, Child-Turcotte-Pugh score, history of AKI, and medication exposures. Urine samples were collected at the time of consent. Urine exosome protein content was analyzed, and proteomic data were validated by immunoblotting. Statistical analysis included partial least squares-discriminant analysis coupled with variable importance in projection identification.
RESULTS: Eighteen cirrhotic subjects were enrolled, and six healthy control subjects were extracted from our biorepository. Urine exosomes were isolated, and 1572 proteins were identified. Maltase-glucoamylase was the top discriminating protein confirmed by western blotting.
CONCLUSIONS: Patients with cirrhosis and AKI have upregulation of renal brush border disaccharidase, MGAM, in urinary exosomes which may differentiate the type of kidney injury in cirrhosis; however, the clinical significance of this requires further validation.
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1
Status
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1176.

Erratum: Hollinger A, Wittebole X, Francois B, et al. Proenkephalin A 119-159 (Penkid) is an early biomarker of septic acute kidney injury: the Kidney in Sepsis and Septic Shock (Kid-SSS) Study. Kidney Int Rep. 2018;3:1424-1433.
Anonymous
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
KI Reports. 4(1):187, 2019 01.
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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6308820
Year of Publication
2019

1177.

Outcome of patients with failed pelvic fracture-associated urethral injury repair: A single centre 10-year experience.

Garg G, Singh M, Kumar M, Aggarwal A, Pandey S, Sharma D, Sankhwar SN
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Turkish Journal of Urology. 45(2):139-145, 2019 03.
[Journal Article]
UI: 30475700
OBJECTIVE: The management of recurrent posterior urethral strictures developing after pelvic fracture urethral injury (PFUI) is a challenging task. Despite availability of many surgical approaches, there is no consensus regarding the optimal approach. The objective of this study was to present our 10-year experience in the management of recurrent urethral strictures due to PFUI.
MATERIAL AND METHODS: We did a retrospective single-institution review of patients who underwent surgical management for recurrent posterior urethral strictures from January 2006 to December 2016 using descriptive statistics. We included only those patients with PFUI who underwent some definitive surgical procedure for their previous failed repair(s).
RESULTS: The final analysis included data of 50 male patients (10 adolescents and 40 adults). Mean age of the patients was 29.92+/-10.62 years. The average length of stricture was 3.02+/-1.47 cm. Progressive perineal urethroplasty (PPU) was done in 40 cases. Two patients with concomitant rectourethral fistula/false passage underwent transpubic urethroplasty (TPU). Three patients with complete bulbar necrosis were managed with single stage/staged preputial tube reconstruction. One patient underwent microsurgical urethroplasty using radial free forearm flap while in two patients each Mitrofanoff appendicovesicostomy and perineal urethrostomy was done. Majority of complications were minor (Clavien Grade 1 and 2). Overall success rate of PPU was 75%. Mean follow-up period was 29.46+/-10.68 months (range: 13-60 months).
CONCLUSION: Most cases of recurrent posterior urethral strictures of <3 cm in length can be operated by PPU with reasonable success rates. Complex and long-segment (higher than 3 cm) strictures require use of ancillary procedures like TPU, substitution urethroplasty and Mitrofanoff appendicovescostomy.
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1
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PMID
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6368039
Year of Publication
2019

1178.

Spinal cord lesions in a pediatric patient with chronic kidney disease and review of literature: Questions.
Tiwana H, Patel H, Asghar S, Kumar A, Freeman M
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 34(6):1033, 2019 06.
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Year of Publication
2019

1179.

Correction to: Acute kidney injury in neonatal encephalopathy: an evaluation of the AWAKEN database.
Kirkley MJ, Boohaker L, Griffin R, Soranno DE, Gien J, Askenazi D, Gist KM
OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
Pediatric Nephrology. 34(2):363, 2019 Feb.
[Published Erratum]
UI: 30315405
The original version of this article unfortunately contained a mistake. The collaborators of the Neonatal Kidney Collaborative (NKC) were not named individually. The list of all collaborators is given below.
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Comments
Erratum for (EFR)
Year of Publication
2019

1180.

Acute kidney injury in children hospitalized with diarrheal illness in the United States.
Bradshaw C., Han J., Chertow G.M., Long J., Sutherland S.M., Anand S.
Embase
Hospital Pediatrics. 9(12) (pp 933-941), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 2004359044
OBJECTIVES: To determine the incidence, correlates, and consequences of acute kidney injury (AKI) among children hospitalized with diarrheal illness in the United States.
METHOD(S): Using data from Kids' Inpatient Database in 2009 and 2012, we studied children hospitalized with a primary diagnosis of diarrheal illness (weighted N 5 113 195). We used the International Classification of Diseases, Ninth Revision, Clinical Modification, diagnosis codes 584.5 to 584.9 to capture AKI. We calculated the incidence, correlates, and consequences (mortality, length of stay [LOS], and costs) of AKI associated with hospitalized diarrheal illness using stepwise logistic regression and generalized linear models.
RESULT(S): The average incidence of AKI in children hospitalized with diarrheal illness was 0.8%. Hospital location and teaching status were associated with the odds of AKI, as were older age, solid organ transplant, hypertension, chronic kidney disease, and rheumatologic and hematologic conditions. The development of AKI in hospitalized diarrheal illness was associated with an eightfold increase in the odds of in-hospital mortality (odds ratio 8.0; 95% confidence interval [CI] 4.2-15.4). AKI was associated with prolonged LOS (mean increase 3.0 days; 95% CI 2.3-3.8) and higher hospital cost (mean increase $9241; 95% CI $4661-$13 820).
CONCLUSION(S): Several demographic factors and comorbid conditions are associated with the risk of AKI in children hospitalized with diarrheal illness. Although rare, development of AKI in this common pediatric condition is associated with increased mortality, LOS, and hospital cost.

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Publisher
American Academy of Pediatrics
Year of Publication
2019

1181.

Iatrogenic Ureteral Injury as a Complication of Posterior or Lateral Lumbar Spine Surgery: A Systematic Review of the Literature.
Turgut M., Turgut A.T., Dogra V.S.
Embase
World neurosurgery. (no pagination), 2019. Date of Publication: 27 Dec 2019.
[Review]
AN: 630481924
OBJECTIVE: Iatrogenic ureteral injury associated with lumbar spine surgery is an uncommon but devastating complication with associated medico-legal implications.
METHOD(S): We performed a systematic review of the English-language literature published between 1954 and 2019, accessed through four popular databases. We found a total of 44 articles (28 case reports, 9 case based reviews, 4 case series, 1 original article, 1 case illustration, and 1 pictorial) containing 46 cases of ureteral injuries following posterior or lateral lumbar spine surgery.
RESULT(S): Except five cases with insufficient data, 24 of the remaining 41 patients were female and 17 were male, with ages ranging from 16 years to 83 years. Excluding four cases without enough information, initial diagnoses of lumbar disc herniation (n=33) or lumbar spinal stenosis (n=4), spondylolisthesis (n=3), degenerative disc disease (n=1), and failed back surgery syndrome (n=1) from 18 countries, with USA, Japan and Turkey in 54% of patients. The interval from the spinal surgery to the restorative surgery ranged from less than 24 hours to that of 1 month-1 year, with 48% of patients with more than 1 week and a complete recovery in 90% of patients. The initial surgery was combined with vascular injury in 15% of patients.
CONCLUSION(S): Today, ureteral injury associated with lumbar spine surgery is an over-reported entity in developed or developing countries. It should be considered in the differential diagnosis of any patient who presents with symptoms of acute abdomen after lumbar spine surgery and the cases who underwent restorative surgery have a good prognosis.

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Article-in-Press
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Publisher
NLM (Medline)
Year of Publication
2019

1182.

Risk of severe acute kidney injury in multiple trauma patients: Risk estimation based on a national trauma dataset.
Ahmed N., Mathew R.O., Kuo Y.-H., Md A.A.
Embase
Injury. (no pagination), 2019. Date of Publication: 09 Nov 2019.
[Article]
AN: 629949757
INTRODUCTION: The development of acute kidney injury (AKI) in trauma patients has been associated with almost three fold increase in overall mortality. However, there is a paucity of information of early recognition of risk factors of severe AKI in trauma patients examining the patient's demography, injury characteristics and comorbidities. The purpose of the study was early identification of risk factors of severe AKI.
METHOD(S): This retrospective cohort study was performed using 2012-2016, American College of Surgeon Trauma Quality improvement program (ACS-TQIP) data, a national data base of trauma patients in the United State. All adult Trauma patients, age 16 to 89 years old, admitted to the hospital were included in the study. Other variables included; race, sex, initial systolic blood pressure (SBP), SBP<90mmHg, heart rate, injury severity score (ISS), Glasgow Coma Scale Motor Score (GCSMOT), injury type and patient's comorbidities; diabetes mellitus (DM), hypertension (HTN), congestive heart failure (CHF) and history of smoking. A multiple logistic regression model was used to assess the chance of having severe AKI. The receiver-operating characteristics (ROC) curve was constructed, and the corresponding area-under-the curve (AUC) was calculated. All p values <0.05 was considered statistically significant.
RESULT(S): Out of 935,402 trauma victims, 9,281 (0.99%) patients developed severe AKI. There were significant differences found between the groups (severe AKI presence vs AKI absence), regarding median age [IQR] (61[43-75] vs. 53[32-71]; p<0.001), ISS (18[10-29] vs. 12[9-17]; p<0.001), DM (25.6% vs. 13.2%; p<0.001), HTN (48.6% vs. 33.3%; p<0.001), CHF (9.8% vs. 3.4%; p<0.001) and history of smoking (16.5% vs. 21.3%; p<0.001) on univariate analysis. A multivariable analysis showed all variables above had a significant association of the development of severe AKI except history of smoking. Older age, male gender, high ISS, SBP<90mmHg, history of DM, HTN, CHF had a higher odds of development of severe AKI. The model showed a moderate strength with area under the curve (AUC) value was 0.750 and the 95% confidence intervals were [0.740, 0.759].
CONCLUSION(S): Current analysis showed certain patients demography, injury characteristics, along with comorbidities are associated with risk of severe AKI.

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31757466 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31757466]
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Publisher
NLM (Medline)
Year of Publication
2019

1183.

Acute Kidney Injury, Fluid Overload, and Outcomes in Children Supported With Extracorporeal Membrane Oxygenation for a Respiratory Indication.
Mallory P.P., Selewski D.T., Askenazi D.J., Cooper D.S., Fleming G.M., Paden M.L., Murphy L., Sahay R., King E., Zappitelli M., Bridges B.C.
Embase
ASAIO journal (American Society for Artificial Internal Organs : 1992). (no pagination), 2019.
Date of Publication: 15 Apr 2019.
[Article]
AN: 627643348
This study seeks to evaluate the association between acute kidney injury (AKI), fluid overload (FO), and mortality in children supported with extracorporeal membrane oxygenation (ECMO) for refractory respiratory failure. This retrospective observational cohort study was performed at six tertiary care children's hospital intensive care units, studying 424 patients < 18 years of age supported with ECMO for >= 24 hours for a respiratory indication from January 1, 2007, to December 31, 2011. In a multivariate analysis, FO level at ECMO initiation was not associated with hospital mortality, whereas peak FO level during ECMO was associated with hospital mortality. For every 10% increase in peak FO during ECMO, the odds of hospital mortality were approximately 1.2 times higher. Every 10% increase in peak FO during ECMO resulted in a significant relative change in the duration of ECMO hours by a factor of 1.08. For hospital survivors, every 10% increase in peak FO level during ECMO resulted in a significant relative change in the duration of mechanical ventilation hours by a factor of 1.13. In this patient population, AKI and FO are associated with increased mortality and should be considered targets for medical interventions including judicious fluid management, diuretic use, and renal replacement therapy.
PMID
31045919 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31045919]
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Publisher
NLM (Medline)
Year of Publication
2019

1184.

Acute Kidney Injury Epidemiology in pediatrics.
Cleto-Yamane T.L., Gomes C.L.R., Suassuna J.H.R., Nogueira P.K.
Embase
Jornal brasileiro de nefrologia : 'orgao oficial de Sociedades Brasileira e Latino-Americana de Nefrologia. 41(2) (pp 275-283), 2019. Date of Publication: 01 Apr 2019.
[Review]
AN: 629177718
We performed a search in the MEDLINE database using the MeSH term: "Acute Kidney Injury", selecting the subtopic "Epidemiology", and applying age and year of publication filters. We also searched for the terms: "acute renal failure" and "epidemiology" "acute tubular necrosis" and "epidemiology" in the title and summary fields with the same filters. In a second search, we searched in the LILACS database, with the terms: "acute renal injury", or "acute renal failure" or "acute kidney injury" and the age filter. All abstracts were evaluated by the authors and the articles considered most relevant, were examined in their entirety. Acute Kidney Injury (AKI) - related mortality ranged from 3-63% in the studies included in this review. AKI etiology has marked regional differences, with sepsis being the main cause in developed countries. In developing countries, primary renal diseases and hypovolemia are still a common cause of AKI.
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30465591 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30465591]
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Publisher
NLM (Medline)
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1185.

Acute kidney injury in Ugandan children with severe malaria is associated with long-term behavioral problems.
Hickson M.R., Conroy A.L., Bangirana P., Opoka R.O., Idro R., Ssenkusu J.M., John C.C.
Embase

PLoS ONE. 14(12) (no pagination), 2019. Article Number: e0226405. Date of Publication: December 2019.
[Article]
AN: 2004349596
Background Acute kidney injury (AKI) is a risk factor for neurocognitive impairment in severe malaria (SM), but the impact of AKI on long-term behavioral outcomes following SM is unknown. Methods We conducted a prospective study on behavioral outcomes of Ugandan children 1.5 to 12 years of age with two forms of severe malaria, cerebral malaria (CM, n = 226) or severe malarial anemia (SMA, n = 214), and healthy community children (CC, n = 173). AKI was defined as a 50% increase in creatinine from estimated baseline. Behavior and executive function were assessed at baseline and 6, 12, and 24 months later using the Child Behavior Checklist and Behavior Rating Inventory of Executive Function, respectively. Age-adjusted z-scores were computed for each domain based on CC scores. The association between AKI and behavioral outcomes was evaluated across all time points using linear mixed effect models, adjusting for sociodemographic variables and disease severity. Results AKI was present in 33.2% of children with CM or SMA at baseline. Children >=6 years of age with CM or SMA who had AKI on admission had worse scores in socio-emotional function in externalizing behaviors (Beta (95% CI), 0.52 (0.20, 0.85), p = 0.001), global executive function (0.48 (0.15, 0.82), p = 0.005) and behavioral regulation (0.66 (0.32, 1.01), p = 0.0002) than children without AKI. There were no behavioral differences associated with AKI in children <6 years of age. Conclusions AKI is associated with long-term behavioral problems in children >=6 years of age with CM or SMA, irrespective of age at study enrollment.

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Publisher
Public Library of Science
Year of Publication
2019

1186.

Wnt/beta-catenin signaling mediates both heart and kidney injury in type 2 cardiorenal syndrome.
Zhao Y., Wang C., Hong X., Miao J., Liao Y., Hou F.F., Zhou L., Liu Y.
Embase
Kidney International. 95(4) (pp 815-829), 2019. Date of Publication: April 2019.

[Article]
AN: 2001687784
In type 2 cardiorenal syndrome, chronic heart failure is thought to cause or promote chronic kidney disease; however, the underlying mechanisms remain poorly understood. We investigated the role of Wnt signaling in heart and kidney injury in a mouse model of cardiac hypertrophy and heart failure induced by transverse aortic constriction (TAC). At 8 weeks after TAC, cardiac hypertrophy, inflammation, and fibrosis were prominent, and echocardiography confirmed impaired cardiac function. The cardiac lesions were accompanied by upregulation of multiple Wnt ligands and activation of beta-catenin, as well as activation of the renin-angiotensin system (RAS). Wnt3a induced multiple components of the RAS in primary cardiomyocytes and cardiac fibroblasts in vitro. TAC also caused proteinuria and kidney fibrosis, accompanied by klotho depletion and beta-catenin activation in the kidney. Pharmacologic blockade of beta-catenin with a small molecule inhibitor or the RAS with losartan ameliorated cardiac injury, restored heart function, and mitigated the renal lesions. Serum from TAC mice was sufficient to activate beta-catenin and trigger tubular cell injury in vitro, indicating a role for circulating factors. Multiple inflammatory cytokines were upregulated in the circulation of TAC mice, and tumor necrosis factor-alpha was able to inhibit klotho, induce beta-catenin activation, and cause tubular cell injury in vitro. These studies identify Wnt/beta-catenin signaling as a common pathogenic mediator of heart and kidney injury in type 2 cardiorenal syndrome after TAC. Targeting this pathway could be a promising therapeutic strategy to protect both organs in cardiorenal syndrome.

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30770217 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30770217]
Status
Embase
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Publisher
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Year of Publication
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1187.

Acute kidney injury in children after cardiac surgery: Risk factors and outcomes. A retrospective cohort study.
Paula Graziani M., Moser M., Martin Bozzola C., Galvez H.M., Garrido J.I., Guido Alvarez P., Lucila Fernie M., Mariani J., Glenda Ernst M.D.
Embase
Archivos Argentinos de Pediatria. 117(6) (pp E557-E567), 2019. Date of Publication: 2019.
[Article]
AN: 2004093988
Introduction. Acute kidney injury (AKI) has been described as a common complication of cardiac surgery in pediatric patients, whose impact on morbidity and mortality has been documented.Itsincidencehasbeenestimatedto beapproximately40%inthispatientgroup.The objectiveofthisstudywastoestimatetheincidence ofAKIinpatientswhounderwentcardiovascular

surgery and to define associated risk factors and the impact of AKI on the parameters of the postoperative course. Population and methods. This was a retrospective, observational study of pediatric patients who underwent cardiovascular surgery between January 2015 and December 2017 at Hospital Britanico de Buenos Aires. The incidence of AKI was defined as per the Kidney Disease: Improving Global Outcomes criteria,basedonpre-andpost-operativeblood creatinine levels and urine output. Results.Atotalof125patientswereincluded.Of them, 35 % developed AKI. The analysis of risk factorsshowedastatisticallysignificantdifference fortheadministrationofvancomycinandthiazide diuretics,redbloodcelltransfusionrequirement, extracorporealcirculationpumptime,clamptime, maximal intraoperative lactate level, minimum temperature,anddelayedchestclosure.Inrelation totheparametersofthepost-operativecourse,we observed a longer hospital stay, higher inotropic requirement,moredaysofmechanicalventilation, bleeding, and neurological complications. Conclusion. In this study, the incidence of AKI was 35 %. Modifiable and non-modifiable associatedriskfactorsweredefinedandagreater rate of complications was observed in patients who developed AKI.

Status
Embase
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Publisher
Sociedad Argentina de Pediatria
Year of Publication
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1188.

Sperm DNA damage before and after kidney transplantation.
Javadneia A., Moghadam M.T., Alivand A., Kheradmand A., Zargar M., Sabbagh S.
Embase
Nephro-Urology Monthly. 11(1) (no pagination), 2019. Article Number: e86990. Date of Publication: February 2019.
[Article]
AN: 2002155630
Background: Thirty-six people per one million have end-stage renal disease (ESRD). ESRD has the indication of kidney transplantation; or hemodialysis and it is one of the causes of infertility in men.
Objective(s): A high prevalence of sperm DNA damage is reported in men's semen with ESRD; therefore, the aim of this study was to evaluate sperm DNA damage in men with ESRD before and after kidney transplantation.
Method(s): This study evaluated 15 men with chronic renal failure and were candidates for kidney transplantation. DNA damage and semen parameters were investigated in the semen of these patients before and after the transplantation. Aniline blue and toluidine blue staining were used to evaluate the sperm chromatin structure and condensation. The slides were analyzed by light microscope to determine the percentage of DNA damage in sperms.

Result(s): The percentage of positive aniline blue and toluidine blue significantly decreased after kidney transplantation (40% versus 29%, P = 0.01 for aniline blue and 45% versus 35%, P = 0.01 for toluidine blue). Sperm morphology, count, motility, and sperm volume were improved after the transplantation; except for the morphology, all of them were statically significant.
Conclusion(s): These findings support that the kidney transplantation in patients with renal failure could improve chromatin structure and condensation and sperm parameters. Additionally both toluidine blue and aniline blue staining are simple and suitable techniques to evaluate DNA damage.

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Publisher
Kowsar Medical Institute
Year of Publication
2019

1189.

Contemporary management of renal trauma in Canada: A 10-year experience at a level 1 trauma centre.
Mann U., Zemp L., Rourke K.F.
Embase
Canadian Urological Association Journal. 13(6) (pp E177-E182), 2019. Date of Publication: 2019.
[Article]
AN: 2002610754
Introduction: Contemporary Canadian renal trauma data is lacking. Our objective is to describe 10-year outcomes of renal trauma at a Canadian level 1 trauma centre using a conservative approach.
Method(s): The Alberta Trauma Registry at the University of Alberta was used to identify renal trauma patients from October 2004 to December 2014. Hospital records and imaging were reviewed to identify clinic-radiographical factors, including patient age, gender, Injury Severity Score (ISS), American Association of the Surgery for Trauma (AAST) grade, computerized tomography (CT) findings, urological interventions, length of stay, transfusion and death rates. Descriptive statistics, Chi-square, and t-tests were used when appropriate.
Result(s): A total of 368 renal trauma patients were identified. Mechanism of injury was blunt trauma in 89.1% of cases, mean age was 36.2 years, and mean ISS was 30.8 (+/-13.6). AAST grade distribution was 16.6% (Grade 1), 22.8% (Grade 2), 36.4% (Grade 3), 20.9% (Grade 4), and 3.3% (Grade 5). Overall, 9.5% (35) of patients required urological intervention for a total of 40 treatments, including ureteral stenting (3.0%), angioembolization (3.3%), percutaneous drainage (0.3%), or open intervention including nephrectomy (2.4%) and renorrhaphy (0.5%). No Grade 1 or 2 injuries required intervention, while 1.5%, 31.2%, and 75.0% of Grade 3, 4, and 5 injuries did, respectively. The overall renal salvage rate was 97.6%, which did not differ by mechanism of

injury (p=0.25). Patients with penetrating trauma were more likely to require urological intervention (20.0% vs. 8.2%; p=0.04). Of the high-grade (III-V) renal injuries identified, 15.7% (35/223) required urological intervention, 4.9% (11) required open surgical intervention, and only 4.0% (9) of patients with high-grade renal injury required nephrectomy.
Conclusion(s): The trend towards conservative treatment of renal trauma in Canada appears well-supported even in a severely injured patient population, as over 90% of patients avoid urological intervention and only 3% require operative intervention resulting in renal salvage rates of 97.6%.

Status
Embase
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Publisher
Canadian Urological Association
Year of Publication
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1190.

Association between sepsis induced acute kidney injury with shock and length of stay in critically ill pediatric patients.
Ganda I.J., Karjana, Daud D.
Embase
Current Pediatric Research. 23(2) (pp 64-70), 2019. Date of Publication: 2019.
[Article]
AN: 2002255471
Introduction: Sepsis induced AKI is reversible increase in serum creatinine levels or nitrogen metabolism products and the inability of the kidneys to regulate fluid and electrolytes to a state of body homeostasis caused by sepsis. This study aimed to find out relationship between sepsisinduced AKI and shock and length of stay in Pediatric Intensive Care Unit (PICU).
Method(s): This prospective cohort study was conducted in PICU from November 2017 to October 2018. A total of 90 sepsis patients were included. The diagnostic of septic shock based on International Pediatric Sepsis Consensus 2015. Kidney function examination and urine production every 8 hours was done to determine whether or not Acute Kidney Injury present. Patient were observed until the outcome occurred; either septic patient become shock or not and how long they were treated in PICU.
Result(s): Result of 90 sepsis patients, 36 patients (40%) become sepsis-induced AKI. Chi Square analysis found significant differences in the incidence of shock in sepsis-induced AKI patient with p=0.00 with OR 4.37, 95% CI 1,689-11.33. Sepsis patient with AKI will undergo longer treatment in PICU if compared to sepsis patients without AKI. However, Mann-Whitney test showed not significant (p=0.25).
Conclusion(s): Incidence of sepsis-induced AKI in this cohort of children was 40%, and shock severity in patients with sepsis induced-AKI was higher than those with sepsis without AKI, and there was no difference in length of stay between sepsis patients with AKI and without AKI.

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Publisher
Scientific Publishers of India

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1191.

A novel multi-biomarker assay for non-invasive quantitative monitoring of kidney injury.
Watson D., Yang J.Y.C., Sarwal R.D., Sigdel T.K., Liberto J.M., Damm I., Louie V., Sigdel S., Livingstone D., Soh K., Chakraborty A., Liang M., Lin P.-C., Sarwal M.M.
Embase
Journal of Clinical Medicine. 8(4) (no pagination), 2019. Article Number: 499. Date of Publication: April 2019.
[Article]
AN: 2002182584
The current standard of care measures for kidney function, proteinuria, and serum creatinine (SCr) are poor predictors of early-stage kidney disease. Measures that can detect chronic kidney disease in its earlier stages are needed to enable therapeutic intervention and reduce adverse outcomes of chronic kidney disease. We have developed the Kidney Injury Test (KIT) and a novel KIT Score based on the composite measurement and validation of multiple biomarkers across a unique set of 397 urine samples. The test is performed on urine samples that require no processing at the site of collection and without target sequencing or amplification. We sought to verify that the pre-defined KIT test, KIT Score, and clinical thresholds correlate with established chronic kidney disease (CKD) and may provide predictive information on early kidney injury status above and beyond proteinuria and renal function measurements alone. Statistical analyses across six DNA, protein, and metabolite markers were performed on a subset of residual spot urine samples with CKD that met assay performance quality controls from patients attending the clinical labs at the University of California, San Francisco (UCSF) as part of an ongoing IRB-approved prospective study. Inclusion criteria included selection of patients with confirmed CKD and normal healthy controls; exclusion criteria included incomplete or missing information for sample classification, logistical delays in transport/processing of urine samples or low sample volume, and acute kidney injury. Multivariate logistic regression of kidney injury status and likelihood ratio statistics were used to assess the contribution of the KIT Score for prediction of kidney injury status and stage of CKD as well as assess the potential contribution of the KIT Score for detection of early-stage CKD above and beyond traditional measures of renal function. Urine samples were processed by a proprietary immunoprobe for measuring cell-free DNA (cfDNA), methylated cfDNA, clusterin, CXCL10, total protein, and creatinine. The KIT Score and stratified KIT Score Risk Group (high versus low) had a sensitivity and specificity for detection of kidney injury status (healthy or CKD) of 97.3% (95% CI: 94.6-99.3%) and 94.1% (95% CI: 82.3-100%). In addition, in patients with normal renal function (estimated glomerular filtration rate (eGFR) >= 90), the KIT Score clearly identifies those with predisposing risk factors for CKD, which could not be detected by eGFR or proteinuria ($p < 0.001$). The KIT Score uncovers a burden of kidney injury that may yet be incompletely recognized, opening the door for earlier detection, intervention and preservation of renal function. View Full-Text

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Publisher
MDPI
Year of Publication
2019

1192.

Meta-analysis: Urinary calprotectin for discrimination of intrinsic and prerenal acute kidney injury.
Chen J.-J., Fan P.-C., Kou G., Chang S.-W., Chen Y.-T., Lee C.-C., Chang C.-H.
Embase
Journal of Clinical Medicine. 8(1) (no pagination), 2019. Article Number: 74. Date of Publication: January 2019.
[Review]
AN: 625830423
Background: Urinary calprotectin is a novel biomarker that distinguishes between intrinsic or prerenal acute kidney injury (AKI) in different studies. However, these studies were based on different populations and different AKI criteria. We evaluated the diagnostic accuracy of urinary calprotectin and compared its diagnostic performance in different AKI criteria and study populations.
Method(s): In accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, we searched PubMed, Embase, and the Cochrane database up to September 2018. The diagnostic performance of urinary calprotectin (sensitivity, specificity, predictive ratio, and cutoff point) was extracted and evaluated.
Result(s): This study included six studies with a total of 502 patients. The pooled sensitivity and specificity were 0.90 and 0.93, respectively. The pooled positive likelihood ratio (LR) was 15.15, and the negative LR was 0.11. The symmetric summary receiver operating characteristic (symmetric SROC) with pooled diagnostic accuracy was 0.9667. The relative diagnostic odds ratio (RDOC) of the adult to pediatric population and RDOCs of different acute kidney injury criteria showed no significant difference in their diagnostic accuracy.
Conclusion(s): Urinary calprotectin is a good diagnostic tool for the discrimination of intrinsic and prerenal AKI under careful inspection after exclusion of urinary tract infection and urogenital malignancies. Its performance is not affected by different AKI criteria and adult or pediatric populations.

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Embase
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1193.

Surveillance of drugs that most frequently induce acute kidney injury: A pharmacovigilance approach.
Hosohata K., Inada A., Oyama S., Furushima D., Yamada H., Iwanaga K.
Embase
Journal of Clinical Pharmacy and Therapeutics. 44(1) (pp 49-53), 2019. Date of Publication: February 2019.
[Article]
AN: 623286390
What is known and objective: Acute kidney injury (AKI) often occurs in hospitalized patients, and it is an increasing problem worldwide. Recently, clinical studies have shown that there is a strong association between drug-induced AKI and poor outcomes, including the progression of chronic kidney disease and end-stage renal disease; however, limited data are available on drug-induced AKI. The purpose of this study was to clarify the rank-order of the association of all drugs with AKI using a spontaneous reporting system database.
Method(s): We performed a retrospective pharmacovigilance disproportionality analysis using the Japanese Adverse Drug Event Report (JADER) database. Adverse event reports submitted to Pharmaceuticals and Medical Devices Agency between April 2004 and January 2017 were analysed. Results and discussion: Based on 5 195 890 reports of all adverse events, we obtained 12 964 reports of AKI caused by all drugs and calculated the reporting odds ratio (ROR) and 95% confidence interval (CI) for AKI. The most frequently reported drugs were valaciclovir hydrochloride (ROR, 24.88; 95% CI: 23.1-26.8), eldecalcitol (ROR, 14.23; 95% CI, 11.68-17.33), edaravone (ROR, 14.03; 95% CI, 11.76-16.75), acyclovir (ROR, 11.17; 95% CI, 9.55-13.1), piperacillin-tazobactam (ROR, 9.23; 95% CI, 7.72-11.0), and spironolactone (ROR, 7.36; 95% CI, 6.12-8.86). What is new and conclusion: A comprehensive study using a pharmacovigilance database enabled us to identify the drugs that most frequently induce AKI, raising physicians' awareness of the drugs in use for patients with potentially decreased renal function.

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30014591 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30014591]
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Publisher
John Wiley and Sons Inc
Year of Publication
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1194.

Factors that influenced undergoing renal replacement therapy and survival in children with acute kidney injury.
Oztek-Celebi F.Z., Ozlu S.G., Aydog O.
Embase
Nephrology. 24(2) (pp 181-187), 2019. Date of Publication: February 2019.
[Article]
AN: 626169704
Aim: Acute kidney injury (AKI) is an important clinical condition that is associated with increased mortality and morbidity. This study was performed to identify the factors that influence AKI stage, undergoing renal replacement therapy (RRT) and mortality.
Method(s): This study was retrospectively conducted on 219 children with AKI who had been referred to the paediatric nephrology division of Dr Sami Ulus Teaching Hospital during their inpatient treatment from 2008 to 2012. AKI was defined using pRIFLE criteria.
Result(s): From the 219 enrolled patients, 131 were identified as having AKI at the time of hospital admission. Infant age group was the largest group. RRT was performed in 68 patients. Median RRT initiation time was 1.5 day (0-2) and the mortality increased significantly when RRT initiation time was >1 day. The likelihood of undergoing RRT was higher for patients who were younger, who were managed in PICU and who had intrinsic type of AKI. pRIFLE stage and AKI place did not influence the likelihood of undergoing RRT. Overall mortality was 26.9%. In log-rank tests, factors influencing survival were younger age, being treated in PICU, developing AKI during inpatient treatment, having a comorbid condition and undergoing RRT. pRIFLE stage did not influence survival. In the logistic regression model, factors associated with mortality included younger age, undergoing RRT and having AKI during inpatient treatment. Having underlying disease and being managed in PICU did not influence the likelihood of death.
Conclusion(s): Acute kidney injury is an important condition in all hospitalized patients. More studies and interventions are needed on this topic to identify, treat and prevent AKI.

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Publisher
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Year of Publication
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1195.

Interleukin-10-1082A/G polymorphism is associated with renal parenchymal damage in congenital anomalies of the kidney and urinary tract.
Miteva L.D., Kostadinova E.S., Stanilova S.A.

Embase
Nephrology. 24(2) (pp 213-220), 2019. Date of Publication: February 2019.
[Article]
AN: 626169651
Aim: The aim of the study was to investigate whether the functional IL10-1082A/G polymorphism exert a role in congenital anomalies of the kidney and urinary tract (CAKUT) in children. Also, the serum IL-10 and its association with genotype and renal parenchymal damage in CAKUT were explored.
Method(s): In the current case-control study, 134 paediatric cases of CAKUT and 382 unrelated controls were included. The genotyping of IL10-1082A/G polymorphism was performed by amplification refractory mutation system-PCR and IL-10 serum level was determined by ELISA.
Result(s): Although, the genotype and allelic frequencies of IL10-1082 A/G polymorphism in cases and controls were similar (chi2 = 0.459; P = 0.79 and chi2 = 0.426; P = 0.51, respectively), significant different genotype distribution between patients with or without parenchymal damage/reduction was observed (chi2 = 6.9; P = 0.032). The GG-genotype was more frequent in cases with renal parenchymal damage/reduction compared to patients with preserved parenchyma (22% vs. 9%; OR = 2.987; 95% CI = 0.979-9.468; P = 0.031). On the contrary, the heterozygous genotype was less frequent among cases with parenchymal damage/reduction compared to cases with preserved parenchyma (39% vs. 59%; OR = 0.453; 95% CI = 0.214-0.958; P = 0.024). Additionally, the serum IL-10 was significantly higher in CAKUT patients compared to age-sex-matched controls (median 11.98; IQR: 7.14-31.6 vs. 5.92; IQR: 4.68-14.8; P = 0.0057). Among carriers of GG-genotype significantly higher IL-10 level was detected in cases with parenchymal damage/reduction, than cases with preserved parenchyma (P = 0.028).
Conclusion(s): Our results suggested that the functional -1082A/G polymorphism in IL10 is associated with risk of renal parenchymal damage/reduction rather than genetic predisposition to CAKUT. Additionally, our study supposes that immunoregulatory cytokine IL-10 might have a significant role in CAKUT.

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Publisher
John Wiley and Sons Inc
Year of Publication
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1196.

Spectrum and immediate outcome of acute kidney injury in a pediatric intensive care unit: A snapshot study from indian subcontinent.
Bharat A., Mehta A., Chandra Tiwari H., Sharma B., Singh A., Singh V.
Embase
Indian Journal of Critical Care Medicine. 23(8) (pp 352-355), 2019. Date of Publication: 2019.
[Article]
AN: 632492803

Background and aims: Acute kidney injury (AKI) became an important cause of mortality and morbidity in critically ill children, despite advancement in its management. In developing countries etiology of AKI are different from that of developed countries.
Material(s) and Method(s): This observational study was carried out in pediatric intensive care unit (PICU) in 2 months to18 years of critically ill children. Kidney injury was defined and categorized by the pRIFLE criteria.
Result(s): Out of 361children, 86 children (23.8%) developed AKI at some point during admission, 275 children (age and sex matched) who did not develop kidney injury during hospitalization served as non-AKI children. Maximum cases of AKI were seen in 1-5 years of age. Maximum children of AKI were of viral encephalitis (n = 43, 50.0%) followed by scrub typhus (n = 14, 16.3%). Risk factors for the development of AKI were shock, PRISM score and longer hospital stay. In our study the mortality in AKI children (n = 30, 34.8%) was significantly higher (p = 0.005) as compared to non-AKI children (n = 56, 20.3%)). Duration on mechanical ventilation, PICU stay and hospital stay were also significantly (p = 0.001) higher in AKI children.
Conclusion(s): AKI is common in critically ill children and associated with high mortality and morbidity.

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Publisher
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Year of Publication
2019

1197.

Validation of International Club of Ascites subclassification of stage 1 acute kidney injury in chronic liver disease.
Khatua C.R., Sahu S.K., Barik R.K., Pradhan S., Panigrahi S., Mishra D., Singh S.P.
Embase
JGH Open. 3(4) (pp 290-294), 2019. Date of Publication: August 2019.
[Article]
AN: 626601739
Background and Aim: Acute kidney injury (AKI) commonly occurs in patients with chronic liver disease (CLD). As per the International Club of Ascites, AKI is classified into three stages; stage 1 has recently been divided into subgroups 1A and 1B. We performed a prospective study to validate the association between subgrouping and outcome.
Method(s): This study was conducted using decompensated cirrhosis (DC) patients hospitalized in the Gastroenterology ward between August 2016 and May 2018. Demographic, clinical, and laboratory parameters were compared between AKI 1A and AKI 1B patients. The duration of hospitalization and outcome were compared.
Result(s): A total of 528 subjects were enrolled; 296 (56.1%) had AKI, and of them, 61.48% (n = 182) had stage 1, 20.95% (n = 62) had stage 2, and 17.57% (n = 52) had stage 3 AKI. Of the enrolled patients, 100 (54.94%) had early (AKI 1A) and 82 (45.06%) had late stage 1 AKI (AKI 1B). Patients with AKI 1B had higher total leucocyte count, total bilirubin, serum urea, serum creatinine (SCr), model for end-stage liver disease (MELD), MELD-Na+, and child-turcotte-pugh (CTP) score and decreased serum albumin than AKI 1A. The prevalence of hepatorenal

syndrome (HRS), acute on chronic liver failure (ACLF) were higher in AKI 1B patients, and they had a prolonged hospital stay compared to AKI 1A patients. Furthermore, AKI 1B patients had significantly lower survival both at 28 days and 90 days.
Conclusion(s): Our study validates the subclassification of stage 1 AKI. Patients with AKI 1B more often progress to higher AKI stages with significantly lower 28-day and 90-day survival rates. Results justify subclassification and suggest the need for early intervention. The small increase in SCr should be viewed with caution in AKI stage 1A.

Status
Embase
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Publisher
John Wiley and Sons Inc
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2019

1198.

Effect of sevoflurane and propofol on acute kidney injury in pediatric living donor liver transplantation.
Li H., Weng Y., Yuan S., Liu W., Yu H., Yu W.
Embase
Annals of Translational Medicine. 7(14) (no pagination), 2019. Article Number: 340. Date of Publication: 01 Jul 2019.
[Article]
AN: 628878858
Background: Acute kidney injury (AKI) is the primary cause of morbidity and mortality after major abdominal surgery. However, little is known about the effect of anesthetics on the development of AKI after pediatric liver transplantation (LT). This study aimed to compare the effects of propofol and sevoflurane anesthetics on postoperative AKI after LT surgery.
Method(s): A total of 120 pediatric patients scheduled for pediatric LT were randomly assigned to receive either continuous infusion of propofol or inhalation of sevoflurane. Serum creatinine (Scr), inflammatory medium and oxidative stress factors and renal biomarkers were measured before surgery (T1), 5 min after anhepatic phase (T2), 10 min after ischemia reperfusion (T3), 2 h after ischemia reperfusion (T4), 24 h after surgery (T5), and 3 d after surgery (T6) to evaluate the effects of anesthetics on the development of postoperative AKI.
Result(s): The incidence of AKI was lower in patients receiving sevoflurane than those receiving propofol. The mean arterial pressure was changed slightly in sevoflurane group. The inflammatory factors of interleukin-18, tumor necrosis factor-alpha, and the levels of neutrophil gelatinase-associated lipocalin (NGAL) were lower in sevoflurane group, while no oxidative stress factors [hydrogen peroxide (H2O2), malondialdehyde and superoxide dismutase)] and interleukin-10 showed differences between the groups.
Conclusion(s): Anesthesia with sevoflurane may be associated with a modest decrease in the incidence of AKI when compared with propofol. Further clarification with relevance to such association is warranted.

Status
Embase
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Publisher
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Year of Publication
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1199.

Monoclonal immunoglobulin G deposits on tubular basement membrane in renal allograft: Is this significant for chronic allograft injury?.
Sawada A., Kawanishi K., Horita S., Omoto K., Okumi M., Shimizu T., Taneda S., Fuchinoue S., Ishida H., Honda K., Hattori M., Tanabe K., Koike J., Nagashima Y., Nitta K.
Embase
Nephrology Dialysis Transplantation. 34(4) (pp 711-717), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 629317899
Background: Tubular basement membrane immune deposits (TBMID) has rarely been observed in renal allografts. It is usually found in BK virus nephropathy and immune complex glomerulonephritis; however, its significance is not well understood. We conducted a retrospective clinicopathological study on monoclonal immunoglobulin G (IgG) TBMID.
Method(s): We studied 7177 renal allograft biopsy specimens obtained from Tokyo Women's Medical University from 2007 to 2015 and performed light microscopic, electron microscopic and immunofluorescence studies.
Result(s): Tubular basement membrane (TBM) deposits of IgG were found in 73 biopsies from 61 patients and the IgG subclass was obtained in 31 biopsies. There were no cases of monoclonal IgA or IgM TBMID. In total, 13 biopsies from 10 patients showed monoclonal IgG TBMID. Of these, seven showed monoclonal IgG1kappa TBMID and one each showed monoclonal IgG2kappa, IgG2lambda and IgG3kappa TBMID. Conversely, eight patients showed polyclonal IgG TBMID. In electron microscopy, large granular electron-dense deposits (EDDs) in the TBM were detected in all patients with monoclonal IgG1kappa TBMID. EDDs were absent in TBM in patients with monoclonal IgG2kappa, IgG2lambda or IgG3kappa TBMID. Progression of interstitial fibrosis and tubular atrophy (IFTA) was significantly higher in patients with monoclonal IgG1kappa TBMID than in those with polyclonal IgG TBMID ($P < 0.05$). There were no significant differences in the other clinical parameters between monoclonal IgG1kappa and polyclonal IgG TBMID.
Conclusion(s): This is the first study of patients with monoclonal IgG TBMID in renal allografts. We found that monoclonal IgG1kappa TBMID was associated with EDD formation in TBM and IFTA progression.

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Publisher
Oxford University Press
Year of Publication
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1200.

Markers of acute kidney injury in children undergoing hematopoietic stem cell transplantation.
Augustynowicz M., Bargenda-Lange A., Kalwak K., Zwolinska D., Musial K.
Embase
Advances in Clinical and Experimental Medicine. 28(8) (pp 1111-1118), 2019. Date of Publication: 2019.
[Review]
AN: 2003184159
Acute kidney injury (AKI), one of the major complications in children undergoing hematopoietic stem cell transplantation (HSCT), is an independent predictor of the patient's survival and a prognostic factor of progression to chronic kidney disease (CKD). Despite the multifaceted role of AKI, its early diagnosis in the course of HSCT remains a challenge. These difficulties may result from the inefficiency of traditional methods used to assess kidney function, like serum creatinine or estimated glomerular filtration rate. Moreover, the list of potential AKI markers tested in HSCT conditions is limited and does not involve indexes evaluated in the pediatric population. This review summarizes current knowledge on the pathophysiology of AKI developing in the course of HSCT; presents well-known markers of AKI that are potentially applicable in children who have undergone HSCT; discusses the role of new markers in diagnosing AKI and predicting the renal outcome in children undergoing HSCT; and analyzes the prospects for the use of new tools for assessing kidney injury in everyday clinical practice.

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30740947 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30740947]
Status
Embase
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Publisher
Wroclaw University of Medicine

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2019

1201.

Bladder injury as a complication of cesarean deliveries and peripartum hysterectomy.
Tayeh N.K., Kareem N.K., Fawzi H.A.
Embase
Indian Journal of Public Health Research and Development. 10(4) (pp 467-471), 2019. Date of Publication: April 2019.
[Article]
AN: 2001750492
Objective: review the incidence of iatrogenic bladder injuries (IBI) in obstetrical procedures and to identify the risk factors for these injuries.
Material(s) and Method(s): a retrospective research involve all patients that had cesarean deliveries (CS) and peripartum hysterectomies at Fatima Al-Zahraa Administrative hospital, from the 1st of January 2015 till the 30th of September 2018.
Result(s): A total of 35,212 CS performed during the study period, 68(0.19%) CS and peripartum hysterectomies were complicated by bladder injury of them 41% were type 1, 53% were type 2, and 6% were type 3 complications. Adhesions documented in 73%, while 12% had placenta accreta and 15% had ruptured uterus. Elective CS performed in 47% of the cases. Most cases of IBI occurred during reflection of bladder flap 56% and are mainly in type 1 and type 2 while 30% occurred during delivering the baby. All cases of type 3 (6%) occurred during opening the peritoneum.
Conclusion(s): bladder injury is a rare complication of cesarean delivery and peripartum hysterectomy but knowledge of the obstetrical, surgical and anatomical factors that can predispose to injury is the key to prevention..

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Publisher
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1202.

Autoantibody levels are associated with acute kidney injury, anemia and post-discharge morbidity and mortality in Ugandan children with severe malaria.
Rivera-Correa J., Conroy A.L., Opoka R.O., Batte A., Namazzi R., Ouma B., Bangirana P., Idro R., Schwaderer A.L., John C.C., Rodriguez A.

Embase
Scientific reports. 9(1) (pp 14940), 2019. Date of Publication: 17 Oct 2019.
[Article]
AN: 629632997
Autoantibodies targeting host antigens contribute to autoimmune disorders, frequently occur during and after infections and have been proposed to contribute to malaria-induced anemia. We measured anti-phosphatidylserine (PS) and anti-DNA antibody levels in 382 Ugandan children prospectively recruited in a study of severe malaria (SM). High antibody levels were defined as antibody levels greater than the mean plus 3 standard deviations of community children (CC). We observed increases in median levels of anti-PS and anti-DNA antibodies in children with SM compared to CC (p<0.0001 for both). Children with severe malarial anemia were more likely to have high anti-PS antibodies than children with cerebral malaria (16.4% vs. 7.4%), p=0.02. Increases in anti-PS and anti-DNA antibodies were associated with decreased hemoglobin (p<0.05). A one-unit increase in anti-DNA antibodies was associated with a 2.99 (95% CI, 1.68, 5.31) increase odds of acute kidney injury (AKI) (p<0.0001). Elevated anti-PS and anti-DNA antibodies were associated with post-discharge mortality (p=0.031 and p=0.042, respectively). Children with high anti-PS antibodies were more likely to have multiple hospital readmissions compared to children with normal anti-PS antibody levels (p<0.05). SM is associated with increased autoantibodies against PS and DNA. Autoantibodies were associated with anemia, AKI, post-discharge mortality, and hospital readmission.
PMID
31624288 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31624288]
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Publisher
NLM (Medline)
Year of Publication
2019

1203.

Kidney and uro-trauma: WSES-AAST guidelines.
Coccolini F., Moore E.E., Kluger Y., Biffl W., Leppaniemi A., Matsumura Y., Kim F., Peitzman A.B., Fraga G.P., Sartelli M., Ansaloni L., Augustin G., Kirkpatrick A., Abu-Zidan F., Wani I., Weber D., Pikoulis E., Larrea M., Arvieux C., Manchev V., Reva V., Coimbra R., Khokha V., Mefire A.C., Ordonez C., Chiarugi M., Machado F., Sakakushev B., Matsumoto J., Maier R., di Carlo I., Catena F.
Embase
World journal of emergency surgery : WJES. 14 (pp 54), 2019. Date of Publication: 2019.

[Review]
AN: 630190415
Renal and urogenital injuries occur in approximately 10-20% of abdominal trauma in adults and children. Optimal management should take into consideration the anatomic injury, the hemodynamic status, and the associated injuries. The management of urogenital trauma aims to restore homeostasis and normal physiology especially in pediatric patients where non-operative management is considered the gold standard. As with all traumatic conditions, the management of urogenital trauma should be multidisciplinary including urologists, interventional radiologists, and trauma surgeons, as well as emergency and ICU physicians. The aim of this paper is to present the World Society of Emergency Surgery (WSES) and the American Association for the Surgery of Trauma (AAST) kidney and urogenital trauma management guidelines.

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31827593 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31827593]
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Publisher
NLM (Medline)
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1204.

Factors Associated with Mortality of Intensive Care Unit Patients with Acute Kidney Injury at Cipto Mangunkusumo National Central General Hospital.
Lydia A., Rebecca R.V., Sedono R., Mansjoer A.
Embase
Acta medica Indonesiana. 51(4) (pp 324-330), 2019. Date of Publication: 01 Oct 2019.
[Article]
AN: 630890038
BACKGROUND: the incidence of acute kidney injury (AKI) in intensive care units is associated with increased mortality, post AKI morbidity and high treatment costs. Research on factors related to mortality of AKI patients in intensive care units in Indonesia, especially Cipto Mangungkusumo General Hospital has never been done. This study aims to determine the prevalence of AKI, mortality rate of AKI patients, and the factors associated with increased mortality of AKI patients in intensive care units in ICU Cipto Mangunkusumo General Hospital.
METHOD(S): this is a retrospective cohort study of all patients diagnosed with AKI in the intensive care unit at Cipto Mangunkusumo General Hospital, January 2015 - December 2016. An analysis of bivariate relationships with multvariate with STATA Statistics 15.0 between age > 60 years, sepsis, use of ventilator, ventilator duration, dialysis, oligoanuria, and APACHE II scores at admission with mortality.
RESULT(S): the prevalence of AKI patients in the intensive care unit was 12.25% (675 of 5511 subjects) and 220 subjects (32.59%) of the 675 analyzed subjects died in the intensive care unit. Factors related to increased mortality in multivariate analysis were sepsis (OR 6,174; IK95% 3,116-12,233), oligoanuria (OR 4,173; IK95% 2,104-8,274), use of ventilator (OR 3,085; IK95% 1,348-7,057), (scores APACHE II at admission) 1/2 [OR 1,597; IK95% 1.154-2.209], and the duration of the ventilator (OR 1.062; IK95% 1.012-1.114).
CONCLUSION(S): the prevalence of AKI patients and their mortality rate in the intensive care unit of Cipto Mangunkusumo General Hospital obtained 12.25% and 32.59%. Sepsis, oligoanuria, ventilators (APACHE II score at admission) 1/2, and ventilator duration are factors that are significantly associated with increased mortality of AKI patients in intensive care units.
PMID
32041916 [https://www.ncbi.nlm.nih.gov/pubmed/?term=32041916]
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Publisher
NLM (Medline)
Year of Publication
2019

1205.

Hospitalization Trends for Acute Kidney Injury in Kidney Transplant Recipients in the United States, 2004-2014.
Garg N., Kumar N., Singh T., Parajuli S., Astor B.C., Mandelbrot D., Djamali A.
Embase
Transplantation. 103(11) (pp 2405-2412), 2019. Date of Publication: 01 Nov 2019.
[Article]
AN: 629693586
BACKGROUND: The incidence of acute kidney injury (AKI) and AKI requiring dialysis (AKI-D) in the general population is increasing. However, there is limited information on the epidemiology of AKI-related hospitalizations in the prevalent US kidney transplant population.
METHOD(S): We analyzed trends in the incidence of hospitalizations with primary diagnosis of AKI and secondary diagnosis of AKI and AKI-D using data from the National Inpatient Sample 2004-2014. Co-primary endpoints were in-hospital mortality, length of stay (LOS), and cost. Survey analysis techniques were used to compute national estimates. Linear trends in outcomes were evaluated using linear regression.
RESULT(S): There were a total of 37562 hospitalizations for primary AKI, 136628 for secondary AKI, and 10731 for AKI-D during the study period. We found an increase in hospitalizations for all 3 diagnoses over time (13.7-24.7 per thousand kidney transplant recipients [KTRs] for primary AKI, 37.4-108.0 per thousand KTRs for secondary AKI, and 4.2-6.0 per thousand KTRs for AKI-D; all P trend < 0.01). This was accompanied by significant improvements in in-hospital mortality (3.2%-0.5% for primary and 6.1%-4.4% for secondary AKI; both P trend < 0.01), average LOS (5.3-4.6 days for primary and 8.4-7.2 days for secondary AKI; both P trend < 0.001), and cost ($11635-$8234 for primary and $21373-$17470 for secondary AKI; P trend < 0.001 for both).
CONCLUSION(S): The incidence of hospitalizations for AKI and AKI-D among KTRs is rapidly rising. This has been accompanied by significant improvements in in-hospital mortality, LOS, and cost.
PMID
30801533 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30801533]
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Publisher
NLM (Medline)
Year of Publication
2019

1206.

Early Diagnosis and Prognostic Value of Acute Kidney Injury in Critically Ill Patients.
Dobiliene D., Masalskiene J., Rudaitis S., Vitkauskiene A., Peciulyte J., Kevalas R.
Embase

Medicina (Kaunas, Lithuania). 55(8) (no pagination), 2019. Date of Publication: 20 Aug 2019.
[Article]
AN: 629134333
Background and objectives: In hospitalized children, acute kidney injury (AKI) remains to be a frequent and serious condition, associated with increased patient mortality and morbidity. Identifying early biomarkers of AKI and patient groups at the risk of developing AKI is of crucial importance in current clinical practice. Specific human protein urinary neutrophil gelatinase-associated lipocalin (uNGAL) and interleukin 18 (uIL-18) levels have been reported to peak specifically at the early stages of AKI before a rise in serum creatinine (sCr). Therefore, the aim of our study was to determine changes in uNGAL and uIL-18 levels among critically ill children and to identify the patient groups at the highest risk of developing AKI.
Material(s) and Method(s): This single-center prospective observational study included 107 critically ill children aged from 1 month to 18 years, who were treated in the Pediatric Intensive Care Unit (PICU) of Lithuanian University of Health Sciences Hospital Kauno Klinikos from 1 December 2013, to 30 November 2016. The patients were divided into two groups: those who did not develop AKI (Group 1) and those who developed AKI (Group 2).
Result(s): A total of 68 (63.6%) boys and 39 (36.4%) girls were enrolled in the study. The mean age of the patients was 101.30 +/- 75.90 months. The mean length of stay in PICU and hospital was 7.91 +/- 11.07 and 31.29 +/- 39.09 days, respectively. A total of 32 (29.9%) children developed AKI. Of them, 29 (90.6%) cases of AKI were documented within the first three days from admission to hospital. In all cases, AKI was caused by diseases of non-renal origin. There was a significant association between the uNGAL level and AKI between Groups 1 and 2 both on day 1 ($p = 0.04$) and day 3 ($p = 0.018$). Differences in uNGAL normalized to creatinine in the urine (uCr) (uNGAL/uCr) between the groups on days 1 and 3 were also statistically significant ($p = 0.007$ and $p = 0.015$, respectively). uNGAL was found to be a good prognostic marker. No significant associations between uIL-18 or Uil-18/uCr and development of AKI were found. However, the uIL-18 level of >69.24 pg/mL during the first 24 hours was associated with an eightfold greater risk of AKI progression (OR = 8.33, 95% CI = 1.39-49.87, $p = 0.023$). The AUC for uIL-18 was 73.4% with a sensitivity of 62.59% and a specificity of 83.3%. Age of <20 months, Pediatric Index of Mortality 2 (PIM2) score of >2.5% on admission to the PICU, multiple organ dysfunction syndrome with dysfunction of three and more organ systems, PICU length of stay more than three days, and length of mechanical ventilation of >five days were associated with a greater risk of developing AKI.
Conclusion(s): Significant risk factors for AKI were age of <20 months, PIM2 score of >2.5% on admission to the PICU, multiple organ dysfunction syndrome with dysfunction of 3 and more organ systems, PICU length of stay of more than three days, and length of mechanical ventilation of > five days. uNGAL was identified as a good prognostic marker of AKI. On admission to PICU, uNGAL should be measured within the first three days in patients at the risk of developing AKI. The uIL-18 level on the first day was found to be as a biomarker predicting the progression of AKI.
PMID
31434328 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31434328]
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Publisher
NLM (Medline)
Year of Publication
2019

1207.

Associated factors for acute kidney injury in preterm infants.
Felipin L.C.S., Oliveira R.R., Merino M.F.G.L., Rodrigues B.C., Higarashi I.H.
Embase
Revista brasileira de enfermagem. 72(Supplement 3) (pp 118-124), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 630310307
OBJECTIVE: to analyze the prevalence and factors associated with acute kidney injury in preterm newborns.
METHOD(S): a cross-sectional study based on records data of preterm newborns hospitalized in two neonatal units in northwest Parana State in 2015. For data analysis, the logistic regression model was used by the stepwise forward method and Fisher's Exact Test.
RESULT(S): 132 preterm newborns, with a prevalence of 7.5% of acute kidney injury, were hospitalized. Majority of males, extremely preterm and very low birth weight. Associated factors were the use of non-nephrotoxic antibiotics and the presence of mechanical pulmonary ventilation, increasing the chance of developing acute kidney damage by 2.98 and 1.33/day, respectively. Hospitalization days constituted a protection factor.
CONCLUSION(S): this study was able to identify the prevalence, and outline the variables associated with acute kidney injury in preterm newborns in a particular care situation.
PMID
31851243 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31851243]
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Publisher
NLM (Medline)
Year of Publication
2019

1208.

Renal trauma in a Trauma Intensive Care Unit population.
Pillay V., Pillay M., Hardcastle T.C.
Embase
South African journal of surgery. Suid-Afrikaanse tydskrif vir chirurgie. 57(4) (pp 29-32), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 629990940
BACKGROUND: For the majority of renal injuries, non-operative management is the standard of care with nephrectomy reserved for those with severe trauma. This study in a dedicated Trauma Intensive Care Unit (TICU) population aimed to assess the outcomes of renal injuries and identify factors that predict the need for nephrectomy.
METHOD(S): Patients, older than 18 years, admitted to TICU from January 2007 to December 2014 who sustained renal injuries had data extracted from the prospectively collected Class

Approved Trauma Registry (BCA207-09). Patients who underwent surgical intervention for the renal injury or received non-operative management were compared. The key variables analysed were: patient demographics, mechanism of injury, grade of renal injury, presenting haemoglobin, initial systolic blood pressure, Injury Severity Score and Renal Injury AAST Grade on CT scan in patients who did not necessarily require immediate surgery, or at surgery in those patients who needed emergency laparotomy.
RESULT(S): There were 74 confirmed renal injuries. There were 42 low grade injuries (grade I-III) and 32 high grade injuries (5 grade IV and 27 grade V). Twenty-six (35%) had a nephrectomy: 24 with grade V injuries and 2 with grade IV injuries required nephrectomy. Six patients in the high injury grade arm had non-operative management. A low haemoglobin, low systolic blood pressure, higher injury severity score, and a high-grade renal injury, as well as increasing age were positive predictors for nephrectomy in trauma patients with renal injury.
CONCLUSION(S): Non-operative management is a viable option with favourable survival rates in lower grade injury; however, complications should be anticipated and managed accordingly. High grade injuries predict the need for surgery.

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31773929 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31773929]
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Publisher
NLM (Medline)
Year of Publication
2019

1209.

Recent Pattern of Acute Kidney Injury in Bosnia and Herzegovina.
Mesic E., Aleckovic-Halilovic M., Pjanic M., Hodzic E., Dugonjic-Taletovic M., Halilcevic A., Jasarevic A., Altumbabic A., Moric N., Trnacevic S.
Embase
Medical archives (Sarajevo, Bosnia and Herzegovina). 73(4) (pp 276-281), 2019. Date of Publication: 01 Aug 2019.
[Article]
AN: 629961442
Introduction: Acute kidney injury (AKI) is one of the major public health issues with constantly increasing incidence, with epidemiology and outcomes that vary substantially across the world.
Aim(s): Aim of our study was to determine epidemiological characteristics and causes of AKI and to provide a comparison of our findings with data from other low and middle income countries.
Method(s): This retrospective observational study conducted during an 18-month period included 84 patients. Data were collected from hospital information system and patients' medical records. All data were analyzed using descriptive statistics.
Result(s): More than two-thirds of patients were older than 56 years. Most cases of AKI (54,76%) were hospital-acquired and predominantly developed in intensive care units (32,14%). Dominant risk factor was underlying chronic kidney disease (48,81%) and chronic heart failure (45,24. In majority of patients (73,81%) were identified multiple factors that may have contributed to AKI: infection (90,48%), prerenal factors (77,38%), nephrotoxic agents (69,05%), and sepsis (28,57%). Multiple organ failure was identified in 94,05% of patients: cardiovascular (64,56%), respiratory (58,23%) and hematological (56,96%) system. Half of all patients were alive at last observation

day. Leading cause of death was infection/sepsis (21,43%), followed by cancer (16,67%) and shock (14,28%).
Conclusion(s): Data on AKI show great variation, but general picture of AKI resembles more that from high income countries. The need for dialysis and overall mortality remains high. This highlights the importance of early recognition of AKI, timely referral to nephrologist and need for national guidelines and standardized protocols for AKI.

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31762565 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31762565]
Institution
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Publisher
NLM (Medline)
Year of Publication
2019

1210.

Scrub typhus-associated acute kidney injury: A study from a South Indian Tertiary Care Hospital.
Jayaprakash V., Vamsikrishna M., Indhumathi E., Jayakumar M.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 30(4) (pp 883-890), 2019. Date of Publication: 01 Jul 2019.
[Article]
AN: 629177081
Infections including scrub typhus contribute to a significant proportion of community-acquired acute kidney injury (AKI) in the tropics. Scrub typhus infection now requires global attention since disease outbreaks are being reported across continents. We intended to study the clinical profile, renal involvement, and parameters predicting renal involvement in scrub typhus infection. This is a retrospective study. The medical records of all patients who were admitted and treated for scrub typhus infection for a study period of two years (from September 2015 to August 2017) were analyzed, and salient clinical features and laboratory results were collected from the hospital data. Statistical analysis was done from the collected data. Our study had 272 patients including 81 children. Adults constituted 70.96% (n = 193) and the remaining 29.04% (n = 81) were pediatric population. Among adults, females constituted 62.7% (n = 121) and males 37.3% (n = 72). The mean age of the adult population was 45.7 +/- 15 years and that of pediatric patients was 8.56 +/-5.1 years. 18.7% of adult cases and 3.70% of pediatric cases had AKI. Renal replacement therapy was required in 3.67% of adult cases. Mortality was 4.14% in adults and 1.23% in children. Hypotension, pulmonary involvement, central nervous system involvement, multiorgan dysfunction syndrome, increased total counts, elevated aspartate transaminase levels, and hypoalbuminemia predicted AKI in our adult population. Scrub typhus should be considered as a differential in cases presenting with fever and AKI. Outcomes of scrub typhus infection in terms of mortality seem to be improving in this region.
PMID
31464245 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31464245]
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Publisher
NLM (Medline)
Year of Publication
2019

1211.

Evaluation of vascular and kidney injury biomarkers in Mexican children exposed to inorganic fluoride.
Jimenez-Cordova M.I., Gonzalez-Horta C., Ayllon-Vergara J.C., Arreola-Mendoza L., Aguilar-Madrid G., Villareal-Vega E.E., Barrera-Hernandez A., Barbier O.C., Del Razo L.M.
Embase
Environmental Research. 169 (pp 220-228), 2019. Date of Publication: February 2019.
[Article]
AN: 2001306960
Exposure to inorganic fluoride (F) has been implicated in cardiovascular and kidney dysfunction mainly in adult populations. However, limited epidemiological information from susceptible populations, such as children, is available. In this study we evaluated the relationship of F exposure with some vascular and kidney injury biomarkers in children. A cross-sectional study was conducted in 374 Mexican schoolchildren. Dental fluorosis and F concentrations in the water and urine were evaluated. The glomerular filtration rate (eGFR) and the urinary concentrations of kidney injury molecule 1 (KIM-1) and cystatin-C (uCys-C) were examined to assess kidney injury. The carotid intima media thickness (cIMT) and serum concentrations of vascular adhesion molecule 1 (VCAM-1), intracellular adhesion molecule 1 (ICAM-1), endothelin 1(ET-1) and cystatin-C (sCys-C) were measured to assess vascular alterations. High proportions of children exposed to F were observed (79.7% above 1.2 ppm F in urine) even in the low water F exposure regions, which suggested additional sources of F exposure. In robust multiple linear regression models, urinary F was positively associated with eGFR (beta = 1.3, p = 0.015), uCys-C (beta = -8.5, p = 0.043), VCAM-1 (beta = 111.1, p = 0.019), ICAM-1 (beta = 57, p = 0.032) and cIMT (beta = 0.01, p = 0.032). An inverse association was observed with uCys-C (beta = -8.5, p = 0.043) and sCys-C (beta = -9.6, p = 0.021), and no significant associations with ET-1 (beta = 0.069, p = 0.074) and KIM-1 (beta = 29.1, p = 0.212) were found. Our findings revealed inconclusive results regarding F exposure and kidney injury. However, these results suggest that F exposure is related to early vascular alterations, which may increase the susceptibility of cardiovascular diseases in adult life.

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Publisher
Academic Press Inc.
Year of Publication
2019

1212.

Computed tomography with intravenous contrast is not associated with development of acute kidney injury in severely injured pediatric patients.
McGaha P.K., Johnson J., Garwe T., Sarwar Z., Motghare P., Daly W., Letton R.
Embase
American Surgeon. 85(1) (pp E1-E5), 2019. Date of Publication: January 2019.
[Conference Paper]
AN: 2007013382
Data for the incidence of acute kidney injury (AKI) related to intravenous contrast administration in the pediatric trauma population are limited. Obtaining a creatinine value before elective CT scans is a relatively accepted standard of care. We sought to determine whether there was any significant difference in the incidence of AKI between severely injured patients who received IV contrast and those who did not.We reviewed data from the trauma registry at our Level I pediatric trauma center. We limited the patients to severely injured pediatric traumas (<15 years old) directly transported from the scene of injury with a creatinine level measured on arrival. Two hundred and eleven patients were included in the study. AKI was defined by the criteria of the AKI Network. We then compared incidence of AKI in those who received a CT scan with IV contrast with those who did not receive IV contrast. The two groups were comparable in age, gender, Glasgow Coma Scale, Injury Severity Score, mean creatinine on arrival, and mean creatinine post-CT scan/arrival. There was no significant difference in AKI between the two. In a subgroup analysis of patients presenting in shock, there was no significant difference in AKI. Our study suggests that IV contrast is not associated with the development of AKI in severely injured pediatric trauma patients. Although obtaining a creatinine value before exposure is ideal, a CT scan with IV contrast in severely injured children should not be delayed to obtain a creatinine value.

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Embase
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Publisher
Southeastern Surgical Congress (E-mail: sesc@sesc.org)
Year of Publication
2019

1213.

Melamine and cyanuric acid exposure and kidney injury in US children.
Sathyanarayana S., Flynn J.T., Messito M.J., Gross R., Whitlock K.B., Kannan K., Karthikraj R., Morrison D., Huie M., Christakis D., Trasande L.
Embase
Environmental Research. 171 (pp 18-23), 2019. Date of Publication: April 2019.
[Article]
AN: 2001454927
Background: Melamine and cyanuric acid, which are currently used in a variety of common consumer products and present in foods, have been implicated in the development of urolithiasis and acute kidney injury in Chinese children. To determine whether US children have measurable concentrations of these chemicals in their bodies and whether they are at greater risk of acute kidney injury, we measured melamine and cyanuric acid exposure in a cohort of US children and determined their relationship with markers of kidney injury.
Method(s): We measured urinary melamine and cyanuric acid in a convenience sample of 109 children (4 months - 8 years) from Seattle, WA and New York City, NY using liquid chromatography with tandem mass spectrometry. We measured several urinary markers of kidney injury: fatty acid binding protein 3 (FABP3), kidney injury molecule 1 (KIM1), neutrophil gelatinase-associated lipocalin (NGAL) using Luminex xMAP methods, and urine urea was measured using standard laboratory methods. We described urinary melamine and cyanuric acid concentrations and assessed predictors of the exposures. We used multivariable linear regression to assess relationships between melamine/cyanuric acid and kidney injury markers in unadjusted and adjusted (creatinine, age, sex) analyses.
Result(s): Melamine and cyanuric acid were above the limit of detection (LOD) in 78% and 95% of all samples, respectively. The mean concentrations (SD) for melamine and cyanuric acid were 27.4 ng/ml (141.9 ng/ml) and 35.3 ng/ml (42.4 ng/ml). In unadjusted analyses, we observed statistically significant increases in the percentages of FABP3 and KIM1 in relation to a one log unit change in melamine and cyanuric acid, respectively. In adjusted analyses, we observed a 55% (95% CI 0, 141) increase in KIM1 in relation to a one log unit increase in cyanuric acid.
Conclusion(s): US children have detectable concentrations of melamine and cyanuric acid in urine, and these concentrations are higher than those reported in children from other countries. This is a novel finding that improves upon previous exposure estimates using questionnaires only and suggests widespread exposure in the population. Cyanuric acid is associated with increased KIM 1 concentrations, suggesting kidney injury. Given the potential widespread exposure, future analyses should examine melamine and cyanuric acid in relation to chronic kidney disease and markers of kidney injury in a larger cohort that is representative of the general population.

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Publisher
Academic Press Inc. (E-mail: apjcs@harcourtbrace.com)
Year of Publication
2019

1214.

Association of uric acid in serum and urine with subclinical renal damage: Hanzhong Adolescent Hypertension Study.
Wang Y., Chen C., Yan Y., Yuan Y., Wang K.-K., Chu C., Hu J.-W., Ma Q., Liao Y.-Y., Fu B.-W., Gao K., Sun Y., Lv Y.-B., Zhu W.-J., Yang L., Zhang J., Yang R.-H., Yang J., Mu J.-J.
Embase
PLoS ONE. 14(11) (no pagination), 2019. Article Number: e0224680. Date of Publication: 01 Nov 2019.
[Article]
AN: 2003845646
Background and objectives The aim of the study was to examine the associations of uric acid (UA) in blood and urine with subclinical renal damage (SRD) and its progression in a Chinese cohort. Methods 1) 2342 participants from our previously established cohort who were followed up in 2017 were included. Cross-sectional analysis was used to examine the relationships between serum and urinary UA and the risk of SRD. 2) A total of 266 participants were recruited from the same cohort in 2013, and followed up in 2017. Longitudinal analysis was used to determine the relationships of serum and urinary UA with progression of SRD, which was defined as urinary albumin-to-creatinine ratio (uACR) progression or estimated glomerular filtration rate (eGFR) decline. Results In cross-sectional analysis, higher levels of uACR were associated with higher levels of serum uric acid (SUA) and urinary uric acid/creatinine ratio (uUA/Cre). Lower eGFR was associated with higher levels of SUA and fractional excretion of uric acid (FEUA) but lower uUA/Cre levels in all subjects. In addition, the multivariate-adjusted odds ratios for SRD compared with non-SRD were 3.574 (2.255-5.664) for uUA/Cre. Increasing uUA/Cre levels were associated with higher risk of SRD. In longitudinal analysis, 4-year changes of uUA/ Cre and SUA were significantly associated with eGFR decline. Conclusions This study suggested that urinary UA excretion was significantly associated with the risk of SRD in Chinese adults. Furthermore, 4-year changes of serum and urinary UA were associated with SRD progression. These findings suggest that UA, especially urinary UA, may be used as a simple, noninvasive marker for early detection of decreased renal function in otherwise healthy subjects.

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31730636 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31730636]
Status
Embase

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Publisher
Public Library of Science (E-mail: plos@plos.org)
Year of Publication
2019

1215.

Plasma total fibroblast growth factor 23 levels are associated with acute kidney injury and mortality in children with acute respiratory distress syndrome.
Hanudel M.R., Zinter M.S., Chen L., Gala K., Lim M., Guglielmo M., Deshmukh T., Vangala S., Matthay M., Sapru A.
Embase
PLoS ONE. 14(9) (no pagination), 2019. Article Number: e0222065. Date of Publication: 01 Sep 2019.
[Article]
AN: 2002802069
Acute respiratory distress syndrome (ARDS) has high rates of mortality and multisystem morbidity. Pre-clinical data suggest that fibroblast growth factor 23 (FGF23) may contribute to pulmonary pathology, and FGF23 is associated with mortality and morbidity, including acute kidney injury (AKI), in non-ARDS cohorts. Here, we assess whether FGF23 is associated with AKI and/or mortality in a cohort of 161 pediatric ARDS patients. Plasma total (intact + C-terminal) FGF23 and intact FGF23 concentrations were measured within 24 hours of ARDS diagnosis (Day 1), and associations with Day 3 AKI and 60-day mortality were evaluated. 35 patients (22%) developed AKI by 3 days post-ARDS diagnosis, and 25 (16%) died by 60 days post-ARDS diagnosis. In unadjusted models, higher Day 1 total FGF23 was associated with Day 3 AKI (odds ratio (OR) 2.22 [95% confidence interval (CI) 1.62, 3.03], p<0.001), but Day 1 intact FGF23 was not. In a model adjusted for demographics and disease severity, total FGF23 remained associated with AKI (OR 1.52 [95% CI 1.02, 2.26], p = 0.039). In unadjusted models, both higher Day 1 total and intact FGF23 were associated with 60-day mortality (OR 1.43 [95% CI 1.07, 1.91], p = 0.014; and OR 1.44 [95% CI 1.02, 2.05], p = 0.039, respectively). In the adjusted model, only total FGF23 remained associated with 60-day mortality (OR 1.62 [95% CI 1.07, 2.45], p = 0.023). In a subgroup analysis of patients with Day 1 plasma IL-6 concentrations available, inflammation partially mediated the association between total FGF23 and AKI. Our data suggest both inflammation-dependent and inflammation-independent associations between total FGF23 and clinical outcomes in pediatric ARDS patients.

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31487315 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31487315]
Status
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Publisher
Public Library of Science (E-mail: plos@plos.org)
Year of Publication
2019

1216.

Clinical progress note: Pediatric acute kidney injury.
Roy J.-P., Forster C.S.
Embase
Journal of Hospital Medicine. 14(9) (pp 552-554), 2019. Date of Publication: September 2019.
[Article]
AN: 2004868543
PMID
31433778 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31433778]
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Publisher
Frontline Medical Communications
Year of Publication
2019

1217.

The role of an electronic alert system to detect acute kidney injury in hospitalized patients: DETECT-H Project. Utilidad de un sistema de alerta electronica para la deteccion de fracaso renal agudo en pacientes hospitalizados. Proyecto DETECT-H <Utilidad de un sistema de alerta electronica para la deteccion de fracaso renal agudo en pacientes hospitalizados. Proyecto DETECT-H.>
Labrador Gomez P.J., Gonzalez Sanchidrian S., Labrador Gomez J., Gomez-Martino Arroyo J.R., Jimenez Herrero M.C., Polanco Candelario S.J.A., Marin Alvarez J.P., Gallego Dominguez S., Davin Carrero E., Sanchez Montalban J.M., Castellano Cervino I., Rosner M.H., Ronco C.
Embase
Nefrologia. 39(4) (pp 379-387), 2019. Date of Publication: July - August 2019.
[Article]
AN: 2002985936

Background and aims: Acute kidney injury (AKI) is associated with higher mortality and length of stay (LOS) for hospitalized patients. To improve outcomes, an electronic detection system could be a useful tool for early diagnosis.
Method(s): A fully automated real-time system for detecting decreased glomerular filtration rate in adult patients was developed in our hospital, DETECT-H project. AKI was established according to KDIGO guidelines.
Result(s): In six months, 1241 alerts from 11,022 admissions were issued. Overall incidence of AKI was 7.7%. Highest AKI stage reached was: stage 1 (49.8%), 2 (24.5%) and 3 (25.8%), in-hospital mortality was 10.9%, 22.7%, 33.9% respectively and 57.1% in AKI requiring dialysis; mortality in stable CKD was 4.3%. Median LOS was 8 days versus 5 days for all patients. AKI was associated with a mortality of 3.18 (95% CI 1.80-5.59) and a LOS 1.52 (1.11-2.08) times as high as that for admissions without AKI. Multivariate analysis indicated that a LOS higher than 8 days was associated with AKI. Previous CKD was noted in 31.9% and AKI in 45.3% at discharge. As compared to the use of the detect system, only one third of CKD patients and half of AKI episodes were identified.
Conclusion(s): CKD and in-hospital AKI are under-recognized entities. Mortality and LOS are increased in-hospital patients with renal dysfunction. AKI severity was associated with higher mortality and LOS. An automated electronic detection system for identifying renal dysfunction would be a useful tool to improve renal outcomes.

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Embase
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Publisher
Elsevier Espana S.L.
Year of Publication
2019

1218.

Short-term outcome associated with disease severity and electrolyte abnormalities among critically ill children with acute kidney injury.
Safder O.Y., Alhasan K.A., Shalaby M.A., Khathlan N., Al Rezgan S.A., Albanna A.S., Kari J.A.
Embase
BMC Nephrology. 20(1) (no pagination), 2019. Article Number: 89. Date of Publication: 12 Mar 2019.
[Article]
AN: 626758634

Background: Acute kidney injury (AKI) in critically ill children is associated with increased mortality and morbidity. In this study we evaluated the effect of AKI severity on the incidence of short-term mortality and morbidity.
Method(s): Multicenter prospective cohort study was conducted over two years period. We used the Kidney Disease Improving Global Outcomes (KDIGO) to diagnose and stage AKI.
Result(s): A total of 511 out of 1367 included children (37.4%; 95% CI: 34.8-40.0) were diagnosed with AKI. They were categorized into three KDIGO stages: stage I (mild) in 47.5% (95% CI: 43.2-52.0), stage II (moderate) in 32.8% (95% CI: 28.8-37.1) and stage III (severe) in 19.7% (95% CI: 16.4-23.5). Stage II and III AKI had higher risk of mortality and longer length of stay (LOS) in hospital. Children with stage III AKI were more likely to require mechanical ventilation, referral to pediatric nephrology and discharge with abnormal creatinine level (above 100 uml\L). Hypervolemia, hypocalcemia, anemia, and acidosis were found to be independent risk factors of mortality.
Conclusion(s): The extent of severity of AKI is directly associated with increased mortality, LOS and short-term morbidity.

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Publisher
BioMed Central Ltd. (E-mail: info@biomedcentral.com)
Year of Publication
2019

1219.

Acute Kidney Injury and Fluid Overload in Pediatric Cardiac Surgery.
Carlisle M.A., Soranno D.E., Basu R.K., Gist K.M.
Embase
Current Treatment Options in Pediatrics. 5(4) (pp 326-342), 2019. Date of Publication: 01 Dec 2019.
[Review]
AN: 2003853127
Purpose of review: Acute kidney injury (AKI) and fluid overload affect a large number of children undergoing cardiac surgery and confer an increased risk for adverse complications and outcomes including death. Survivors of AKI suffer long-term sequelae. The purpose of this narrative review is to discuss the short- and long-term impact of cardiac surgery-associated AKI and fluid overload, currently available tools for diagnosis and risk stratification, existing management strategies, and future management considerations. Recent findings: Improved risk stratification, diagnostic prediction tools, and clinically available early markers of tubular injury have the ability to improve AKI-associated outcomes. One of the major challenges in diagnosing AKI is the

diagnostic imprecision in serum creatinine, which is impacted by a variety of factors unrelated to renal disease. In addition, many of the pharmacologic interventions for either AKI prevention or treatment have failed to show any benefit, while peritoneal dialysis catheters, either for passive drainage or prophylactic dialysis, may be able to mitigate the detrimental effects of fluid overload.
Summary: Until novel risk stratification and diagnostics tools are integrated into routine practice, supportive care will continue to be the mainstay of therapy for those affected by AKI and fluid overload after pediatric cardiac surgery. A viable series of preventative measures can be taken to mitigate the risk and severity of AKI and fluid overload following cardiac surgery and improve care.

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Publisher
Springer
Year of Publication
2019

1220.

Evidence-based development of a nephrotoxic medication list to screen for acute kidney injury risk in hospitalized children.
Goswami E., Ogden R.K., Bennett W.E., Goldstein S.L., Hackbarth R., Somers M.J.G., Yonekawa K., Misurac J.
Embase
American Journal of Health-System Pharmacy. 76(22) (pp 1869-1874), 2019. Date of Publication: 17 Oct 2019.
[Article]
AN: 629815461
Purpose: Medications are commonly associated with acute kidney injury (AKI). However, in both clinical practice and research, consideration of specific medications as nephrotoxic varies widely. The Nephrotoxic Injury Negated by Just-in-time Action quality improvement collaborative was formed to focus on prevention or reduction of nephrotoxic medication-associated AKI in noncritically ill hospitalized children. However, there were discrepancies among institutions as to which medications should be considered nephrotoxic. The collaborative convened a Nephrotoxic Medication (NTMx) Subcommittee to develop a consensus for the classification of nephrotoxic medications.
Summary: The NTMx Subcommittee initially included pediatric nephrologists, a pharmacist, and a pediatric intensivist. The committee reviewed NTMx lists from the collaborative and identified changes from the initial NTMx list. The NTMx Subcommittee conducted a literature review of the disputed medications and assigned an evidence grade based on the reported association with nephrotoxicity and the quality of the data. The association between medication exposure and AKI was also determined using administrative data from the Pediatric Health Information Systems

database. The NTMx Subcommittee then came to a majority consensus regarding which medications should be included on the list. The subcommittee's recommendations were presented to the larger collaborative for approval, and consensus was achieved. The list continues to be reviewed and updated annually.
Conclusion(s): Formation of a multicenter quality-improvement initiative exposed current limitations as to which medications are considered nephrotoxic in clinical and research settings and presented an opportunity to approach this problem using an evidence-based process. A consensus definition of nephrotoxic-medication exposure was achieved.

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Oxford University Press (E-mail: info@idsociety.org)
Year of Publication
2019

1221.

Acute Kidney Injury in Critically Ill Children Admitted to the PICU for Diabetic Ketoacidosis. A Retrospective Study.
Weissbach A., Zur N., Kaplan E., Kadmon G., Gendler Y., Nahum E.
Embase
Pediatric Critical Care Medicine. 20(1) (pp E10-E14), 2019. Date of Publication: 01 Jan 2019.
[Article]
AN: 630996091
Objectives: Acute kidney injury in the critically ill pediatric population is associated with worse outcome. The aim of this study was to assess the prevalence, associated clinical variables, and outcomes of acute kidney injury in children admitted to the PICU with diabetic ketoacidosis.
Design(s): Retrospective cohort.
Setting(s): PICU of a tertiary, university affiliated, pediatric medical center.
Patient(s): All children less than age 18 years with a primary diagnosis of diabetic ketoacidosis admitted to the PICU between November 2004 and October 2017.
Intervention(s): None.
Measurements and Main Results: Acute kidney injury was categorized into three stages using the Kidney Disease Improving Global Outcomes scale. Of the 82 children who met the inclusion criteria, 24 (30%) had acute kidney injury: 18 (75%) stage 1, five (21%) stage 2, and one (4%) stage 3. None needed renal replacement therapy. Compared with the patients without acute kidney injury, the acute kidney injury group was characterized by higher mean admission serum

levels of sodium (143.25 +/- 9 vs 138.6 +/- 4.9 mmol/L; p = 0.0035), lactate (29.4 +/- 17.1 vs 24.1 +/- 10.8 mg/dL; p = 0.005), and glucose (652 +/- 223 vs 542 +/- 151 mg/dL; p = 0.01). There was no between-group difference in length of PICU stay (1.38 +/- 0.7 vs 1.4 +/- 0.7 d; p = 0.95) or hospitalization (6.1 +/- 2.1 vs 5.8 +/- 5.6 d; p = 0.45). Kidney injury was documented at discharge in four patients with acute kidney injury (16.7%), all stage 1; all had normal creatinine levels at the first clinical outpatient follow-up. All 82 patients with diabetic ketoacidosis survived.
Conclusion(s): In this study, acute kidney injury was not uncommon in children with diabetic ketoacidosis hospitalized in the PICU. However, it was usually mild and not associated with longer hospitalization or residual kidney injury.

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Embase
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1222.

Associations of Perioperative Renal Oximetry Via Near-Infrared Spectroscopy, Urinary Biomarkers, and Postoperative Acute Kidney Injury in Infants after Congenital Heart Surgery: Should Creatinine Continue to Be the Gold Standard?.
Adams P.S., Vargas D., Baust T., Saenz L., Koh W., Blasiole B., Callahan P.M., Phadke A.S., Nguyen K.N., Domnina Y., Sharma M., Kellum J.A., Sanchez-De-Toledo J.
Embase
Pediatric Critical Care Medicine. 20(1) (pp 27-37), 2019. Date of Publication: 01 Jan 2019.
[Article]
AN: 630996048
Objectives: Examine the relationship between perioperative renal regional tissue oximetry, urinary biomarkers, and acute kidney injury in infants after congenital cardiac surgery with cardiopulmonary bypass.
Design(s): Prospective, observational.
Setting(s): Cardiac operating room and cardiac ICU.
Patient(s): Neonates and infants without history of kidney injury or anatomic renal abnormality.
Intervention(s): None.
Measurements and Main Results: Renal regional tissue oximetry was measured intraoperatively and for 48 hours postoperatively. Urinary levels of neutrophil gelatinase-associated lipocalin and tissue inhibitor of metalloproteinases 2 together with insulin-like growth factor-binding protein 7 were measured preoperatively, 2, 12, and 24 hours postoperatively. Patients were categorized as no acute kidney injury, stage 1, or Stage 2-3 acute kidney injury using the Kidney Disease: Improving Global Outcomes criteria with 43 of 70 (61%) meeting criteria for any stage acute kidney injury. Stage 2-3 acute kidney injury patients had higher tissue inhibitor of metalloproteinases 2, insulin-like growth factor-binding protein 7 at 2 hours (0.3 vs 0.14 for stage

1 acute kidney injury and 0.05 for no acute kidney injury; p = 0.052) and 24 hours postoperatively (1.71 vs 0.27 for stage 1 acute kidney injury and 0.19 for no acute kidney injury, p = 0.027) and higher neutrophil gelatinase-associated lipocalin levels at 24 hours postoperatively (10.3 vs 3.4 for stage 1 acute kidney injury and 6.2 for no acute kidney injury, p = 0.019). Stage 2-3 acute kidney injury patients had lower mean cardiac ICU renal regional tissue oximetry (66% vs 79% for stage 1 acute kidney injury and 84% for no acute kidney injury, p = 0.038). Regression analyses showed that tissue inhibitor of metalloproteinases 2, insulin-like growth factor-binding protein 7 at 2 hours postoperatively and nadir intraoperative renal regional tissue oximetry to be independent predictors of postoperative kidney damage as measured by urinary neutrophil gelatinase-associated lipocalin.
Conclusion(s): We observed modest differences in perioperative renal regional tissue oximetry and urinary biomarker levels compared between acute kidney injury groups classified by creatinine-dependent Kidney Disease: Improving Global Outcomes criteria, but there were significant correlations between renal regional tissue oximetry, tissue inhibitor of metalloproteinases 2, insulin-like growth factor-binding protein 7, and postoperative neutrophil gelatinase-associated lipocalin levels. Kidney injury after infant cardiac surgery may be undetectable by functional assessment (creatinine) alone, and continuous monitoring of renal regional tissue oximetry may be more sensitive to important subclinical acute kidney injury.

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1223.

Prevalence of acute kidney injury in patients with perinatal asphyxia in tertiary hospital.
Shrestha N.J., Subedi K.U., Shakya S., Adhikari S.
Embase
Journal of Nepal Paediatric Society. 39(2) (pp 109-115), 2019. Date of Publication: 2019.
[Article]
AN: 2004397878
Introduction: Perinatal asphyxia has multisystem involvement, kidneys are most frequently affected.This study was conducted to determine the relation between severity of Hypoxic Ischaemic Encephalopathy (HIE) with acute kidney injury in term neonates.

Method(s): Retrospective study was done over a period of six months (Sept 2016 to Feb 2017) at Department of Neonatology of a tertiary level maternity hospital. Total 98 cases of Perinatal asphyxia cases which were diagnosed with certain degree of HIE were evaluated for its relation with renal involvement in different stage of HIE.
Result(s): Out of 98 cases of perinatal asphyxia, HIE I was 21%, HIE II was 69% and HIE III was 10%, among which 72% cases had some degree of renal problem. seventy two cases had renal problem, oliguric cases were 41 (57%) among which 33% case had persistent symptoms and associated renal function deterioration. Among 42 cases of deranged RFTs, 40% of cases has persistently deranged RFTs. In comparison to HIE II in HIE III, 22% of cases had one time derangement of RFTs and 33% cases had at least one observation of oliguria, while remaining 45% cases had persistent deterioration of RFTs and urine output, suggesting that progression in HIE stage has significant association with renal dysfunction ($p < 0.05$). More than half of the cases of HIE III had mortality while 20.3% of HIE II cases had mortality, indicating that the mortality is highly significant with higher HIE grade ($p < 0.05$).
Conclusion(s): Renal involvement is very common in cases of perinatal asphyxia, and severity of renal involvement increases as the HIE grading increases.

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Embase
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Publisher
Nepal Paediatric Society (NEPAS)
Year of Publication
2019

1224.

Acute kidney injury after thoracic surgery: A proposal for a multicentre evaluation (MERITS).
Naruka V., McKie M.A., Khushiwal R., Clayton J., Aresu G., Peryt A., Villar S.S., Mackay J., Coonar A.S.
Embase
Interactive Cardiovascular and Thoracic Surgery. 29(6) (pp 861-866), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 631561866
OBJECTIVES: Because the mortality rate is very low in thoracic surgery, its use as a quality discriminator is limited. Acute kidney injury (AKI) is a candidate measure because it is associated with increased rates of morbidity and mortality and is partly preventable. The incidence of AKI after thoracic surgery is not well documented. We conducted an audit to determine the incidence and outcomes of AKI. This audit became a pilot project, and the results indicate the feasibility of a larger study.
METHOD(S): Retrospective data on renal function post-thoracic surgery were collected at a tertiary cardiothoracic unit over 12 months. Renal impairment was classified according to the Kidney Disease Improving Global Outcomes criteria.
RESULT(S): Of 568 patients (mean = 59 +/- SD 18; 38% women), AKI was diagnosed in 86 (15.1%) within 72 h post-thoracic surgery based on the Kidney Disease Improving Global Outcomes staging system (stage 1, n = 55; stage 2, n = 25; stage 3, n = 6). Significant differences were found in postoperative length of stay (3 vs 5 days; $P < 0.001$) of patients with

and without AKI. There was a significant difference between the age groups of patients with and without AKI (P < 0.05) in the open surgical group but not in the group having video-assisted thoracoscopic surgery (VATS). There was no significant difference in the mortality rates between patients with and without AKI.
CONCLUSION(S): The incidence of AKI after thoracic surgery was 15.1%. AKI was associated with longer hospital stays and was more likely in >=60-year-old patients after open surgery than after VATS. Reducing AKI could improve patient outcomes. We propose that AKI may be a useful quality measure in thoracic surgery. We are developing a multicentre audit based on this approach.

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1225.

The role of cardiac troponin t in detection of cardiac damage and long term mortality in children with chronic renal disease.
Karadas U., Karadas N.O., Bak M., Serdaroglu E., Yilmazer M.M., Mese T.
Embase
Turkish Journal of Pediatrics. 61(6) (pp 873-878), 2019. Date of Publication: 2019.
[Article]
AN: 2003960597
In this study, we aimed to evaluate the role of cardiac troponin T (cTnT) in detecting myocardial involvement in children with chronic kidney disease (CKD) and to investigate whether it contributes to predicting cardiac involvement and mortality at follow-up. Echocardiographic evaluations were performed on a sample of 69 patients, of which 33 (47.8%) were female, with grade 3, 4 and 5 chronic renal failure and end-stage renal failure. Patients with normal cTnT levels and patients with high cTnT levels were compared. cTnT levels were observed to be high in 13 (19%) of the 69 patients. The comparison between the patients with normal cTnT levels and patients with high cTnT levels with regards to the echocardiographic findings revealed that in the latter group, the average ejection fraction and fractional shortening levels were lower (p=0.003 and p=0.013, respectively), the detection rate of left ventricular systolic dysfunction was 5.5 times

higher and the rate of detection of left ventricular hypertrophy (LVH) was 3 times higher (p=0.004, p=0.011). In this study, it was shown that it is possible to obtain information about cardiac effects by examining the serum cTnT level before clinical symptoms occur in children with CKD, and that cTnT can be used for screening purposes.

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Turkish Journal of Pediatrics (E-mail: deryakaraduman@gmail.com)
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2019

1226.

Effect of concomitant vancomycin and piperacillin-tazobactam on frequency of acute kidney injury in pediatric patients.
Buhlinger K.M., Fuller K.A., Faircloth C.B., Wallace J.R.
Embase
American Journal of Health-System Pharmacy. 76(16) (pp 1204-1210), 2019. Date of Publication: 15 Aug 2019.
[Article]
AN: 631497803
Purpose: Results of a study of rates of acute kidney injury (AKI) in pediatric patients treated with vancomycin plus piperacillin-tazobactam or vancomycin plus alternative antipseudomonal beta-lactams (APBLs) are reported.
Method(s): A retrospective, single-center cohort study was performed. Pediatric patients were included in the study cohort if they received combination therapy for at least 48 hours, had documented baseline and follow-up serum creatinine levels, and had a documented serum vancomycin trough concentration. The primary outcome was the frequency of AKI, defined as a 50% or greater increase in serum creatinine concentration from baseline or an increase of at least 0.5 mg/dL from baseline. The secondary outcome was time to AKI onset.
Result(s): A total of 474 patients were included. Among 100 patients who received vancomycin plus piperacillin-tazobactam, the rate of AKI was higher than the rate in the group treated with vancomycin plus alternative APBLs (27% versus 7%, $p < 0.0001$). The median time to AKI onset was shorter in the piperacillin-tazobactam group versus the alternative APBL group (3.8 versus 7.9 days, $p = 0.0065$). Patients who were administered piperacillin-tazobactam were almost 6 times as likely to develop AKI (odds ratio [OR], 5.955; 95% confidence interval [CI], 2.774-12.784), and patients who had a maximum vancomycin trough concentration greater than 20 mg/L were 7.5 times as likely to develop AKI (OR, 7.552; 95% CI, 3.625-15.734).
Conclusion(s): Pediatric patients treated with concomitant vancomycin and piperacillin-tazobactam had a higher rate of AKI, with faster AKI onset, than those who received vancomycin in combination with other APBLs.

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Publisher
Oxford University Press (E-mail: info@idsociety.org)
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2019

1227.

Acute kidney injury among paediatric emergency room admissions in a tertiary hospital in South West Nigeria: A cohort study.
Ademola A.D., Asinobi A.O., Ekpe-Adewuyi E., Ayede A.I., Ajayi S.O., Raji Y.R., Salako B.L., James M., Zappitelli M., Samuel S.M.
Embase
Clinical Kidney Journal. 12(4) (pp 521-526), 2019. Date of Publication: 01 Aug 2019.
[Article]
AN: 631508420
Background: Epidemiological data on paediatric acute kidney injury (AKI) in sub-Saharan Africa are limited and largely retrospective. We performed a prospective study of AKI among patients admitted through the emergency room.
Method(s): Children admitted to the post-neonatal emergency room of the University College Hospital, Ibadan, Nigeria between February 2016 and January 2017 were studied. AKI was defined by Kidney Disease: Improving Global Outcomes serum creatinine criteria. AKI ascertainment relied on serum creatinine measurements carried out in routine care by post-admission Day 1. We compared in-hospital mortality by post-admission Day 7 for patients with and without AKI (no-AKI).
Result(s): Of the 1344 children admitted to the emergency room, 331 were included in the study. AKI occurred in 112 patients (33.8%) with a median age of 3.1 years [interquartile range (IQR) 0.9-9.4] and was Stage 3 in 50.5% of the cases. The no-AKI group had a median age of 1.8 (IQR 0.7-5.8) years. The underlying diagnoses in patients with AKI were sepsis (33.0%), malaria (12.5%) and primary renal disorders (13.4%). Twenty-four of the patients with AKI underwent dialysis: haemodialysis in 20 and peritoneal dialysis in 4. By Day 7 of admission, 7 of 98 (7.1%) patients in the AKI group had died compared with 5 of 175 (2.9%) patients in the no-AKI group [odds ratio 2.6 (95% confidence interval 0.8-8.5)]. Outcome data were not available for 58 (17.5%) patients.
Conclusion(s): AKI is common among paediatric emergency room admissions in a tertiary care hospital in sub-Saharan Africa. It is associated with high mortality risk that may be worse in settings without dialysis.

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Publisher
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1228.

Asymmetric dimethylarginine is not a marker of arterial damage in children with glomerular kidney diseases.
Skrzypczyk P., Przychodzien J., Mizerska-Wasiak M., Kuzma-Mroczkowska E., Stelmaszczyk-Emmel A., Gorska E., Panczyk-Tomaszewska M.
Embase
Central European Journal of Immunology. 44(4) (pp 370-379), 2019. Date of Publication: 2019.
[Article]
AN: 2005368113
Introduction: Asymmetric dimethylarginine (ADMA), an endogenous inhibitor of nitric oxide synthase, correlates with cardiovascular risk especially in patients with chronic kidney disease. The aim of our study was to establish significance of ADMA as a biomarker of arterial damage in children with glomerulopathies.
Material(s) and Method(s): In 80 children with glomerulopathies (mean age, 11.33 +/-4.25 years; 42 with idiopathic nephrotic syndrome [INS], 38 with IgA or Henoch-Schoenlein nephropathy [IgAN/HSN]), we analyzed serum ADMA [nmol/ml], peripheral and central blood pressure, arterial stiffness (augmentation index - AIx75HR, pulse wave velocity - PWV), common carotid artery intima media thickness (cIMT), and selected clinical and biochemical parameters.
Result(s): In the study group, mean ADMA concentration was 1.66 +/-1.19 [nmol/ml] and did not differ between INS and IgAN/HSN patients. We found no significant correlations between concentration of ADMA, cIMT [mm]/Z-score, PWV [m/s]/Z-score, and AIx75HR [%] in the whole group and in INS and IgAN/HSN patients. In the whole group of 80 children, ADMA correlated ($p < 0.05$) with BMI Z-score ($r = -0.24$), uric acid ($r = -0.23$), HDL-cholesterol ($r = -0.25$), and central mean arterial pressure ($r = -0.25$), in children with INS also with total protein ($r = 0.37$), albumin ($r = 0.36$), and total cholesterol ($r = -0.40$, $p = 0.028$). In multivariate analysis, serum albumin was the strongest determinant of ADMA in the whole group (beta = 0.536, 95% CI: 0.013-1.060, $p = 0.045$).
Conclusion(s): 1. In children with glomerulonephritis, measurement of asymmetric dimethylarginine cannot replace well established and validated methods of assessment of subclinical arterial damage. 2. In children with glomerular kidney diseases, ADMA concentration is related primarily to serum albumin concentration.

Status
Embase

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Termedia Publishing House Ltd. (Kleeberqa St.2, Poznan 61-615, Poland)
Year of Publication
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1229.

Vancomycin-associated Nephrotoxicity and Risk Factors in Critically Ill Children Without Preexisting Renal Injury.
Feiten H.D.S., Okumura L.M., Martinbiancho J.K., Andreolio C., Da Rocha T.S., Antonacci Carvalho P.R., Pedro Piva J.
Embase
Pediatric Infectious Disease Journal. 38(9) (pp 934-938), 2019. Date of Publication: 01 Sep 2019. [Article]
AN: 630995118
Background: A recent systematic review concluded that critically ill pediatric patients have higher odds of vancomycin-related nephrotoxicity [odds ratio (OR): 3.61, 95% CI: 1.21-10.74]. We aimed to assess the incidence and risk factors for vancomycin-associated nephrotoxicity in critically ill children without preexisting renal injury.
Method(s): A cohort of children admitted to a pediatric intensive care unit, from 2011 to 2016 treated with vancomycin without preexisting renal injury. The main diagnosis, therapeutic interventions and medications administered in this period were evaluated. Generalized estimating equation models were used to assess the association between clinical covariates and the dependent variable pediatric risk, injury, failure, loss, end-stage renal disease (pRIFLE).
Result(s): Hundred ten patients, representing 1177 vancomycin days, were analyzed. Vancomycin-associated nephrotoxicity was seen in 11.8%. In a multivariate model, higher vancomycin doses were not associated with poorer renal function (P = 0.08). Higher serum vancomycin levels were weakly associated with pRIFLE classification (OR: 1.05, 95% CI: 1.02-1.07). Furosemide or amphotericin B in addition to the vancomycin treatment was associated with impaired renal function (OR: 2.56, 95% CI: 1.38-4.8 and OR: 7.7 95% CI: 2.55-23, respectively).
Conclusion(s): Vancomycin-associated nephrotoxicity in acute ill children without preexisting renal injury, measured with pRIFLE, is close to 11.8%. Furosemide and amphotericin B in addition to the vancomycin treatment are strong predictors of worse pRIFLE scores. The influence of acute kidney injury status at pediatric intensive care unit admission and the method used for renal function assessment might influence the incidence of vancomycin-associated nephrotoxicity and its associated risk factors.

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Lippincott Williams and Wilkins (E-mail: kathiest.clai@apta.org)

Year of Publication
2019

1230.

Assessing the role of urologists and general surgeons in the open repair of bladder injuries: Analysis of a large, statewide trauma database.
Leong J.Y., Rshaidat H., Tham E., Mitsuhashi S., Chung P.H.
Embase
Journal of Trauma and Acute Care Surgery. 87(6) (pp 1308-1314), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 630957754
BACKGROUND Bladder injuries often occur in the setting of polytrauma, and if severe, may require open surgical repairs. We assess the role of urologists and general surgeons (GS) in the open surgical management of bladder injuries and their outcomes in a traumatic setting. METHODS Patients who underwent open bladder injury repair secondary to trauma from 2000 to 2017 by urology or GS were identified in the Pennsylvania Trauma Outcome Study database by International Classification of Diseases - 9th Rev. - Clinical Modification procedure codes (57.19-57.93). Patient demographics, initial trauma assessment, length of hospital stay, associated complications, and mortality were evaluated. Urology management of a bladder injury was defined by documentation of a urologist in the operating room or urological consultation during the hospital stay. GS management was defined by documented bladder repair without urology involvement as described previously. RESULTS Of 624,504 patients in the database, 701 met inclusion criteria (419 managed by urology, 282 by GS). The most commonly performed procedure was suturing of bladder lacerations (80.5%). On univariate analysis, GS was more likely to manage patients with penetrating injuries and those who required exploratory laparotomy less than 2 hours upon arrival. Urology was more likely to manage patients with concomitant pelvic fractures and higher Injury Severity Score (ISS). On multivariate analysis, higher ISS was predictive of urology management (odds ratio, 1.83; 95% confidence interval, 1.17-2.87, p = 0.008), while patients who required urgent exploratory laparotomy was predictive of GS management (odds ratio, 0.34; 95% confidence interval, 0.21-0.55, p < 0.001). Patients with concomitant pelvic fractures (n = 318) were also more likely to have higher ISS (p < 0.001) and were more likely to be managed by urology (odds ratio, 1.52; 95% confidence interval, 1.01-2.30, p = 0.046). Mortality, length of hospital stay, and complication rates were not significantly different between the two specialties and among individual procedures. CONCLUSION Our study describes the landscape of traumatic bladder repairs between urology and GS. GS may maintain similar patient outcomes when managing select cases of traumatic bladder injuries in the absence of urologists. LEVEL OF EVIDENCE Therapeutic, level IV.

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31389916 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31389916]
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Publisher
Lippincott Williams and Wilkins (E-mail: kathiest.clai@apta.org)
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1231.

Pregnancy-related acute kidney injury in preeclampsia: Risk factors and renal outcomes.
Conti-Ramsden F.I., Nathan H.L., De Greeff A., Hall D.R., Seed P.T., Chappell L.C., Shennan A.H., Bramham K.
Embase
Hypertension. 74(5) (pp 1144-1151), 2019. Date of Publication: 01 Nov 2019.
[Article]
AN: 630975267
Preeclampsia is a common cause of acute kidney injury (AKI) in low- and middle-income countries, but AKI incidence in preeclampsia, its risk factors, and renal outcomes are unknown. A prospective observational multicenter study of women admitted with preeclampsia in South Africa was conducted. Creatinine concentrations were extracted from national laboratory databases for women with maximum creatinine of >=90 mumol/L (>=1.02 mg/dL). Renal injury and recovery were defined by Kidney Disease Improving Global Outcomes creatinine criteria. Predefined risk factors, maternal outcomes, and neonatal outcomes were compared between AKI stages. Of 1547 women admitted with preeclampsia 237 (15.3%) met AKI criteria: 6.9% (n=107) stage 1, 4.3% (n=67) stage 2, and 4.1% (n=63) stage 3. There was a higher risk of maternal death (n=7; relative risk, 4.3; 95% CI, 1.6-11.4) and stillbirth (n=80; relative risk, 2.2; 95% CI, 1.8-2.8) in women with AKI compared with those without. Perinatal mortality was also increased (89 of 240; 37.1%). Hypertension in a previous pregnancy was the strongest predictor of AKI stage 2 or 3 (odds ratio, 2.24; 95% CI, 1.21-4.17). Renal recovery rate reduced with increasing AKI stage. A third of surviving women (76 of 230 [33.0%]) had not recovered baseline renal function by discharge. Approximately half (39 of 76; 51.3%) of these women had no further creatinine testing post-discharge. In summary, AKI was common in women with preeclampsia and had high rates of associated maternal and perinatal mortality. Only two-thirds of women had confirmed renal recovery. History of a previous hypertensive pregnancy was an important risk factor.

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1232.

Using score for neonatal acute physiology perinatal extension ii (SNAPPE II) in neonates with acute kidney injury.
Naunova-Timovska S., Jordanova O., Babinkostova Z.

Embase
Open Access Macedonian Journal of Medical Sciences. 7(21) (pp 3559-3563), 2019. Date of Publication: 2019.
[Article]
AN: 2003608664
BACKGROUND: Acute kidney injury is a severe clinical condition. It is common in neonates in intensive care unit. It is defined as a sudden deterioration in kidney function resulting in derangements in fluid balance, electrolytes, and waste products. The score for neonatal acute physiology perinatal extension in critically sick neonates with kidney injury is a useful tool for assessing the severity of the disease. AIM: This study aimed to determine the incidence of AKI and the role of SNAPPE 2 score in predicting mortality and morbidity of kidney injury in neonates. METHOD(S): The study was designed as a prospective clinical investigation performed in the period of three years, which included 100 neonates (50 with AKI and 50 without AKI) hospitalised in intensive care unit of University Clinic of Children Diseases in Skopje. The severity of the illness of hospitalised newborn infants was estimated with SNAPPE 2 score realised in the first 12 hours of admission to NICU. Medical data records of admitted neonates with AKI were analysed. The material was statistically processed using methods of descriptive statistics.
RESULT(S): During the study period, 770 new born's were hospitalised in the intensive care unit due to various pathological conditions and 50 new born's were selected with AKI. The control group consisted of 50 neonates with comparable associated pathological conditions, but without kidney injury. The calculated prevalence of AKI in neonates was 6.4%. Most of the involved neonates in the study in both groups (AKI and non-AKI) were born at term (64% and 54%) with a predominance of male neonates (68% and 60%). The mortality rate was significantly higher in newborns with AKI than in the control group (36% vs 24%) ($p < 0.01$). The mean SNAPPE 2 score value in neonates with AKI was higher than in the control group (58.72 vs 40.0), and the difference was significant ($p = 0.00001$). Difficult score level predominated in half (50%) of newborn infants with AKI, while median score level predominated in control group (42%). There was a significant difference between the mean score value in neonates with AKI and lethal outcome compared to neonates with AKI without lethal outcome (70.73 +/- 18.6 vs 40.2 +/- 16.6) ($p < 0.0001$).
CONCLUSION(S): Acute kidney injury is a life-threatening condition with still high mortality rate. The severity of the illness of hospitalised neonates in an intensive care unit is estimated by SNAPPE 2 score. Also, the risk of mortality is estimated too, taking into consideration the fact that higher values of the score are associated with higher mortality. Appropriate treatment of neonates with severe kidney injury improves the outcome and reduces the mortality of the disease.

Status
Embase
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Publisher
Open Access Macedonian Journal of Medical Sciences (E-mail: mspiroski@id-press.eu)
Year of Publication
2019

1233.

Acute kidney injury in hematopoietic stem cell transplantation.
Wanchoo R., Stotter B.R., Bayer R.L., Jhaveri K.D.
Embase
Current Opinion in Critical Care. 25(6) (pp 531-538), 2019. Date of Publication: 01 Dec 2019.

[Review]
AN: 629313010
Purpose of review Acute kidney injury (AKI) in the setting of hematopoietic stem cell transplantation (HSCT) is common in pediatric and adult patients. The incidence ranges from 12 to 66%, and development of AKI in the posttransplant course is independently associated with higher mortality.Recent findingsPatients who undergo HSCT have many risk factors for developing AKI, including sepsis, use of nephrotoxic medications, graft versus host disease (GVHD), and veno-occlusive disease (VOD). In addition, engraftment syndrome/cytokine storm, transplant-associated thrombotic microangiopathy (TA-TMA), and less common infections with specific renal manifestations, such as BK and adenovirus nephritis, may lead to kidney injury. There has been significant advancement in the understanding of TA-TMA in particular, especially the role of the complement system in its pathophysiology. The role of early dialysis has been explored in the pediatric population, but not well studied in adult HSCT recipientsSummaryThis review provides an update on the risk factors, causes, and treatment approaches to HSCT-associated AKI.Video abstracthttp://links.lww.com/COCC/A29.

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31524721 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31524721]
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Lippincott Williams and Wilkins (E-mail: kathiest.clai@apta.org)
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2019

1234.

Acute kidney injury in preterm neonates with <=30 weeks of gestational age and its risk factors.
Ladeiras R., Flor-De-Lima F., Soares H., Oliveira B., Guimaraes H.
Embase
Minerva Pediatrica. 71(5) (pp 404-414), 2019. Date of Publication: 2019.
[Article]
AN: 2004491139
BACKGROUND: Acute kidney injury (AKI), an abrupt decline in kidney function, is a challenging diagnosis among preterm infants due to some specific features of this population. The aim of this study was to determine the risk factors of developing AKI and the predictive factors for its severity in preterm neonates with less than 31 weeks of gestational age.
METHOD(S): All neonates with less than 31 weeks of gestational age, admitted in our NICU between January 2012 and December 2015, were included. Maternal and neonatal records about demographics, placental abnormalities, perinatal and neonatal period and evolution in NICU, as well as electrolytic analysis and serum creatinine and urea values during their hospitalization were retrospectively collected and analyzed.
RESULT(S): A total of 106 neonates were included. Of those, 24 were diagnosed with AKI, resulting in a prevalence of 22.6%, and 82 were used as controls. Gestational age (OR=0.39; 95% CI=0.2-0.76; P=0.006), congenital malformations (OR=36.93; 95%CI=2.48-550.59;

P=0.009), vasoactive drugs (OR=27.06; 95%CI=3.58-204.45; P=0.001), non-steroidal anti-inflammatory drugs (OR=9.61; 95%CI=1.78-51.73; P=0.008) and sepsis (OR=7.78; 95%CI=1.32-46.04; P=0.024) were found to be independent risk factors. Cardiac surgery was a predictive factor for AKI severity (OR=25; 95%CI=2.09-298.29; P=0.011). The mortality rate in the AKI group was 41.7%.
CONCLUSION(S): AKI in preterm neonates is an important feature that contributes to increase the mortality in NICUs. Thus, it is crucial to know its risk factors to establish prompt diagnosis and prevention and, in this way, be able to improve the prognosis.

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29381007 [https://www.ncbi.nlm.nih.gov/pubmed/?term=29381007]
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Publisher
Edizioni Minerva Medica (E-mail: subscriptions.dept@minervamedica.it)
Year of Publication
2019

1235.

A study of the utility of novel non-invasive urinary and serum biomarkers of blunt kidney injury in a rat model: NGAL, KIM-1, and IL-18.
Bakal U., Sarac M., Tartar T., Kaman D., Kazez A.
Embase
Central European Journal of Immunology. 44(3) (pp 219-225), 2019. Date of Publication: 2019.
[Article]
AN: 2004571204
This study investigated changes in the concentrations of serum and urine neutrophil gelatinase lipocalin (NGAL), kidney injury molecule 1 (KIM-1), interleukin 18 (IL-18), and cystatin-C (Cys-C) induced by parenchymal and tubular damage following blunt kidney trauma, as well as their potential utility as biomarkers in the detection and follow-up of patients with suspected blunt renal trauma. Three-month-old male Sprague-Dawley rats (n = 18) were divided into three groups (n = 6 in each): Group 1: Control group (no intervention); group 2: Sham group (explorative surgery and exposure of the left kidneys); and group 3: Trauma group (explorative surgery and induction of blunt renal trauma of the left kidneys). Serum and urine samples were collected before and 12-24, 36-48, and 60-72 hours later for NGAL, KIM-1, IL-18, and Cys-C measurements. In the trauma group, there was a statistically significant increase in post-operative NGAL, KIM-1, and IL-18 values after 12-24 h and 36-48 h, as compared with pre-operative values. There was also a statistically significant increase in post-operative serum and urine Cys-C values after 60-72 h, as compared with pre-operative values. NGAL, KIM-1, and IL-18 may represent novel non-invasive descriptive candidate biomarkers of early-stage tubular damage in children with renal trauma.

Status
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Publisher
Termedia Publishing House Ltd. (Kleeberqa St.2, Poznan 61-615, Poland)
Year of Publication
2019

1236.

Straddle injuries to the bulbar urethra: What is the best choice for immediate management?.
Peng X., Guo H., Zhang X., Wang J.
Embase
Journal of Trauma and Acute Care Surgery. 87(4) (pp 892-897), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 630702593
BACKGROUND Cystostomy, endoscopic realignment, and emergency anastomosis are three methods used to treat bulbous urethral injury (BUI). The aim of the study is to determine the optimal management. METHODS A retrospective study was performed on 328 male patients with blunt straddle injury to the perineum. In total, 304 patients were included in the analysis due to strict criteria. Among these 304 patients, 197 had partial urethral disruption diagnosed, and 107 had complete urethral disruption. Group placement of the patients was based on the extent of injury. Each group was further divided into two subgroups based on the immediate management. Propensity score matching was used to correct for differences in baseline characteristics. RESULTS In the partial disruption group, the propensity score-matched subgroups set comprised of 164 patients. Of the 82 patients treated with endoscopic realignment, 34 (41.5%) patients required no urethral surgery, in contrast to 12 (14.6%) patients with cystostomy ($p < 0.05$). No significant difference was found in the other respects ($p > 0.05$). In the complete disruption group, the propensity score-matched subgroups set comprised of 104 patients. The success rate of emergency anastomosis was 90.4% (47 patients), and urethral stricture occurred in five patients (96%), while urethral stricture developed in all 52 patients in the cystostomy subgroup. With regard to surgical management of complications, the choice of management methods significantly differed between the two subgroups (all, $p < 0.05$). The time to natural urination and duration of hospital stay were significantly shorter in the emergency anastomosis subgroup (29.1 +/- 5.4 days vs. 57.1 +/- 6.4 days; 7.2 +/- 3.1 days vs. 12.5 +/- 2.3 days; each $p < 0.05$). CONCLUSION Endoscopic realignment is associated with a lower stricture rate than cystostomy as immediate management for partial disruption. Emergency anastomosis provides better clinical outcomes for patients with complete disruption. LEVEL OF EVIDENCE Therapeutic Level IV.

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31205218 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31205218]
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Publisher
Lippincott Williams and Wilkins (E-mail: kathiest.clai@apta.org)
Year of Publication

2019

1237.

Prognostic value of serum and urine kidney injury molecule-1 in infants with urinary tract infection.
Krzemien G., Turczyn A., Panczyk-Tomaszewska M., Kotula I., Demkow U., Szmigielska A.
Embase
Central European Journal of Immunology. 44(3) (pp 262-268), 2019. Date of Publication: 2019.
[Article]
AN: 2004571209
Introduction: Kidney injury molecule-1 (KIM-1) is an important diagnostic and prognostic marker in acute kidney injury and chronic kidney disease of various aetiologies. The aim of the study was to evaluate the usefulness of serum KIM-1 (sKIM-1) and urine KIM-1 (uKIM-1) for predicting febrile and non-febrile urinary tract infection (UTI) in infants.
Material(s) and Method(s): A prospective study included 101 children divided into three groups: Febrile UTI 49 children, non-febrile UTI 22 children, and healthy controls 30 children. The following laboratory tests were performed: SKIM-1, uKIM-1, white blood count (WBC), C-reactive protein (CRP), and procalcitonin (PCT).
Result(s): Median levels of sKIM-1 were significantly higher in the febrile and non-febrile UTI group compared to the healthy controls (both $p < 0.05$). Mean levels of uKIM-1 were significantly lower in the febrile UTI group compared to the non-febrile UTI group and healthy controls ($p < 0.001$ and $p < 0.0001$, respectively). Univariate logistic regression analysis has demonstrated a positive association of sKIM-1 with febrile and non-febrile UTI (both $p < 0.05$), and negative association uKIM-1 with febrile UTI ($p < 0.0001$). Receiver operating curve (ROC) analysis showed good diagnostic profiles of uKIM-1 with a best cut-off value of 2.4 ng/ml and sKIM-1 with a best cut-off value of 3.88 ng/ml for predicting febrile UTI (area under the curve [AUC] 0.82 and 0.67, sensitivity 73% and 63%, specificity 86% and 80%, respectively).
Conclusion(s): SKIM-1 can be useful for predicting febrile UTI. We do not recommended use of uKIM-1 as a marker of febrile UTI because of its negative association with febrile UTI. Both markers are not useful for predicting non-febrile UTI.

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Year of Publication
2019

1238.

Epidemiology of acute kidney injury among paediatric patients after repair of anomalous origin of the left coronary artery from the pulmonary artery.

Wang C., Fu P., Wang Y., Yang K., Peng Y.G., Li J., Gong J., Wang J., Luo Q., Gao Y., Wang S., Tian Y., Yan F.
Embase
European Journal of Cardio-thoracic Surgery. 56(5) (pp 883-890), 2019. Date of Publication: 01 Nov 2019.
[Article]
AN: 630547751
OBJECTIVES: Acute kidney injury (AKI) is a prevalent complication after the surgical repair of paediatric cardiac defects and is associated with poor outcomes. Insufficient renal perfusion secondary to severe myocardial dysfunction in neonates is most likely an independent risk factor in patients undergoing repair for anomalous origin of the left coronary artery from the pulmonary artery (ALCAPA). We retrospectively investigated the epidemiology and outcomes of children with ALCAPA who developed AKI after repair.
METHOD(S): Eighty-nine children underwent left coronary reimplantation. The paediatric-modified risk, injury, failure, loss and end-stage (p-RIFLE) criteria were used to diagnose AKI.
RESULT(S): The incidence of AKI was 67.4% (60/89) in our study. Among the patient cohort with AKI, 23 (38.3%) were diagnosed with acute kidney injury/failure (I/F) (20 with acute kidney injury and 3 with acute kidney failure). Poor cardiac function (left ventricular ejection fraction < 35%) prior to surgery was a significant contributing factor associated with the onset of AKI [odds ratio (OR) 5.55, 95% confidential interval (CI) 1.39-22.13; P = 0.015], while a longer duration from diagnosis to surgical repair (OR 0.97, 95% CI 0.95-1.00; P = 0.049) and a higher preoperative albumin level (OR 0.83, 95% CI 0.70-0.99; P = 0.041) were found to lower the risk of AKI. Neither the severity of preoperative mitral regurgitation nor mitral annuloplasty was associated with the onset of AKI. After reimplantation, there was 1 death in the no-AKI group and 2 deaths in the AKI/F group (P = 0.356); the remaining patients survived until hospital discharge. The median follow-up time was 46.5 months (34.0-63.25). During follow-up, patients in the AKI cohort were seen more often by specialists and reassessed more often by echocardiography.
CONCLUSION(S): Paediatric AKI after ALCAPA repair occurs at a relatively higher incidence than that suggested by previous reports and is linked to poor clinical outcomes. Preoperative cardiac dysfunction (left ventricular ejection fraction < 35%) is strongly associated with AKI. The beneficial effect of delaying surgery seen in some of our cases warrants further investigation, as it is not concordant with standard teaching regarding the timing of surgery for ALCAPA.

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Publisher
European Association for Cardio-Thoracic Surgery (E-mail: info@eacts.co.uk)
Year of Publication
2019

1239.

Kidney injury biomarkers after cardiac angiography in children with congenital heart disease.
Nishida M., Kubo S., Morishita Y., Nishikawa K., Ikeda K., Itoi T., Hosoi H.
Embase
Congenital Heart Disease. 14(6) (pp 1087-1093), 2019. Date of Publication: 01 Nov 2019.
[Article]
AN: 2003474134
Objective: This study aims to investigate the changes in renal function and levels of urinary biomarkers before and after cardiac angiography in children with congenital heart disease (CHD).
Setting(s): Children with CHD are at a risk for kidney injury during contrast exposure in cardiac angiography. Outcome Measures: We measured urinary protein, albumin, N-acetyl-beta-D-glucosaminidase (NAG), beta2-microglobulin (BMG), and liver-type fatty acid-binding protein (L-FABP) levels, as well as serum creatinine and cystatin C levels, before and after cardiac angiography in 33 children with CHD.
Result(s): No significant decrease was noted in either the creatinine-based or cystatin C-based estimated glomerular filtration rate at 24 hours after angiography compared with that before angiography. Urinary protein, NAG, BMG, and L-FABP levels were significantly increased at 24 hours after angiography, all of which returned to baseline levels at more than 7 days after angiography. An increase in urinary level of protein, albumin, NAG, or BMG was mostly associated with increased urinary L-FABP level. An increase in both urinary BMG and L-FABP, but not that in urinary L-FABP alone, was associated with increased levels of urinary protein and NAG, as well as the greater dose of contrast media.
Conclusion(s): Transient increases of kidney injury biomarkers following cardiac angiography are not necessarily associated with the impairment of renal function in a short time period; however, the increase in urinary protein, albumin, NAG, or BMG level may indicate greater stresses to the kidneys than the increase in urinary L-FABP alone in children with CHD.

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Publisher
Blackwell Publishing Ltd
Year of Publication
2019

1240.

Successful transplantation of kidneys from deceased donors with terminal acute kidney injury.
Domagala P., Gorski L., Wszola M., Kieszek R., Diuwe P., Goralski P., Drozdowski J., Ostaszewska A., Gozdowska J., Ciszek M., Trzebicki J., Durlik M., Paczek L., Chmura A., Kwiatkowski A.
Embase
Renal Failure. 41(1) (pp 167-174), 2019. Date of Publication: 01 Jan 2019.
[Article]
AN: 2003950614

Background: There are many doubts with regards to accepting deceased kidneys with acute kidney injury (AKI) for transplantation.
Purpose(s): The aim of this study was to present the 5-years outcome of kidney transplantation cases where deceased donors developed AKI before organ procurement.
Method(s): Two hundred twenty-six deceased renal transplants were analyzed. Data regarding donors and recipients were collected. Terminal AKI was defined as terminal serum creatinine concentration higher than 1.99 mg/dL and 66 such cases were diagnosed. All kidney transplant recipients were followed for 60 months.
Result(s): AKI group presented more episodes of delayed graft function (DGF) compared to the non-AKI group (56% vs 35%, p <.05). No differences were observed between the groups in the rate of acute rejection episodes, kidney function as well as patient and graft survival.
Conclusion(s): Transplants with AKI present more often DGF and comparable graft survival to transplants without AKI. Kidneys with AKI can be a valuable source of organs provided attentive selection and appropriate care of deceased donors.

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Publisher
Taylor and Francis Ltd
Year of Publication
2019

1241.

Peritoneal Dialysis Treatment in Small Children with Acute Kidney Injury: Experience in Northwest China.
Li H., Yang S., Jin L., Wang Z., Xie L., Lv J., Yin A., Lu W.
Embase
Blood Purification. 48(4) (pp 315-320), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 628947342
Background: Peritoneal dialysis (PD) is a kind of renal replacement therapy (RRT), which can be employed to treat pediatric acute kidney injury (AKI) as it is safe, simple, and cost-effective. The studies of PD treatment in pediatric AKI in China have rarely been reported in English literature.
Objective(s): To investigate the efficacy and the outcome of PD in pediatric patients with AKI.
Method(s): We performed a retrospective study of children who received PD as RRT for AKI in a teaching hospital in northwest China from 2003 to 2013. Demographic characteristics and laboratory data were collected, and the prognostic factors of renal recovery were identified.

Result(s): There were 24 children (62.5% male) identified, with the mean age of 22.4 +/- 18.7 months (3 months to 5 years old). The most common causes of AKI were drug induced (25.0%), glomerulonephritis (20.9%), and obstructive nephropathy (16.7%). The mean duration of PD was 11.3 +/- 7.8 days (2-39 days). PD treatment was highly effective in attenuation of toxics, improvement of fluid overload, and correction of electrolyte disturbances ($p < 0.001$). One catheter outflow obstruction was noted, and no major complication was identified. In total, 18 children (75.0%) recovered and had the catheter successfully removed, 2 (8.3%) needed further PD treatment, and 4 (16.7%) died. The albumin level was significantly higher in patients who recovered with PD treatment (33.7 +/- 6.2 vs. 21.5 +/- 4.8 g/L, $p = 0.002$).
Conclusion(s): PD can be performed safely and efficiently for the treatment of pediatric AKI. Low albumin level may be associated with poor prognosis of pediatric AKI.

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Publisher
S. Karger AG
Year of Publication
2019

1242.

Plasma Neutrophil Gelatinase-Associated Lipocalin Is Associated With Acute Kidney Injury and Clinical Outcomes in Neonates Undergoing Cardiopulmonary Bypass.
Schroeder L.W., Buckley J.R., Stroud R.E., Martin R.H., Nadeau E.K., Barrs R., Graham E.M.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. 20(10) (pp 957-962), 2019. Date of Publication: 01 Oct 2019.
[Article]
AN: 628401133
OBJECTIVES: Acute kidney injury is a frequent complication following neonatal cardiac surgery and is associated with significant morbidity and mortality. The objectives of this study were to determine if plasma neutrophil gelatinase-associated lipocalin levels were associated with acute kidney injury and clinical outcomes in neonates with congenital heart disease undergoing cardiopulmonary bypass. DESIGN: Retrospective single-center observational study. SETTING: A pediatric cardiac ICU within a tertiary-care academic hospital. PATIENTS: Patients age less than 30 days undergoing cardiac surgery requiring cardiopulmonary bypass.None. MEASUREMENTS AND MAIN RESULTS: Plasma neutrophil gelatinase-associated lipocalin peaked at 12 hours postcardiopulmonary bypass and more than doubled compared with preoperative levels. Higher preoperative and 24-hour postoperative neutrophil gelatinase-associated lipocalin levels were associated with acute kidney injury ($r = 0.30$, $r = 0.49$), longer duration of mechanical ventilation ($r = 0.40$, $r = 0.51$), ICU ($r = 0.32$, $r = 0.33$) and hospital lengths of stay ($r = 0.28$, $r = 0.32$), and total hospital charges ($r = 0.35$, $r = 0.30$; all p values < 0.05).
CONCLUSION(S): Both preoperative and 24-hour postoperative plasma neutrophil gelatinase-associated lipocalin levels are associated with acute kidney injury and worse clinical outcomes in neonates undergoing cardiac surgery. Plasma neutrophil gelatinase-associated lipocalin levels

may have a role in risk stratification for predicting postoperative renal dysfunction as well as providing a potential clinical trajectory in the postoperative period.
PMID
31206501 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31206501]
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Publisher
NLM (Medline)
Clinical Trial Number
https://clinicaltrials.gov/show/NCT00934843
Year of Publication
2019

1243.

The Effect of Levosimendan Versus Milrinone on the Occurrence Rate of Acute Kidney Injury Following Congenital Heart Surgery in Infants: A Randomized Clinical Trial.
Thorlacius E.M., Suominen P.K., Wahlander H., Keski-Nisula J., Vistnes M., Ricksten S.-E., Synnergren M., Romlin B.S., Castellheim A.
Embase
Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies. 20(10) (pp 947-956), 2019. Date of Publication: 01 Oct 2019.
[Article]
AN: 628621846
OBJECTIVES: It has been shown that, in contrast to other inotropic agents, levosimendan improves glomerular filtration rate after adult cardiac surgery. The aim of this study was to investigate the efficacy of levosimendan, compared with milrinone, in preventing acute kidney dysfunction in infants after open-heart surgery with cardiopulmonary bypass. DESIGN: Two-center, double-blinded, prospective, randomized clinical trial. SETTING: The study was performed in two tertiary pediatric centers, one in Sweden (Gothenburg) and one in Finland (Helsinki). PATIENTS: Infants between 1 and 12 months old, diagnosed with Tetralogy of Fallot, complete atrioventricular septal defect or nonrestrictive ventricular septal defect, undergoing total corrective cardiac surgery with cardiopulmonary bypass. INTERVENTIONS: Seventy-two infants were randomized to receive a perioperative infusion of levosimendan (0.1 microg/kg/min) or milrinone (0.4 microg/kg/min). The infusion was initiated at the start of cardiopulmonary bypass and continued for 26 hours. MEASUREMENTS AND MAIN RESULTS: The primary outcome variable was the absolute value of serum creatinine data on postoperative day 1. Secondary outcomes included the following: 1) acute kidney injury according to the serum creatinine criteria of the Kidney Diseases: Improving Global Outcomes; 2) acute kidney injury with serum creatinine corrected for fluid balance; 3) plasma neutrophil gelatinase-associated lipocalin; 4) cystatin C; 5) urea; 6) lactate; 7) hemodynamic variables; 8) use of diuretics in the PICU; 9) need of dialysis; 10) length of ventilator therapy; and 11) length of PICU stays. There was no significant difference in postoperative serum creatinine between the treatment groups over time (p = 0.65). The occurrence rate of acute kidney injury within 48 hours was 46.9% in the levosimendan group and 39.5% in the milrinone group (p = 0.70). There were no significant differences in other secondary outcome variables between the groups.

CONCLUSION(S): Levosimendan compared with milrinone did not reduce the occurrence rate of acute kidney injury in infants after total corrective heart surgery for atrioventricular septal defect, ventricular septal defect, or Tetralogy of Fallot.
PMID
31274775 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31274775]
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2019

1244.

High grade renal trauma due to blunt injury in children: do all require intervention?.
Govindarajan K.K., Utagi M., Naredi B.K., Jindal B., Sambandan K., Subramaniam D.
Embase
Jornal brasileiro de nefrologia : 'orgao oficial de Sociedades Brasileira e Latino-Americana de Nefrologia. 41(2) (pp 172-175), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 629178010
INTRODUCTION: The aim of this study was to analyze the presentation and management of major grade renal trauma in children.
METHOD(S): A retrospective study was performed including data collected from the patients who were admitted in Pediatric surgery with major grade renal injury (grade 3 and more) from January 2015 to August 2018. Demography, clinical parameters, management, duration of hospital stay and final outcome were noted.
RESULT(S): Out of 13 children (9 males and 4 females), with age range 2-12 years (mean of 8 years), reported self-fall was the commonest mode of injury followed by road traffic accident. The majority (10/13, 75%) had a right renal injury. Eight children had a grade IV injury, one had a grade V injury, and four children had grade III injury. Duration of hospital stay varied from 3 to 28 (mean of 11.7) days. Three children required blood transfusion. One child required image guided aspiration twice and two required pigtail insertion for perinephric collection. All the 13 children improved without readmission or need for any other surgical intervention.
CONCLUSION(S): Children with major grade renal trauma due to blunt injury can be successfully managed without surgical intervention and minimal intervention may only be needed in select situations.
PMID
30638253 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30638253]
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Publisher
NLM (Medline)
Year of Publication
2019

1245.

Acute kidney injury in children: A study of etiology, clinical profile, and short-term outcomes at the University of Abuja Teaching Hospital, Gwagwalada, Abuja, Nigeria.
Anigilaje E.A., Adebayo A.I., Ocheni S.A.
Embase
Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia. 30(2) (pp 421-439), 2019. Date of Publication: 01 Mar 2019.
[Article]
AN: 627611747
A major hindrance in programs designed to reduce deaths from acute kidney injury (AKI) is that the extent and nature of AKI are often unknown. This article reports the etiology, clinical profile, and short-term outcomes of children managed for AKI at the University of Abuja Teaching Hospital, Gwagwalada, Abuja, Nigeria. Children aged one month to 15 years managed for AKI (identified by pediatric RIFLE criteria) from January 2017 to December 2017 were followed up for a short period of four weeks following the AKI. Multivariate Cox regression model was used to analyze the predictors of mortality. An annual prevalence of 26 AKI cases per 1000 children was recorded with 43 AKI cases from 1634 children seen during the 12-month period. The median age was 48 months. Twenty-two were males (51.2%). Sepsis (20, 46.6%), acute glomerulonephritis (5, 11.6%), diarrheal dehydration (5, 11.6%), severe falciparum malaria (4, 9.3%), and hemolyticuremic syndrome (4, 9.3%) were the major causes of the AKI. Fourteen children were managed conservatively, while 29 children that required dialysis had access to it. Thirteen children died (percentage mortality of 30.2%). The hazard of dying was eight times more in male gender [95% confidence interval (CI); 1.03-72.9, P = 0.017] and was lower in children without pulmonary edema by 0.14 (95% CI; 0.03-0.63, P = 0.01). In our setting, mortality from AKI is still high, and male children and those with pulmonary edema should be closely managed for AKI to reduce this high mortality.
PMID
31031378 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31031378]
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Publisher
NLM (Medline)
Year of Publication
2019

1246.

Minor blunt trauma, major kidney injury in a pediatric patient; healing after ureteral stenting. Traumatismo cerrado menor, gran lesion renal en un paciente pediatrico; curacion despues de caterizacion ureteral <Traumatismo cerrado menor, gran lesion renal en un paciente pediatrico; curacion despues de caterizacion ureteral.>
Bagbanci S., Tursem Tokmak T., Dadali M., Dadali Y., Karabulut A., Emir L.
Embase
Archivos espanoles de urologia. 72(9) (pp 978-979), 2019. Date of Publication: 01 Nov 2019.
[Article]
AN: 629797539
PMID
31697262 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31697262]
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Publisher
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1247.

Evaluation of benzene exposure and early biomarkers of kidney damage in children exposed to solvents due to precarious work in ticul, yucatan, mexico.
Perez-Herrera N., Leon-Martinez L.D., Flores-Ramirez R., Barbier O., Ortega-Romero M., May-Euan F., Saldana-Villanueva K., Perera-Rios J., Perez-Vazquez F.J.
Embase
Annals of Global Health. 85(1) (no pagination), 2019. Article Number: 94. Date of Publication: 2019.
[Article]
AN: 2003243178
Background: The child labor situation has been associated with precarious job conditions and poor health conditions because children are often exposed to unsafe work environments, stressful psycho-social work conditions, scarce or no access to protective services, and heavy work burdens.
Objective(s): The aim of the study was to evaluate markers of exposure to benzene through the exposure biomarker trans, trans-muconic acid (tt-MA), and biomarkers of early renal damage in children who work in sites that are under precarious job conditions.
Method(s): Samples of urine were obtained from children (aged 6-12 years old) who resided in Ticul, Yucatan, Mexico. Exposure to benzene was assessed through trans, trans-muconic acid (t,t-MA). Evaluated renal damage biomarkers were: Cystatin-C (Cys-C), Osteopontin (OPN), alpha1-Microglobulin (alpha1-MG) and Neutrophil Gelatinase-Associated Lipocalin (NGAL).
Finding(s): Children who live where the workplace is inside the dwelling presented higher mean levels of tt-MA (0.59 mg/g creatinine) compared with those who live away from the workshops (0.19 mg/g creati-nine). Likewise, mean levels of NGAL (4.7, 5.2 ng/ml), albuminuria (10, 10 ng/ml), Cys-C (11.8, 7.5 ng/ml), OPN (224.4, 226.5 ng/ml) and alpha1-MG (96.6, 73.6 ng/ml) were found in children where the workplace was inside the dwelling and outside, respectively.
Conclusion(s): Our data indicate that the children who work under precarious job conditions are exposed to benzene, and they exhibit protein levels that suggest renal damage in a population in precarious working conditions. Therefore, the child population should be considered as the most vulnerable and susceptible to suffer adverse health effects.

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Ubiquity Press (Ubiquity Press, 6 Windmill Street, London W1T 2 JB, United Kingdom. E-mail: support@ubiquitypress.com)
Year of Publication
2019

1248.

Intraoperative Hepatic Blood Inflow Can Predict Early Acute Kidney Injury following DCD Liver Transplantation: A Retrospective Observational Study.
Jiao A., Liu Q., Li F., Guo R., Wang B., Lu X., Sun N., Zhang C., Li X., Zhang J.
Embase
BioMed Research International. 2019 (no pagination), 2019. Article Number: 4572130. Date of Publication: 2019.
[Article]
AN: 628976037
Purpose. Acute kidney injury (AKI) is a major and severe complication following donation-after-circulatory-death (DCD) liver transplantation (LT) and is associated with increased postoperative morbidity and mortality. However, the risk factors and the prognosis factors of AKI still need to be further explored, and the relativity of intraoperative hepatic blood inflow (HBI) and AKI following LT has not been discussed yet. The purpose of this study was to investigate the correlation between HBI and AKI and to construct a prediction model of early acute kidney injury (EAKI) following DCD LT with the combination of HBI and other clinical parameters. Methods. Clinical data of 132 patients who underwent DCD liver transplantation at the first hospital of China Medical University from April 2005 to March 2017 were analyzed. Data of 105 patients (the first ten years of patients) were used to develop the prediction model. Then we assessed the clinical usefulness of the prediction models in the validation cohort (27 patients). EAKI according to Kidney Disease Improving Global Outcomes (KDIGO) criteria based on serum creatinine increase during 7-day of postoperative follow-up. Results. After Least Absolute Shrinkage and Selection Operator (LASSO) regression and simplification, a simplified prediction model consisting of the Child-Turcotte-Pugh (CTP) score (p=0.033), anhepatic phase (p=0.014), packed red blood cell (pRBC) transfusion (p=0.027), and the HBI indexed by height (HBI/h) (p=0.002) was established. The C-indexes of the model in the development and validation cohort were 0.823 [95% CI, 0.738-0.908] and 0.921 [95% CI, 0.816-1.000], respectively. Conclusions. In this study, we demonstrated the utility of HBI/h as a predictor for EAKI following DCD LT, as well as the clinical

usefulness of the prediction model through the combination of the CTP score, anhepatic phase, pRBC transfusion and HBI/h.

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Hindawi Limited (410 Park Avenue, 15th Floor, 287 pmb, New York NY 10022, United States)
Year of Publication
2019

1249.

Profile of Acute Kidney Injury in Hospitalized Children with Idiopathic Nephrotic Syndrome.
Prasad B.S., Kumar M., Dabas A., Mishra K.
Embase
Indian Pediatrics. 56(2) (pp 119-122), 2019. Date of Publication: 01 Feb 2019.
[Article]
AN: 626471148
Objective: To determine the incidence, risk factors and outcome of acute kidney injury (AKI) in hospitalized children with nephrotic syndrome.
Method(s): All consecutive hospitalized children (aged 1-14 years) with diagnosis of nephrotic syndrome between February 2016 and January 2017 were enrolled for the study. Children (aged 1-14 years) with features of nephritis, underlying secondary causes of nephrotic syndrome as well as children admitted for diagnostic renal biopsy and intravenous cyclophosphamide or rituximab infusion were excluded.
Result(s): A total of 73 children (81 admissions) were enrolled; incidence of AKI was 16% (95% CI, 9-23). On multivariate logistic regression analysis, furosemide infusion was observed as an independent risk factor for acute kidney injury (OR 23; 95% CI, 3-141; P<0.001). Out of 13 children with AKI, three died.
Conclusion(s): Acute kidney injury in hospitalized children with nephrotic syndrome has high risk of mortality. Children receiving furosemide infusion should be closely monitored for occurrence of acute kidney injury.

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Publisher

Springer
Year of Publication
2019

1250.

Resident macrophages reprogram toward a developmental state after acute kidney injury.
Lever J.M., Hull T.D., Boddu R., Pepin M.E., Black L.M., Adedoyin O.O., Yang Z., Traylor A.M., Jiang Y., Li Z., Peabody J.E., Eckenrode H.E., Crossman D.K., Crowley M.R., Bolisetty S., Zimmerman K.A., Wende A.R., Mrug M., Yoder B.K., Agarwal A., George J.F.
Embase
JCI Insight. 4(2) (no pagination), 2019. Article Number: Y. Date of Publication: 24 Jan 2019.
[Article]
AN: 626312689
Acute kidney injury (AKI) is a devastating clinical condition affecting at least two-thirds of critically ill patients, and, among these patients, it is associated with a greater than 60% risk of mortality. Kidney mononuclear phagocytes (MPs) are implicated in pathogenesis and healing in mouse models of AKI and, thus, have been the subject of investigation as potential targets for clinical intervention. We have determined that, after injury, F4/80hi-expressing kidney-resident macrophages (KRMs) are a distinct cellular subpopulation that does not differentiate from nonresident infiltrating MPs. However, if KRMs are depleted using polyinosinic/polycytidylic acid (poly I:C), they can be reconstituted from bone marrow-derived precursors. Further, KRMs lack major histocompatibility complex class II (MHCII) expression before P7 but upregulate it over the next 14 days. This MHCII-KRM phenotype reappears after injury. RNA sequencing shows that injury causes transcriptional reprogramming of KRMs such that they more closely resemble that found at P7. KRMs after injury are also enriched in Wingless-type MMTV integration site family (Wnt) signaling, indicating that a pathway vital for mouse and human kidney development is active. These data indicate that mechanisms involved in kidney development may be functioning after injury in KRMs.

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Publisher
American Society for Clinical Investigation

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1251.

Non-invasive differentiation of non-rejection kidney injury from acute rejection in pediatric renal transplant recipients.
Archdekin B., Sharma A., Gibson I.W., Rush D., Wishart D.S., Blydt-Hansen T.D.
Embase
Pediatric Transplantation. 23(3) (no pagination), 2019. Article Number: e13364. Date of Publication: May 2019.
[Article]
AN: 626255634
Acute kidney injury (AKI) is a major concern in pediatric kidney transplant recipients, where non-alloimmune causes must be distinguished from rejection. We sought to identify a urinary metabolite signature associated with non-rejection kidney injury (NRKI) in pediatric kidney transplant recipients. Urine samples (n = 396) from 60 pediatric transplant participants were obtained at time of kidney biopsy and quantitatively assayed for 133 metabolites by mass spectrometry. Metabolite profiles were analyzed via projection on latent structures discriminant analysis. Mixed-effects regression identified laboratory and clinical predictors of NRKI and distinguished NRKI from T cell-mediated rejection (CMR), antibody-mediated rejection (AMR), and mixed CMR/AMR. Urine samples (n = 199) without rejection were split into NRKI (n = 26; DELTASCr >=25%), pre-NRKI (n = 35; DELTASCr >=10% and <25%), and no NRKI (n = 138; DELTASCr <10%) groups. The NRKI discriminant score (dscore) distinguished between NRKI and no NRKI (AUC = 0.86; 95% CI = 0.79-0.94), confirmed by leave-one-out cross-validation (AUC = 0.79; 95% CI = 0.68-0.89). The NRKI dscore also distinguished between NRKI and pre-NRKI (AUC = 0.82; 95% CI = 0.71-0.93). In a linear mixed-effects regression model to account for repeated measures, the NRKI dscore was independent of concurrent rejection, but there was a non-statistical trend for higher dscores with rejection severity. A second exploratory classifier developed to distinguish NRKI from clinical rejection had similar test characteristics (AUC = 0.81, 95% CI = 0.70-0.92, confirmed by LOOCV). This study demonstrates the potential of a urine metabolite classifier to detect NRKI in pediatric kidney transplant patients and non-invasively discriminate NRKI from rejection.

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Blackwell Publishing Inc. (E-mail: subscrip@blackwellpub.com)
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2019

1252.

Single kidney transplantation from donors with acute kidney injury: A single-center experience.
Jiang Y., Song T., Liu J., Wang Z., Wang X., Huang Z., Fan Y., Lin T.
Embase
Pediatric Transplantation. 23(3) (no pagination), 2019. Article Number: e13326. Date of Publication: May 2019.
[Article]
AN: 627473292
Introduction: Despite a severe shortage of organ supply, patients are reluctant to accept organs from deceased donors with AKI, let alone from pediatric AKI donors.
Method(s): We assessed 70 patients who received kidneys from donors with AKI (10 with pediatric and 60 with adult donors) and 176 contemporaneous patients who received kidneys from non-AKI donors (41 with pediatric and 135 with adult donors) between March 2012 and February 2017 for retrospectively evaluating the clinical outcomes.
Result(s): AKI was defined and staging by the RIFLE criteria and pediatric-modified RIFLE criteria. Median age was 11.00 years IQR (4.50-14.00 years), and median weight was 25.00 kg (IQR, 17.00-45.00 kg) for all pediatric donors. Median follow-up was 8 months (range, 1-49 months). Adult AKI group had the highest incidence of DGF (35.0% vs 10%, 9.8%, and 19.3%, P = 0.011). There was a significant increase in DGF in higher AKI stages (Risk: 20.7%, Injury: 46.7%, Failure: 50.0%; P = 0.014) among patients with adult donors. No significant differences were noted in 1-year (100.0%, 95.1%, 98.3%, and 97.8%; P = 0.751) and 3-year (100.0%, 95.1%, 98.3%, and 97.8%; P = 0.751) patient survival, and 1-year (90.0%, 97.6%, 98.3%, and 95.6%; P = 0.535) and 3-year (90.0%, 97.6%, 98.3%, and 95.6%; P = 0.535) graft survival.
Conclusion(s): Transplants procured from donors with AKI, particularly pediatric ones, could achieve excellent intermediate-term clinical outcomes and thus potentially expand the donor pool.

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Publisher
Blackwell Publishing Inc. (E-mail: subscrip@blackwellpub.com)
Year of Publication
2019

1253.

Furosemide response predicts acute kidney injury in children after cardiac surgery.
Penk J., Gist K.M., Wald E.L., Kitzmiller L., Webb T.N., Li Y., Cooper D.S., Goldstein S.L., Basu R.K.
Embase
Journal of Thoracic and Cardiovascular Surgery. 157(6) (pp 2444-2451), 2019. Date of Publication: June 2019.
[Article]
AN: 2001552373
Objective: A standardized assessment of response to furosemide is predictive of acute kidney injury progression in adults, but a paucity of data exists in pediatric patients. We evaluate furosemide responsiveness in a multicenter cohort of pediatric patients after cardiac surgery.
Method(s): Children who underwent cardiac surgery with a Society of Thoracic Surgeons-European Association for Cardiothoracic Surgery score of 3 or greater were retrospectively identified. The first dose of furosemide after surgery was recorded, and hourly urine output for 6 hours was recorded after the index dose. Urine flow rate calculated as urine output per hour was used to predict development of acute kidney injury.
Result(s): A total of 166 patients from 4 institutions (median age, 6.3 months; interquartile range, 0.4-27.7)were included. Acute kidney injury occurred in 54 patients (33%). Compared with those without acute kidney injury, the 2- and 6-hour urine flow rates were significantly lower in patients in whom acute kidney injury developed: 2.9 (0.9-6.5)versus 5.0 (2.5-9.0)mL/kg/h for 2-hour urine flow rate, P =.004, and 2.4 (1.2-4.0)versus 4.0 (2.3-5.9)mL/kg/h for 6-hour flow rate, P =.001. In multivariable regression analysis, 2-hour (odds ratio, 1.2, P =.002)and 6-hour (odds ratio, 1.40, P <.001)urine flow rates were independently associated with acute kidney injury development. Lower urine flow rate at both 2 and 6 hours was also independently associated with longer hospital length of stay.
Conclusion(s): Lower urine flow rate after furosemide administration, when evaluated in a heterogeneous cohort of children from multiple institutions after pediatric cardiac surgery, was independently associated with subsequent acute kidney injury and longer length of stay. Future prospective studies are needed to validate furosemide responsiveness as a predictor of acute kidney injury.

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Mosby Inc. (E-mail: customerservice@mosby.com)
Year of Publication
2019

1254.

Urinary nephrin as a biomarker of glomerular maturation and injury is associated with acute kidney injury and mortality in critically ill neonates.
Chen J., Li G., Wang S., Hu X., Sun Y., Dai X., Bai Z., Pan J., Li X., Wang J., Li Y.
Embase
Neonatology. 116(1) (pp 58-66), 2019. Date of Publication: 01 Jul 2019.
[Article]
AN: 627404110
Background: Nephrin is a key component of the slit diaphragm of the glomerular podocyte, and increased urinary nephrin level may reflect glomerular injury.
Objective(s): To determine whether urinary nephrin is a useful biomarker of glomerular maturation and injury and whether it is associated with acute kidney injury (AKI) and neonatal intensive care unit (NICU) mortality in critically ill neonates.
Method(s): Urinary samples were serially collected in 234 neonates during NICU stay for measurements of nephrin, cystatin C (CysC), and albumin. AKI diagnosis was based on neonatal Kidney Disease: Improving Global Outcome (KDIGO) criteria.
Result(s): Of the neonates, 26 developed AKI and 24 died during NICU stay. The independent contributors to the initial urinary nephrin level obtained on the first 24 h admitted to NICU were gestational age ($p = 0.004$) and initial urinary CysC level ($p < 0.001$). Both initial ($p = 0.037$) and peak ($p = 0.039$) urinary nephrin were significantly associated with AKI, even after controlling for significant covariates, and had an area under the receiver-operating characteristic curve (AUC) of 0.71 and 0.70, respectively, for predicting AKI. At the optimal cutoff value of 0.375 mug/mg urinary creatinine, the initial urinary nephrin displayed sensitivity of 61.5% and specificity of 76.9% for predicting AKI. The AUCs for initial and peak urinary nephrin to predict NICU mortality were 0.81 and 0.83, respectively.
Conclusion(s): Urinary nephrin, which may decrease with increasing glomerular maturity, is significantly associated with increased risk for AKI and NICU mortality even after adjustment for potential confounders. A higher level of urinary nephrin may be independently predictive of AKI and NICU mortality in critically ill neonates.

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Publisher
S. Karger AG
Year of Publication
2019

1255.

Neonatal acute kidney injury: recording rate, course, and outcome: one center experience.
Cleper R., Shavit I., Blumenthal D., Reisman L., Pomeranz G., Haham A., Friedman S., Goldiner I., Mandel D.
Embase
Journal of Maternal-Fetal and Neonatal Medicine. 32(20) (pp 3379-3385), 2019. Date of Publication: 18 Oct 2019.
[Article]
AN: 621915231
Background: Neonates, and particularly preterm newborns, are at increased risk for acute kidney injury (AKI) due to immature kidney function. While specific criteria have been defined for AKI in this particular population, this diagnosis is frequently overlooked, and consequently, is often not recorded in patients' medical files. AKI-associated short- and long-term morbidity and mortality underline the importance of this diagnosis Objective: To assess the recording rate of AKI in the neonatal intensive care unit (NICU), and to identify clinical features that may promote awareness to this condition. Study design: The database of one medical center was searched for serum creatinine values above 1 mg% among all the newborns (more than 48 hours old) who were hospitalized in the neonatal intensive care unit (NICU) during the years 2010-2015, and who underwent at least two blood tests during their hospitalization. The files of patients who met acute kidney injury (AKI) diagnostic criteria were searched for AKI diagnosis, maternal, fetal, and postnatal course and outcome.
Result(s): Of 59 newborns who met AKI criteria, 51 (86%) were preterm and 8 term newborns. The respective mean gestational weeks at birth were: 28 +/- 3 and 38.5 +/- 1, and mean birth weights: 1002 +/- 57 and 3157 +/- 375 grams. Mortality rates were 14/51 (27%) versus 1/8 (12.5%). Of the 44 survivors, AKI was recorded in the medical files of 9/37 (24%) preterm versus 5/7 (71%) term-newborns. AKI associated with twin pregnancy in preterm neonates: 22 (43%) versus 1 (12.5%) in term-newborn. Unexpected high frequencies of maternal obstetrical problems and cesarean section delivery: 62.5 and 78%, respectively, along with persistently depressed 5-min Apgar 6.6 +/- 3.5 were found in term newborns with AKI. Congenital anomalies of the urinary tract (CAKUT) were suspected prenatally on fetal ultrasound in 3 (6%) and 1 (12.5%) of the respective groups, a 10-fold higher rate than that observed in the general population. AKI recurred in 18 (35%) of the preterm and none of the term neonates. Mild AKI episodes (Stage 1-2) occurred in 30/37 (81%) by contrast to severe events (Stage 3) in 4/7 (57%) preterm and term survivors, respectively. Ventilation duration associated significantly with AKI recurrence, and sepsis with mortality: OR 1.25 (95%CI = 1.09-1.43) (p <.001) and OR = 4.65 (95%CI = 1.26-17.2) (p =.014), respectively.
Conclusion(s): We demonstrated underreporting of AKI, particularly among preterm newborns, a population at high risk of developing recurrent episodes. Our data suggest different clinical profiles of AKI among preterm and term neonates: with later onset, milder but recurrent episodes in the former. Increased alertness for AKI diagnosis is needed for neonates with prolonged respiratory support, treated with diuretics and after sepsis. Newborns suspected of CAKUT (Congenital Anomalies of Kidneys and Urinary Tract) as per fetal ultrasound might need closer observation for AKI occurrence.

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29635946 [https://www.ncbi.nlm.nih.gov/pubmed/?term=29635946]
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Embase
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Publisher
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1256.

The effect of hemodynamically significant patent ductus arteriosus on acute kidney injury and systemic hypertension in extremely low gestational age newborns.
Velazquez D.M., Reidy K.J., Sharma M., Kim M., Vega M., Havranek T.
Embase
Journal of Maternal-Fetal and Neonatal Medicine. 32(19) (pp 3209-3214), 2019. Date of Publication: 02 Oct 2019.
[Article]
AN: 621663431
Background: Acute kidney injury (AKI) in preterm neonates is becoming an increasingly recognized morbidity in the neonatal intensive care unit neonatal intensive care unit (NICU), yet its epidemiology, delineation and relation to numerous toxic exposures and common morbidities such as systemic hypertension is just evolving. With a frequency of the patent ductus arteriosus (PDA) as high as 70% in preterm infants born before 28-week gestation, the role of the hemodynamically significant PDA (hs-PDA) remains unclear.
Objective(s): To determine if AKI and systemic hypertension is more common in extremely low gestational age newborns (ELGAN) with hs PDA compared to ELGAN with no or non-hs PDA using modified AKIN and Neonatal Risk, Injury, Failure, Loss of Kidney Function, and End-stage (N-RIFLE) scoring systems.
Method(s): This was a retrospective cohort study of infants <=28 weeks gestational age born between 2010 and 2016 who had echocardiographic PDA evaluation completed for hemodynamical significance as well as serial serum creatinine and urine output measurement documented, needed for the two AKI scoring systems: modified AKIN (based on serial serum creatinine) and N-RIFLE (using urine output data). Blood pressure measurements and therapy were evaluated during the hospitalization and on the day of NICU discharge. Baseline characteristics and outcome variables were compared between the hs-PDA and no or non-hs PDA using unpaired t-tests for continuous variables and chi square tests for categorical data.
Result(s): One hundred fifty-one infants were eligible of which 110 had hs-PDA. Infants with hs-PDA were smaller (777 versus 867 g, p =.026), less mature (25.8 versus 26.4 weeks, p =.023) and had greater exposure to nephrotoxic drugs (14 versus 9.4 days, p =.001). Other clinical and demographic variables were similar between the two groups. The overall incidence of AKI was not different between the hs-PDA and no PDA or non-hs PDA groups when evaluated by the acute kidney injury network (AKIN) or N-RIFLE staging; however, preterm newborns with hs-PDA demonstrated a trend towards increased risk of AKI injury (12.7 versus 0.02%, p =.06). The N-RIFLE and AKIN scoring systems demonstrated very poor degree of agreement (kappa = 0.00853) in our study. There was no difference in the rates of hypertension during the hospitalization as well as on the day of NICU discharge.
Conclusion(s): Preterm neonates with hs-PDA had similar rates of AKI and hypertension as neonates with no or non-hs PDA.

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1257.

Acute kidney injury in preterm infants with necrotizing enterocolitis.
Bakhoum C.Y., Basalely A., Koppel R.I., Sethna C.B.
Embase
Journal of Maternal-Fetal and Neonatal Medicine. 32(19) (pp 3185-3190), 2019. Date of Publication: 02 Oct 2019.
[Article]
AN: 621626628
Purpose: Acute kidney injury (AKI) is an independent predictor of morbidity and mortality in critically ill infants and children. AKI develops in an estimated one-third of the neonatal intensive care unit (NICU) population; however, literature on the incidence of AKI in premature infants with a diagnosis of necrotizing enterocolitis (NEC) is limited. The objectives of this study were to describe the incidence of AKI in infants with radiographically confirmed NEC, assess these infants for independent risk factors associated with development of AKI and evaluate if the presence of AKI is associated with increased mortality. Study design: We conducted a retrospective chart review of premature infants, gestational age (GA) 23-34 weeks, who developed modified Bell's level 2 or 3 NEC while admitted to two tertiary NICUs within our health system between 2010 and 2015. AKI was defined and staged according to modified Kidney Disease: Improving Global Outcomes (KDIGO) criteria.
Result(s): 77 infants with Bell's level II (63.6%) and III (36.4%) NEC were studied. AKI occurred in 42.9% of infants (Stage 1: 18.2%; Stage 2: 13%; Stage 3: 11.7%). Bell's Stage III NEC, lower GA, maternal preeclampsia/eclampsia, gentamicin/vancomycin exposure, and empiric antibiotic use were independently associated with AKI. AKI was strongly associated with mortality (HR 20.3 95%CI 2.5-162.8, p =.005) in an adjusted Cox model.
Conclusion(s): AKI is common in premature infants who develop NEC. More severe NEC was found to be an independent risk factor for AKI. Additionally, AKI in infants with NEC increases mortality risk significantly.

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Embase
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Publisher
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Year of Publication
2019

1258.

Acute kidney injury in Indigenous Australians in the Kimberley: age distribution and associated diagnoses.
Mohan J.V., Atkinson D.N., Rosman J.B., Griffiths E.K.
Embase
Medical Journal of Australia. 211(1) (pp 19-23), 2019. Date of Publication: July 2019.
[Article]
AN: 626791358
Objective: To describe the frequencies of acute kidney injury (AKI) and of associated diagnoses in Indigenous people in a remote Western Australian region.
Design(s): Retrospective population-based study of AKI events confirmed by changes in serum creatinine levels. Setting, participants: Aboriginal and Torres Strait Islander residents of the Kimberley region of Western Australia, aged 15 years or more and without end-stage kidney disease, for whom AKI between 1 June 2009 and 30 May 2016 was confirmed by an acute rise in serum creatinine levels.
Main Outcome Measure(s): Age-specific AKI rates; principal and other diagnoses.
Result(s): 324 AKI events in 260 individuals were recorded; the median age of patients was 51.8 years (IQR, 43.9-61.0 years), and 176 events (54%) were in men. The overall AKI rate was 323 events (95% CI, 281-367) per 100 000 population; 92 events (28%) were in people aged 15-44 years. 52% of principal diagnoses were infectious in nature, including pneumonia (12% of events), infections of the skin and subcutaneous tissue (10%), and urinary tract infections (7.7%). 80 events (34%) were detected on or before the date of admission; fewer than one-third of discharge summaries (61 events, 28%) listed AKI as a primary or other diagnosis.
Conclusion(s): The age distribution of AKI events among Indigenous Australians in the Kimberley was skewed to younger groups than in the national data on AKI. Infectious conditions were common in patients, underscoring the significance of environmental determinants of health. Primary care services can play an important role in preventing community-acquired AKI; applying pathology-based criteria could improve the detection of AKI.

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30860606 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30860606]
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John Wiley and Sons Inc. (P.O.Box 18667, Newark NJ 07191-8667, United States)
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1259.

Theophylline and aminophylline for prevention of acute kidney injury in neonates and children: A systematic review.
Bhatt G.C., Gogia P., Bitzan M., Das R.R.
Embase
Archives of Disease in Childhood. 104(7) (pp 670-679), 2019. Date of Publication: 01 Jul 2019.
[Article]
AN: 626542470
Objective To compare the efficacy and safety of theophylline or aminophylline for prevention of acute kidney injury (AKI) in neonates and children. Design Systematic review and meta-analysis with application of Grading of Recommendations, Assessment, Development and Evaluation system. Data sources PubMed/MEDLINE, Embase, Google Scholar and Cochrane renal group were searched from 1970 to May 2018. Eligibility criteria Randomised clinical trials and quasi-randomised trials comparing the efficacy and safety of prophylactic theophylline or aminophylline for prevention of AKI in neonates and children were included. The primary outcomes were: incidence of AKI, serum creatinine levels and all-cause mortality. Results A total of nine trials were included in the qualitative synthesis. Six trials including 436 term neonates with birth asphyxia who received a single dose of theophylline were finally included in the meta-analysis. The pooled estimate showed 60% reduction in the incidence of AKI in neonates with severe birth asphyxia (RR: 0.40; 95% CI 0.3 to 0.54; heterogeneity: I 2 =0%) (moderate quality evidence), decrease in serum creatinine over days 2-5 (very low to low quality evidence) without significant difference in all-cause mortality (RR: 0.88; 95% CI 0.52 to 1.50; heterogeneity: I 2 =0%) (very low-quality evidence). A significant difference in the negative fluid balance, increase in GFR and decrease in urinary beta2 microglobulin was seen in favour of theophylline. Conclusion and relevance A single dose of prophylactic theophylline helps in prevention of AKI/severe renal dysfunction in term neonates with severe birth asphyxia (moderate quality evidence) without increasing the risk of complications and without affecting all-cause mortality (very low-quality evidence). Trial registration number CRD 42017073600.

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30798259 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30798259]
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Publisher
BMJ Publishing Group (E-mail: subscriptions@bmjgroup.com)
Year of Publication
2019

1260.

Emerging Threat: Changing Epidemiology of Hepatitis A and Acute Kidney Injury.

Andrievskaya M., Lenhart A., Uduman J.
Embase
Advances in Chronic Kidney Disease. 26(3) (pp 171-178), 2019. Date of Publication: May 2019.
[Review]
AN: 2002103219
In the past decade, hepatitis A has been considered a rare disease in the United States, largely due to targeted vaccination of at-risk children. Evolving epidemiology has resulted in decreasing immunity and increasing hepatitis A infections among adults who are more likely to experience severe disease. A surge in outbreaks has been noted in the past 2 years, resulting in a high volume of hepatitis A related hospitalizations and complications in otherwise healthy individuals. The traditional understanding that acute kidney injury is a rare extrahepatic manifestation is being challenged by the resurgence of hepatitis A in a more vulnerable population. This review examines the epidemiologic factors that contributed to current public health concern and the association between hepatitis A and acute kidney injury.

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Publisher
W.B. Saunders
Year of Publication
2019

1261.

Hyperchloremia Is Not an Independent Risk Factor for Postoperative Acute Kidney Injury in Pediatric Cardiac Patients.
Kimura S., Iwasaki T., Shimizu K., Kanazawa T., Kawase H., Shioji N., Kuroe Y., Matsuoka Y., Isoyama S., Morimatsu H.
Embase
Journal of Cardiothoracic and Vascular Anesthesia. 33(7) (pp 1939-1945), 2019. Date of Publication: July 2019.
[Article]
AN: 2001443977
Objective: Hyperchloremia recently has been shown to have an association with the development of acute kidney injury (AKI) in critically ill patients. However, there is little information about the prevalence of an abnormal chloride concentration after pediatric cardiac surgery and its association with postoperative AKI. The aim of this study was to determine the prevalence of hyperchloremia and its association with AKI in pediatric patients after cardiac surgery.
Design(s): A retrospective single-center study.
Setting(s): Referral high-volume pediatric cardiac center in a tertiary teaching hospital.
Participant(s): Patients under 72 months of age with congenital heart disease who underwent cardiac surgery with the use of cardiopulmonary bypass.
Intervention(s): None.

Measurements and Main Results: The primary outcome was development of AKI diagnosed by Kidney Disease Improving Global Outcomes consensus criteria. The associations of outcomes with the highest serum chloride concentration ([Cl-]max) and time-weighted average chloride concentration ([Cl-]ave) within the first 48 hours after surgery were investigated. Of 521 patients included in the study, 463 patients (88.9%) had hyperchloremia at least 1 time within the first 48 hours after surgery. Postoperative AKI occurred in 205 patients (39.3%). [Cl-]ave and [Cl-]max in the AKI group were significantly higher than those in the non-AKI group (112 [110-114] mEq/L v 111 [109-113] mEq/L, p = 0.001 and 116 [113, 119] mEq/L v 114 [112-118] mEq/L, p = 0.002, respectively). After adjustment for other predictors of AKI by multivariable analyses, neither [Cl-]ave nor [Cl-]max was associated independently with the development of AKI (odds ratio [OR] = 1.040, 95% confidence interval [CI]: 0.885-1.220, p = 0.63; OR = 0.992, 95% CI: 0.874-1.130. p = 0.90).
Conclusion(s): Postoperative hyperchloremia was common and was associated with the development of AKI in pediatric patients after congenital cardiac surgery in univariate analysis. After adjustment for predictors of AKI by multivariate analyses, there was no significant relationship between postoperative chloride concentration and AKI.

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Embase
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Publisher
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Year of Publication
2019

1262.

Integration of urinary neutrophil gelatinase-associated lipocalin with serum creatinine delineates acute kidney injury phenotypes in critically ill children.
Stanski N., Menon S., Goldstein S.L., Basu R.K.
Embase
Journal of Critical Care. 53 (pp 1-7), 2019. Date of Publication: October 2019.
[Article]
AN: 2002063267
Purpose: Acute kidney injury (AKI)is prevalent in critically ill patients and associated with poor outcomes. Current AKI diagnostics- changes to serum creatinine (SCr)and urine output- are imprecise. Integration of injury biomarkers with SCr may improve diagnostic precision.
Method(s): We performed a secondary analysis of a study of critically ill children. Measurements of urine neutrophil gelatinase-associated lipocalin (uNGAL)and SCr samples from ICU admission facilitated the creation of four groups for comparison, based on elevation of SCr from baseline and reference NGAL cut-off value: uNGAL-/SCr-, uNGAL+/SCr-, uNGAL-/SCr + and uNGAL+/SCr+. The primary outcome assessed was AKI severity on Day 3.
Result(s): 178 children were studied. Compared to uNGAL-/SCr-, uNGAL+/SCr- patients had increased risk for all-stage Day 3 AKI (>= KDIGO stage 1)(OR 3.83, [1.3-11.3], p =.025). Compared to uNGAL-/SCr+, uNGAL+/SCr + patients had increased risk for severe Day 3 AKI (>=

KDIGO stage 2)(OR 12, [1.4-102], p =.018). The only patients to suffer all-stage Day 3 AKI and mortality were uNGAL+ (3.2% uNGAL+/SCr-; 6.5% uNGAL+/SCr+).
Conclusion(s): Unique biomarker combinations on admission are predictive of distinct Day 3 AKI severity phenotypes. These classifications may enable a more personalized approach to the early management of AKI. Expanded study in larger populations is warranted.

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31174170 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31174170]
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Publisher
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Clinical Trial Number
https://clinicaltrials.gov/show/NCT01735162
Year of Publication
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1263.

Outcome and risk factors associated with perirenal subcapsular fluid collections in extremely preterm infants with acute kidney injury.
Oh S.L., Jeon T.Y., Yoo S.-Y., In Sung S., Kim H.W., Chang Y.S., Park W.S., Kim J.H.
Embase
European Radiology. 29(7) (pp 3847-3853), 2019. Date of Publication: 01 Jul 2019.
[Article]
AN: 626294901
Objectives: To investigate the incidence of, clinical outcome of, and risk factors for perirenal subcapsular fluid collections in extremely preterm infants with acute kidney injury (AKI).
Method(s): Extremely preterm infants with AKI who underwent renal ultrasonography (US) during neonatal intensive care unit stay were classified into two groups according to the presence of a perirenal subcapsular fluid collection at US. Clinical outcome was compared, and relevant data were analysed, including demographics and comorbidities of the infants, as well as maternal demographics. The risk factor of perirenal subcapsular fluid in infants with AKI was tested with univariate and multivariate logistic regression analysis.
Result(s): A perirenal subcapsular fluid collection was detected in 7 of 56 (13%) extremely preterm infants with AKI (male to female ratio, 5:2; mean gestational age, 23.6 +/- 1.4 weeks) and it appeared bilaterally in most cases (86%, 6/7). The mortality rate was higher in infants with perirenal subcapsular fluid collections and AKI (86%, 6/7) than with AKI alone (35%, 17/49) (p = 0.015). Infants with perirenal subcapsular fluid collections and AKI were of a lower gestational age, and more frequently showed episodes of intestinal perforation, use of medication having potential to impair renal function, and a history of maternal chorioamnionitis (p < 0.05). Multivariate analysis revealed a significantly higher risk for perirenal subcapsular fluid collections

in extremely preterm infants who were treated with anti-fungal agents (OR, 13.2 (95% CI: 1.5, 119.4); p = 0.022).
Conclusion(s): Although a perirenal subcapsular fluid collection occurred in a small proportion of extremely preterm infants with AKI, its presence was associated with high mortality. The use of anti-fungal agents was an independent risk factor for a perirenal subcapsular fluid collection. Key Points: * A perirenal subcapsular fluid collection may occur in association with acute kidney injury. * A perirenal subcapsular fluid collection has a grave prognostic implication in extremely preterm infants. * The use of anti-fungal agent might be associated with perirenal subscapular fluid collections in critically ill extremely preterm infants with AKI.

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Publisher
Springer Verlag (E-mail: service@springer.de)
Year of Publication
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1264.

Urethroplasty for urethral injuries and trauma-related strictures in children and adolescents: a single-institution experience.
Waterloos M., Verla W., Spinoit A.F., Oosterlinck W., Van Laecke E., Hoebeke P., Lumen N.
Embase
Journal of Pediatric Urology. 15(2) (pp 176.e1-176.e7), 2019. Date of Publication: April 2019.
[Article]
AN: 2001392390
Introduction: Urethral injuries and trauma-related strictures (UITSs) in children are rare. The treatment is challenging but crucial to avoid life-long urinary complications such as recurrent stricture formation, urinary incontinence, and impotence.
Objective(s): The aim was to report on the surgical and functional outcome of urethroplasty for UITSs and to provide data on patient-reported outcome measures (PROMs).
Material(s) and Method(s): Between November 2001 and October 2017, 18 male children (<=18 years; median: 13 years) underwent urethroplasty for UITSs at a single tertiary referral center. Etiology was iatrogenic in five (27.8%), perineal straddle injury in six (33.3%) and pelvic fracture urethral injury (PFUI) in seven (38.8%) patients. PFUIs and short (<=3 cm) bulbar strictures were treated by transperineal anastomotic repair (n = 15; 83.3%), whereas a long bulbar stricture and a penile stricture were treated by, respectively, a preputial skin graft and flap urethroplasty. A penetrating penile urethral injury during circumcision underwent early exploration with primary repair of the laceration. Failure was defined as need for additional urethral instrumentation. PROMs were sent to patients >=16 years at the latest evaluation.
Result(s): Median follow-up was 57 (range: 8-198) months. No complications and grade 1, 2, and 3 were present in, respectively, 13 (72.2%), two (11.1%), one (5.6%), and two (11.1%) patients. The success rate in a tertiary referral center was 94.4%. An immediate failure was observed in a patient with a PFUI and concomitant bladder neck injury. PROMs were available in 12 patients. Four patients (33.3%) reported erectile dysfunction. Post-void dribbling (25%) and urgency (50%)

were the most frequently reported complaints. All patients were satisfied after urethroplasty and stated that they would undergo the surgery again.
Discussion(s): This series corroborates the recent trend in favor of transperineal anastomotic repair for PFUI, with combined abdominoperineal approach reserved for complex situations (e.g. bladder neck injury). For anterior UITSs, adaption of the technique to the characteristics of UITSs (etiology, location, length, and quality of graft bed) yielded excellent outcomes. Future systematic use of PROMs is also needed in children to elucidate the impact of urethroplasty on the urinary and sexual function.
Conclusion(s): External trauma is the most important etiology of UITSs, but iatrogenic causes should not be neglected. Urethroplasty, mainly by anastomotic repair (AR) but with the technique adapted to local stricture characteristics if necessary, has an excellent long-term success rate in experienced hands. Functional disturbances are frequent, but despite this, patient satisfaction is high after urethroplasty.

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Embase
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Publisher
Elsevier Ltd
Year of Publication
2019

1265.

Elevated cytokine levels associated with acute kidney injury due to wasp sting.
Li F., Liu L., Guo X., Luo Z., Zhang Y., Lu F., Wang G., Chen T., Chen D.
Embase
European Cytokine Network. 30(1) (pp 34-38), 2019. Date of Publication: 01 Mar 2019.
[Article]
AN: 627854534
Objective: This study mainly to explore the change of serum cytokines in wasp sting patients and the potential correlation between cytokines and acute kidney injury (AKI) due to wasp stings.
Method(s): The levels of IL-2, IL-4, IL-6, IL-10, TNF-alpha, and IFN-gamma in 33 wasp sting and 24 healthy people were measured by flow cytometry, the level of IL-17 was detected by enzyme-linked immunosorbent assay and the laboratory examination including inflammatory indicators, muscle enzyme markers, and renal function were detected by automatic biochemical analyzer, blood analyzer, and urine analyzer. The wasp sting patients were divided into AKI (n = 10) and non-AKI groups (n = 23). The correlation between the levels of serum cytokines and laboratory examination results was analyzed.
Result(s): The levels of IL-2, IL-6, IL-10, IFN-gamma, and IL-17 were statistically increased in wasp sting patients compared with the controls ($P < 0.05$). IL-6, IL-10, and IL-17 levels were markedly increased in the AKI group compared with the non-AKI group ($P < 0.05$). Moreover, compared with non-AKI group, inflammatory markers and muscle enzyme markers were more abnormal in the AKI group. The positive rate of urinary occult blood in the AKI group was higher

than that in the non-AKI group. The levels of IL-2, IL-4, IL-6, IFN-gamma, and IL-17 correlated positively with white blood cell counts. The levels of IL-2, IL-4, IL-10, IFN-gamma, and IL-17 correlated positively with the levels of serum creatinine. The levels of IL-2, IL-4, IL-10, IL-10, and IFN-gamma correlated positively with the levels of C-reactive protein. The levels of IL-10, and IFN-gamma correlated positively with urinary occult blood.
Conclusion(s): Elevated levels of cytokines in wasp sting patients might be involved in the development and progression of acute kidney injury.

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31074416 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31074416]
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Publisher
John Libbey Eurotext (127, avenue de la Republique, Montrouge 92120, France. E-mail: contact@jle.com)
Year of Publication
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1266.

Pharmacological interventions for the prevention of acute kidney injury after pediatric cardiac surgery: a network meta-analysis.
Bellos I., Iliopoulos D.C., Perrea D.N.
Embase
Clinical and Experimental Nephrology. 23(6) (pp 782-791), 2019. Date of Publication: 01 Jun 2019.
[Article]
AN: 626328282
Background: Acute kidney injury constitutes a major complication of cardiac surgery in pediatric patients. The present meta-analysis aims to accumulate current literature and assess the efficacy of pharmacological interventions in preventing postoperative renal dysfunction after congenital heart surgery.
Method(s): Literature search was conducted using Medline (1966-2018), Scopus (2004-2018), Cochrane Central Register of Controlled Trials CENTRAL (1999-2018), Clinicaltrials.gov (2008-2018), and Google Scholar (2004-2018) databases. Statistical analysis was performed with Review Manager 5.3 and R 3.4.3.
Result(s): Meta-analysis included 14 studies, with a total of 2,625 patients. AKI incidence was significantly lower in the dexmedetomidine (OR 0.49, 95% CI [0.28-0.87]) and acetaminophen (OR 0.43, 94% CI [0.28-0.67]) groups, while no difference was present in patients receiving corticosteroid (OR 1.16, 95% CI [0.69-1.95]), fenoldopam (OR 0.47, 95% CI [0.22-1.02]), or aminophylline (OR 0.98, 95% CI [0.29-3.34]). Network meta-analysis proposed that dexmedetomidine had the greatest probability (44.5%) to rank first, although significant overlap with the other treatments was observed.
Conclusion(s): The present meta-analysis suggests that no firm evidence exists about the protective role of pharmacological interventions in the pediatric population. Future randomized controlled trials should clarify the effectiveness of dexmedetomidine and acetaminophen and indicate the optimal protocol to be applied, to protect renal function in the perioperative setting.

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Publisher
Springer Tokyo (E-mail: orders@springer.jp)
Year of Publication
2019

1267.

Acute Kidney Injury in Pediatric Cancer Patients.
Park P.G., Hong C.R., Kang E., Park M., Lee H., Kang H.J., Shin H.Y., Ha I.-S., Cheong H.I., Yoon H.J., Kang H.G.
Embase
Journal of Pediatrics. 208 (pp 243-250.e3), 2019. Date of Publication: May 2019.
[Article]
AN: 2001677044
Objective: To analyze the incidence of acute kidney injury (AKI) in the first year after cancer diagnosis in children and to evaluate the short-term and long-term effects on renal function and proteinuria. Study design: Retrospective review of medical records was done on children who were diagnosed and treated for cancer at Seoul National University Hospital between 2004 and 2013. AKI was defined according to the Kidney Disease: Improving Global Outcomes criteria. Impaired renal function of estimated glomerular filtration rate less than 90 mL/minute/1.73 m2 and development of proteinuria of cancer survivors were also assessed.
Result(s): This study included 1868 patients who were diagnosed with cancer at a median age of 7.9 years. During the course of treatment, 983 patients (52.6%) developed 1864 episodes of AKI, and the cumulative incidence at 2 weeks, 3 months, and 1 year after diagnosis was 28.9%, 39.6%, and 53.6%, respectively. The 1-year cumulative incidence was the highest in patients with acute myeloid leukemias (88.4%). In all, 6.1% of patients had more than 4 episodes of AKI and 11.8% of patients had stage 3 AKI. Among the 1096 childhood cancer survivors, 22.6% were found to have impaired renal function. A greater number of AKI episodes (>=4 times) and nephrectomy were independent risk factors of impaired renal function. Also, 8.2% of the survivors developed proteinuria among 742 childhood cancer survivors.
Conclusion(s): A large percentage of children with cancer experience AKI during the course of treatment, and AKI is associated with impaired long-term renal function.

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Publisher
Mosby Inc. (E-mail: customerservice@mosby.com)
Year of Publication
2019

1268.

Paediatric acute kidney injury induced by vancomycin monotherapy versus combined vancomycin and meropenem.
Zhang T., Cheng H., Li Y., Dong Y.-Z., Zhang Y., Cheng X.-L., Wang A.-M., Dong Y.-L.
Embase
Journal of Clinical Pharmacy and Therapeutics. 44(3) (pp 440-446), 2019. Date of Publication: June 2019.
[Article]
AN: 626311002
What is known and objective: Increasing reports of the combined use of vancomycin (VAN) and piperacillin/tazobactam leading to higher nephrotoxicity have led to carbapenems being recommended as an alternative option to combine with VAN when nephrotoxicity is a major concern. However, whether carbapenems also increase the nephrotoxicity of VAN is unclear. This study aimed to determine whether meropenem is a suitable drug to combine with VAN based on whether meropenem enhances the nephrotoxicity of VAN.
Method(s): This retrospective cohort study enrolled hospitalized children ranging in age from 1 month to 18 years at two tertiary hospitals from 1 February 2017 to 1 February 2018. Patients treated with either VAN or combined VAN and meropenem (VM) for more than 48 hours were eligible for inclusion. Those with underlying kidney diseases or abnormal age-adjusted baseline serum creatinine (SCr) at admission were excluded. Propensity score matching (PSM) was applied to the patients to balance factors associated with acute kidney injury (AKI). In addition, VAN trough concentrations were also compared. AKI was defined as an increase in SCr by >=50% from baseline or by >=0.3 mg/dL sustained over at least two consecutive measurements ranging from the time of initiation until 72 hours after the completion of VAN therapy. Results and discussion: The eligibility criteria were met by 183 of 243 identified patients: 101 patients received VAN alone and 82 received VM. PSM resulted in 154 hospitalized children being included (77 patients in each group). The incidence of AKI was 10.7% (8/77) in both of the compared groups, while the VAN trough concentration was significantly higher in the VM group (9.0 mg/L) than in the VAN group (6.6 mg/L, P = 0.007) after controlling for confounders. What is new and conclusion: Despite the elevated VAN trough concentration, meropenem did not increase the nephrotoxicity of VAN and might therefore be an acceptable antibiotic to combine with VAN when necessary.

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Publisher
Blackwell Publishing Ltd
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1269.

Patent ductus arteriosus is associated with acute kidney injury in the preterm infant.
Majed B., Bateman D.A., Uy N., Lin F.
Embase
Pediatric Nephrology. 34(6) (pp 1129-1139), 2019. Date of Publication: 01 Jun 2019.
[Article]
AN: 626204512
Background: This study aimed to test the hypothesis that a patent ductus arteriosus (PDA) is independently associated with acute kidney injury (AKI) in neonates <= 28 weeks gestation.
Method(s): Preterm infants with echocardiographic diagnosis of moderate-large PDA at age <= 30 days were studied retrospectively. AKI, the primary outcome, was defined and staged according to serum creatinine using Kidney Disease Improving Global Outcomes (KDIGO) neonatal criteria. Its association with the timing and duration of PDA, non-steroidal anti-inflammatory drugs (NSAIDs) and other nephrotoxic exposures, gestational age, and other covariates was evaluated using mixed-effects logistic regression models.
Result(s): Acute Kidney Injury occurred in 49% (101/206) of infants. Moderate-to-large PDA was associated with any-stage AKI (OR 5.31, 95% CI 3.75 to 7.53), stage 1 (mild) AKI (OR 4.86, 95% CI 3.12 to 7.56), and stages 2-3 (severe) AKI (OR 10.9, 95% CI 5.70 to 20.8). NSAID treatment added additional risk for mild AKI (OR 2.45, 95% CI 1.61 to 3.71). Severe AKI was less likely when NSAID treatment was effective (OR 0.45, 95% CI 0.21 to 0.97) but not when ineffective (OR 1.63, 95% CI 0.76 to 3.50).
Conclusion(s): Moderate-to-large PDA was strongly associated with all stages of AKI in preterm infants <= 28 weeks of gestational age. Effective NSAID treatment decreased the risk of severe but not mild AKI. These differential effects reflect the balance between the renal benefits of PDA closure and the risk of NSAID toxicity.

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Springer Verlag (E-mail: service@springer.de)
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2019

1270.

First-year profile of biomarkers for early detection of renal injury in infants with congenital urinary tract obstruction.
Kostic D., dos Santos Beozzo G.P.N., do Couto S.B., Kato A.H.T., Lima L., Palmeira P., Krebs V.L.J., Bunduki V., Francisco R.P.V., Zugaib M., de Carvalho W.B., Koch V.H.K.
Embase
Pediatric Nephrology. 34(6) (pp 1117-1128), 2019. Date of Publication: 01 Jun 2019.
[Article]
AN: 626256148
Background: Diagnosis of renal function impairment and deterioration in congenital urinary tract obstruction (UTO) continues to be extremely challenging. Use of renal biomarkers in this setting may favor early renal injury detection, allowing for a reliable choice of optimal therapeutic options and prevention or minimization of definitive renal damage.
Method(s): This longitudinal, prospective study analyzed the first-year profile of two serum renal biomarkers: creatinine (sCr) and cystatin C (sCyC); and six urinary renal biomarkers: neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1), transforming growth factor beta-1 (TGF-beta1), retinol-binding protein (RBP), cystatin C (uCyC), and microalbuminuria (muALB) in a cohort of 37 infants with UTO divided into three subgroups: 14/37 with unilateral hydro(uretero)nephrosis, 13/37 with bilateral hydro(uretero)nephrosis, and 10/37 patients with lower urinary tract obstruction (LUTO), compared with 24 healthy infants matched by gestational age and birth weight.
Result(s): All urine biomarkers showed significantly higher values at the first month of life ($p <= 0.009$), while NGAL ($p = 0.005$), TGF-s1 ($p < 0.001$), and muALB ($p < 0.001$) were high since birth compared to controls. Best single biomarker performances were RBP in bilateral hydronephrosis and LUTO subgroups and KIM-1 in unilateral hydronephrosis subgroup. Best biomarker combination results for all subgroups were obtained by matching RBP with TGF-s1 or KIM-1 and NGAL with CyC ([AUC] <= 0.934; sensitivity <= 92.4%; specificity <= 92.8%).
Conclusion(s): RBP, NGAL, KIM-1, TGF-s1, and CyC, alone and especially in combination, are relatively efficient in identifying surgically amenable congenital UTO and could be of practical use in indicating on-time surgery.

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Publisher
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1271.

Spinal cord lesions in a pediatric patient with chronic kidney disease and review of literature: Answers.
Tiwana H., Patel H., Asghar S., Kumar A., Freeman M.
Embase
Pediatric Nephrology. 34(6) (pp 1035-1036), 2019. Date of Publication: 01 Jun 2019.
[Article]
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Publisher
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Year of Publication
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1272.

Fever duration during treated urinary tract infections and development of permanent renal lesions.
Karavanaki K., Koufadaki A.M., Soldatou A., Tsentidis C., Sourani M., Gougourelas D., Haliotis F.A., Stefanidis C.J.
Embase
Archives of Disease in Childhood. 104(5) (pp 466-470), 2019. Date of Publication: 01 May 2019.
[Article]
AN: 624838393
Objective To assess the effect of the duration of fever after the initiation of treatment (FAT) of febrile urinary tract infections (UTI) on the development of permanent renal lesions based on dimercaptosuccinic acid (DMSA) scintigraphy findings. To evaluate the FAT contribution to permanent renal lesion formation in relation to fever before treatment initiation (FBT), the presence of vesicourinary reflux (VUR), age and severity of infection. Methods The inpatient records of 148 children (median age: 2.4 months (11 days to 24 months)) with a first episode of UTI during a 3-year period were analysed. DMSA findings, and clinical and laboratory parameters were evaluated. Results Among the study population, 34/148 (22.97%) children had permanent renal lesions on the DMSA scan 6 months after a single episode of UTI. Twenty-three children (15.5%) had mild, 10 (6.7%) had moderate and 1 (0.6%) child had severe lesions on the DMSA. FAT prolongation >/48 hours was associated with older age (p=0.01) and increased absolute neutrophil count (p=0.042). The likelihood of lesions was significantly increased when FAT was >=48 hours (R 2 =0.043, p=0.021). On multiple regression analysis, with the addition of FBT>/72 hours (0.022), the presence of VUR (p<0.001), C-reactive protein (p=0.027) and age (p=0.031),

the effect of FAT on lesion development disappeared (p=0.15). Conclusions Prolongation of FAT>=48 hours of febrile UTI in children <2 years significantly contributes to the development of permanent renal lesions. However, delay in treatment initiation >/72 hours, the presence of VUR, older age and infection severity seem to be more significant predictors of the development of renal lesions.

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Publisher
BMJ Publishing Group (E-mail: subscriptions@bmjgroup.com)
Year of Publication
2019

1273.

Epidemiology and outcomes of acute kidney injury in hospitalized cancer patients in China.
Cheng Y., Nie S., Li L., Li Y., Liu D., Xiong M., Wang L., Ge S., Xu G.
Embase
International Journal of Cancer. 144(11) (pp 2644-2650), 2019. Date of Publication: 01 Jun 2019.
[Article]
AN: 625820757
Acute kidney injury (AKI) is a common complication in cancer patients, but the data are lacking in Asian countries. We aimed to assed the epidemiology, correlated risk factors and outcomes of AKI in cancer patients from China. We conducted a nationwide cohort study of cancer patients who were admitted to 25 general and children hospitals across China from January 1, 2013 to December 31, 2015. We obtained patient-level data from the electronic hospitalization information system and laboratory databases of all inpatients who had at least two serum creatinine tests within any 7-day window during their first 30 days of hospitalization. AKI was defined and staged according to Kidney Disease Improving Global Outcomes criteria. Incidence rate and risk factor profiles for AKI were examined. Outcomes of interest included in-hospital mortality, length of stay and daily costs. A total of 136,756 adult cancer patients were assessed in our study. The overall incidence of AKI was 7.5%, of which 1.6% were community acquired and 5.9% hospital acquired. The top three cancer types with high incidence of AKI were bladder cancer, leukemia, and lymphoma. Risk factors for community-acquired and hospital-acquired AKI were similar, including age, increased baseline serum creatinine, shock and urinary tract obstruction. In-hospital death occurred in 12.0% with AKI vs. 0.9% cancer patients without AKI. After adjustment for confounders, the severe AKI was associated with higher risk of in-hospital death, prolonged length of stay and higher daily costs. Clinicians should increase their awareness of AKI in hospitalized cancer patients.

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Publisher
Wiley-Liss Inc. (E-mail: info@wiley.com)
Year of Publication
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1274.

Epidemiology and outcome of acute kidney injury due to venomous animals from a subtropical region of India.
Vikrant S., Jaryal A., Gupta D., Parashar A.
Embase
Clinical Toxicology. 57(4) (pp 240-245), 2019. Date of Publication: 03 Apr 2019.
[Article]
AN: 624363042
Aim: To study the epidemiology and outcome of acute kidney injury (AKI) caused by venomous animals.
Method(s): A retrospective study of patients admitted at Indira Gandhi Medical College Hospital, Shimla, with AKI due to venomous animals over a period of 15 years (January 2003-December 2017). Medical records were evaluated for patient information on demographic factors, clinical characteristics, complications, and outcome. Outcomes of requirement for intensive care unit (ICU) support, treatment with dialysis, survival, and mortality were analyzed. The survival and non-survival groups were compared to see the difference in the demographic factors, laboratory results, clinical characteristics, and complications.
Result(s): One hundred and eighty-one patients were diagnosed with AKI caused by venomous creatures. Mean age was 44 +/- 15.4 years, and the majority (54.1%) was women. Snakebite (77.9%) and wasp stings (19.9%) were the leading causes of AKI. Clinical details were available in 148 patients. The median duration of arrival at hospital was two days. 81.8% had oliguria, and 54.7% had a history of hematuria or having passed red or brown colored urine. The hematological and biochemical laboratory abnormalities were as follows: anemia (75%), leukocytosis (75.7%), hyperkalemia (35.8%), severe metabolic acidosis (46.6%), hepatic dysfunction (54.7%), hemolysis (85.8%), and rhabdomyolysis (65.5%). Main complications were as follows: gastrointestinal bleed (9.5%), seizure/encephalopathy (10.8%), and pneumonia/acute respiratory distress syndrome (ARDS) (11.5%). 82.3% of the patients required dialysis. 154 (85.1%) patient survived, and 27 (14.9%) patients died. As compared to the survival group, the white blood cell count, serum bilirubin, aspartate aminotransferase, alanine aminotransferase, creatine kinase, and lactate dehydrogenase were significantly higher, and serum albumin levels were significantly lower in patients who died. The proportion of patients with leukocytosis, hyperkalemia, metabolic acidosis, pneumonia/ARDS, seizure/encephalopathy, need for ICU support, and dialysis was significantly higher in patients who died.
Conclusion(s): Snakebite and multiple Hymenoptera stings (bees and wasps) were the leading causes of AKI due to venomous animals. AKI was severe, a high proportion required dialysis, and the mortality was high.

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Publisher
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1275.

Clinical aspects and prognosis evaluation of cirrhotic patients hospitalized with acute kidney injury.
De Oliveira Gomes C.G., Andrade M.V.M.D., Guedes L.R., Rocha H.C., Guimaraes R.G., Carvalho F.A.C., Vilela E.G.
Embase
Canadian Journal of Gastroenterology and Hepatology. 2019 (no pagination), 2019. Article Number: 6567850. Date of Publication: 2019.
[Article]
AN: 626818788
Background. Acute kidney injury occurs in approximately 20% of hospitalized cirrhotic patients. Mortality is estimated at 60% within a month and 65% within a year. Aims. To evaluate survival in 30 days and in 3 months of cirrhotic patients hospitalized with acute kidney injury, identifying factors associated with mortality. Methods. 52 patients with cirrhosis admitted to an academic tertiary center who presented acute kidney injury according to the International Club of Ascites criteria were evaluated. Clinical and laboratory data was collected at diagnosis between 2011 and 2015. Results. Average age was 54.6 (+/-10.7) years and 69.2% were male. The average MELD, MELD-Na, and Child-Pugh scores were 21.9 (+/-7.0), 24.5 (+/-6.7), and 10.1 (+/-2.2), respectively. Thirty patients (57.7%) were in acute kidney injury stage 1, 16 (30.8%) in stage 2, and six (11.6%) in stage 3. Mortality was 28.6% in 30 days and 44.9% in three months. In multivariate analysis, variables that were associated independently to mortality were lack of response to expansion treatment and Child-Pugh score. Mortality was 93.3% in three months among nonresponders compared to 28.6% among those who responded to volume expansion (p<0.0001). Conclusion. Acute kidney injury in cirrhosis has dire prognosis, particularly in patients with advanced cirrhosis and in nonresponders to volume expansion.

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Hindawi Limited (410 Park Avenue, 15th Floor, 287 pmb, New York NY 10022, United States)
Year of Publication
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1276.

Urinary acute kidney injury biomarkers in very low-birth-weight infants on indomethacin for patent ductus arteriosus.
Waldherr S., Fichtner A., Beedgen B., Bruckner T., Schaefer F., Tonshoff B., Poschl J., Westhoff T.H., Westhoff J.H.
Embase
Pediatric Research. 85(5) (pp 678-686), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 626424012
Background: Serum creatinine (SCr)- or urine output-based definitions of acute kidney injury (AKI) have important limitations in neonates. This study evaluates the diagnostic value of urinary biomarkers in very low-birth-weight (VLBW) infants receiving indomethacin for closure of a patent ductus arteriosus (PDA).
Method(s): Prospective cohort study in 14 indomethacin-treated VLBW infants and 18 VLBW infants without indomethacin as controls. Urinary biomarkers were measured before, during, and after indomethacin administration.
Result(s): Indomethacin therapy was associated with significantly higher SCr concentrations at 36, 84, and 120 h compared to controls. At 36 h, three indomethacin-treated patients met the criteria for neonatal modified Kidney Disease: Improving Global Outcomes (KDIGO) AKI. The product of urinary tissue inhibitor of metalloproteinase-2 and insulin-like growth factor-binding protein 7 ([TIMP-2]*[IGFBP7]) was significantly elevated in the AKI subgroup at 12 h ($P < 0.05$), hence 24 h earlier than the increase in SCr. Urinary neutrophil gelatinase-associated lipocalin (NGAL) and calprotectin were significantly increased in the indomethacin group at 12 h ($P < 0.05$), irrespective of fulfillment of the AKI criteria. Urinary kidney injury molecule-1 (KIM-1) was not significantly altered.
Conclusion(s): While urinary [TIMP-2]*[IGFBP7] proves valuable for the early diagnosis of neonatal modified KDIGO-defined AKI, elevated urinary NGAL and calprotectin concentrations in indomethacin-treated VLBW infants not fulfilling the AKI criteria may indicate subclinical kidney injury.

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1277.

Caffeine exposure and acute kidney injury in premature infants with necrotizing enterocolitis and spontaneous intestinal perforation.
Aviles-Otero N., Kumar R., Khalsa D.D., Green G., Carmody J.B.
Embase
Pediatric Nephrology. 34(4) (pp 729-736), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 624871789
Background: Acute kidney injury (AKI) is common in preterm infants, but specific therapies remain scarce. Recent studies have demonstrated an association between caffeine exposure and less frequent AKI in the first 7-10 days after birth. We hypothesized that patients with necrotizing enterocolitis (NEC) and spontaneous intestinal perforation (SIP) would provide a better natural model of AKI to evaluate this association.
Method(s): We reviewed all premature patients diagnosed with NEC or SIP at our institution from 2008 to 2014. AKI was defined by change in serum creatinine using the neonatal Kidney Disease: Improving Global Outcomes definition. Caffeine was prescribed for apnea of prematurity and caffeine exposure was determined by chart review.
Result(s): A total of 146 patients with NEC/SIP were reviewed. Of these, 119 (81.5%) received caffeine, and 91 (62.3%) developed AKI. AKI occurred less frequently in patients who received caffeine than in those who did not (55.5% vs. 92.6%; odds ratio (OR) 0.10; 95% confidence interval (CI) 0.02-0.44). This association persisted in multivariable models after adjustment for potential confounders (adjusted OR 0.08; 95% CI 0.01-0.42; number needed to be exposed to caffeine to prevent one case of AKI = 2.6). Although baseline serum creatinine did not differ by caffeine exposure, patients receiving caffeine had lower peak creatinine (median 1.0 mg/dl vs. 1.5 mg/dl; p = 0.008) and absolute creatinine change (median 0.42 mg/dl vs. 0.68 mg/dl; p = 0.003) than those who did not.
Conclusion(s): Caffeine exposure in preterm infants with NEC/SIP is associated with decreased incidence and severity of AKI.

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1278.

Long-term outcome of diarrhea-associated hemolytic uremic syndrome is poorly related to markers of kidney injury at 1-year follow-up in a population-based cohort.
Monet-Didailler C., Godron-Dubrasquet A., Madden I., Delmas Y., Llanas B., Harambat J.
Embase
Pediatric Nephrology. 34(4) (pp 657-662), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 624755448
Background: Hemolytic uremic syndrome due to Shiga toxin-producing E. coli (STEC-HUS) is the main cause of acute kidney injury in young children. Most fully recover kidney function; however, some develop long-term sequelae. We aimed to determine whether kidney injury 1 year after HUS onset is associated with long-term kidney outcome in pediatric STEC-HUS.
Method(s): A retrospective population-based study of children < 15 years with STEC-HUS between 1992 and 2012 was performed. Mixed effects logistic regression was used to investigate associations between kidney injury at 1 year and long-term kidney outcome.
Result(s): Ninety-eight STEC-HUS cases were reported. Of 96 patients who survived acute phase, 84 were evaluated at 1-year follow-up of whom 42 (44% of survivors) showed >= 1 signs of kidney injury. Data from 81 patients were collected after median follow-up of 8.7 (IQR 3.5-12.7) years. At last follow-up, 42 (44% of survivors) had >= 1 signs of kidney injury including decreased estimated glomerular filtration rate (eGFR) < 90 mL/min/1.73 m2 (n = 30), proteinuria (n = 17), or hypertension (n = 5). Among 42 patients with kidney injuries at 1-year follow-up, only 22 (52%) still had kidney disease at last follow-up. Conversely, of 33 patients without kidney injury at 1-year and available long-term outcome data, 11 (33%) had proteinuria or decreased GFR at last follow-up. There was no statistically significant association between kidney injury at 1 year and long-term kidney outcome.
Conclusion(s): Since kidney sequelae may appear at variable time intervals after acute HUS, all patients need lifelong follow-up to detect early signs of chronic kidney disease and propose measures to slow progression.

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Year of Publication
2019

1279.

Prevalence of acute kidney injury after liver transplantation in children: Comparison of the pRIFLE, AKIN, and KDIGO criteria using corrected serum creatinine.
Nahum E., Kadmon G., Kaplan E., Weissbach A., Hijazi H., Haskin O., Mozer-Glassberg Y.
Embase
Journal of Critical Care. 50 (pp 275-279), 2019. Date of Publication: April 2019.
[Article]
AN: 2001472229
Purpose: To compare the application of three standardized definitions of acute kidney injury (AKI), using corrected serum creatinine values, in children immediately after liver transplantation.
Method(s): Retrospective search of a tertiary pediatric hospital database yielded 77 patients (age < 18 years) who underwent liver transplantation in 2007-2017. Serum creatinine levels during the 24 h before and after surgery were corrected to daily fluid balance, and the prevalence of AKI was calculated using the Pediatric RIFLE (pRIFLE), AKI Network (AKIN), and Kidney Disease Improving Global Outcomes (KDIGO) criteria.
Result(s): AKI occurred in 44 children (57%) according to the pRIFLE criteria (stage I, 34%; stage II, 10%, stage III, 13%) and 33 children (43%) according to the AKIN and KDIGO criteria (stage I, 20%; stage II, 10%; stage III, 13%). There was a good correlation (kappa = 0.78) among the three criteria. AKI was associated with longer duration of mechanical ventilation (5.5 +/- 6.2 vs 3.6 +/- 4.0 days, p <.05) and longer ICU stay (15.2 +/- 8.8 vs 12.1 +/- 7.5 days, p <.05). Serum creatinine normalized in all patients (mean, 0.43 +/- 0.17 mg/dl) by one year.
Conclusion(s): There is a good correlation among the three criteria defining AKI in pediatric liver transplant recipients. AKI is highly prevalent in this patient group and confers a worse ICU course.

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Publisher
W.B. Saunders
Year of Publication
2019

1280.

Acute kidney injury after pediatric cardiac surgery.
Yuan S.-M.
Embase
Pediatrics and Neonatology. 60(1) (pp 3-11), 2019. Date of Publication: February 2019.
[Review]
AN: 2000829526

Acute kidney injury (AKI) is a common complication of pediatric cardiac surgery and is associated with increased morbidity and mortality. Literature of AKI after pediatric cardiac surgery is comprehensively reviewed in terms of incidence, risk factors, biomarkers, treatment and prognosis. The novel RIFLE (pediatric RIFLE for pediatrics), Acute Kidney Injury Network (AKIN) and Kidney Disease Improving Global Outcomes (KDIGO) criteria have brought about unified diagnostic standards and comparable results for AKI after cardiac surgery. Numerous risk factors, either renal or extrarenal, can be responsible for the development of AKI after cardiac surgery, with low cardiac output syndrome being the most pronounced predictor. Early fluid overload is also crucial for the occurrence of AKI and prognosis in pediatric patients. Three sensitive biomarkers, neutrophil gelatinase-associated lipocalin, cystatin C (CysC) and liver fatty acid-binding protein, are regarded as the earliest (increase at 2-4 h), and another two, kidney injury molecule-1 and interleukin-18 represent the intermediate respondents (increase at 6-12 h after surgery). To ameliorate the cardiopulmonary bypass techniques, improve renal perfusion and eradicate the causative risk factors are imperative for the prevention of AKI in pediatric patients. The early and intermediate biomarkers are helpful for an early judgment of occurrence of postoperative AKI. Improved survival has been achieved by prevention, renal support and modifications of hemofiltration techniques. Further development is anticipated in small children.

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1281.

Acute kidney injury in neonatal encephalopathy: an evaluation of the AWAKEN database.
Kirkley M.J., Boohaker L., Griffin R., Soranno D.E., Gien J., Askenazi D., Gist K.M.
Embase
Pediatric Nephrology. 34(1) (pp 169-176), 2019. Date of Publication: 01 Jan 2019.
[Article]
AN: 623896774
Background: Acute kidney injury (AKI) is common in neonatal encephalopathy (NE) and is associated with worse outcomes. Our objectives were to determine the incidence, risk factors, and outcomes of AKI in infants with NE.
Method(s): We performed a retrospective analysis of infants >= 34 weeks' gestational age with a diagnosis of NE from the Analysis of Worldwide Acute Kidney injury Epidemiology in Neonates (AWAKEN) database. AKI was defined using the modified Kidney Disease Improving Global Outcomes criteria. Perinatal and postnatal factors were evaluated. Multivariate logistic and linear regressions were performed.
Result(s): One hundred and thirteen patients with NE were included. 41.6% (47) developed AKI. Being born outside the admitting institution (OR 4.3; 95% CI 1.2-14.8; p = 0.02), intrauterine growth restriction (OR 10.3, 95% CI 1.1-100.5; p = 0.04), and meconium at delivery (OR 2.8, 95% CI 1.04-7.7; p = 0.04) conferred increased odds of AKI. After controlling for confounders, infants

with AKI stayed in the hospital an average of 8.5 days longer than infants without AKI (95% CI 0.79-16.2 days; p = 0.03).
Conclusion(s): In this multi-national analysis, several important perinatal factors were associated with AKI and infants with both NE and AKI had longer length of stay than NE alone. Future research aimed at early AKI detection, renoprotective management strategies, and understanding the long-term renal consequences is warranted in this high-risk group of patients.

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2019

1282.

Systematic Review and Meta-analysis of the Association of Acute Kidney Injury with the Concomitant Use of Vancomycin and Piperacillin-Tazobactam in Children.
Kalligeros M., Karageorgos S.A., Shehadeh F., Zacharioudakis I.M., Mylonakis E.
Embase
Antimicrobial Agents and Chemotherapy. 63(12) (no pagination), 2019. Article Number: e01572-19. Date of Publication: 2019.
[Article]
AN: 2003994581
Concomitant use of vancomycin plus piperacillin-tazobactam (TZP) has been associated with increased risk of acute kidney injury (AKI) in hospitalized adults. In this systematic review and meta-analysis, we searched PubMed and EMBASE for pediatric studies examining this hypothesis, with reference to vancomycin monotherapy or in combination with another beta-lactam antibiotic. Of 1,381 nonduplicate studies, 10 met our inclusion criteria. We performed a random-effects meta-analysis, based on crude odds ratios (ORs), and we accounted for both quality of included studies and publication bias. In primary analysis, concomitant vancomycin and TZP use yielded a statistically significant association with the development of AKI. More specifically, children with AKI had higher odds of having been exposed to vancomycin plus TZP than to vancomycin monotherapy (OR, 8.15; 95% confidence interval [CI], 3.49 to 18.99) or to vancomycin plus any other beta-lactam antibiotic (OR, 3.48; 95% CI, 2.71 to 4.46). On the basis

of the results of the Newcastle-Ottawa scale quality assessment, a secondary analysis that included only higher-quality studies (6 of 10 studies) again yielded higher odds of exposure to vancomycin plus TZP than to vancomycin plus another beta-lactam antibiotic (OR, 3.76; 95% CI, 2.56 to 5.51). Notably, even after controlling for possible publication bias, our results remained statistically significant (OR, 3.09; 95% CI, 2.30 to 4.14). In conclusion, the concomitant use of vancomycin and TZP could be associated with AKI development and the clinical significance of this potential association needs to be studied further in the pediatric population.

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Publisher
American Society for Microbiology (E-mail: Journals@asmusa.org)
Year of Publication
2019

1283.

The Association of Intraventricular Hemorrhage and Acute Kidney Injury in Premature Infants from the Assessment of the Worldwide Acute Kidney Injury Epidemiology in Neonates (AWAKEN) Study.
Stoops C., Boohaker L., Sims B., Griffin R., Selewski D.T., Askenazi D.
Embase
Neonatology. 116(4) (pp 321-330), 2019. Date of Publication: 01 Nov 2019.
[Article]
AN: 629289534
Background: Acute kidney injury (AKI) and intraventricular hemorrhage (IVH) are common in premature infants. We previously demonstrated that infants with AKI have a higher hazards ratio to develop grade >=2 IVH when controlling for confounders. However, that single-center study was unable to show an overall association.
Objective(s): To test the hypothesis that infants diagnosed with AKI have an increased risk of IVH independent of variables associated with both AKI and IVH, we performed a study on 825 infants from the Assessment of Worldwide Acute Kidney Injury Epidemiology in Neonates (AWAKEN) study (a 24-center multinational retrospective cohort).
Method(s): A neonatal modified KDIGO definition of AKI was used based on serum creatinine (SCr) and/or urine output criteria. Baseline SCr was defined as the lowest previous value. IVH was diagnosed with head ultrasounds.
Result(s): AKI was documented in 22.2% (183/825) of infants and IVH in 14.3% (118/825). Infants with AKI (n = 183) were more likely to have IVH (26.8%, 49/183) than those without AKI (n= 642) who had IVH (10.7%, 69/642, p < 0.0001). After controlling for 5-min Apgar score, vasopressor support within the first week of age, and gestational age, infants with AKI had 1.6 times higher adjusted odds to develop any grade IVH (95% CI 1.04-2.56). Furthermore, infants of gestational age of 22-28 weeks had 1.9 times higher adjusted odds to develop IVH (OR 1.87, 95% CI 1.08-3.23).

Conclusion(s): We present the first multicenter evaluation of the association between AKI and IVH in premature infants showing a significant independent association between AKI and IVH. Development of strategies to reduce AKI may also reduce IVH.

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Publisher
S. Karger AG
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1284.

Risk factors and outcomes of acute kidney injury in ventilated newborns.
Fan Y., Ye J., Qian L., Zhao R., Zhang N., Xue L., Qiao L., Jiang L.
Embase
Renal Failure. 41(1) (pp 995-1000), 2019. Date of Publication: 01 Jan 2019.
[Article]
AN: 2003573111
Purpose: This study aimed to investigate the occurrence and risk factors of acute kidney injury (AKI) in ventilated newborns.
Method(s): In total, 139 newborns receiving mechanical ventilation (MV) were reviewed in this retrospective study. The demographic and clinical data were collected. Then, the independent risk factors for AKI were evaluated using univariate and multivariate logistic regression analyses.
Result(s): The incidence rate of AKI was 15.11% (21/139) in ventilated newborns. Univariate analysis showed significant differences in gestational age, birth weight, Apagar scores, the highest oxygen concentration, serum creatinine levels at admission and 48 h after MV, history of asphyxia, urine output at 48 h after MV, invasive MV, noninvasive MV, and outcomes between AKI and non-AKI groups (all p <.05). The lower gestational age (odd ratio (OR): 1.194, 95% confidence interval (CI): 1.013-1.407, p =.035), the increased use of invasive mechanical ventilation (IMV) (OR: 4.790, 95% CI: 1.115-20.575, p =.035), and lower birth weight (OR: 0.377, 95% CI: 0.178-0.801, p =.011) were independent risk factors for the occurrence of AKI. Additionally, higher stage of AKI was significantly associated with poor prognosis of AKI (p =.018).
Conclusion(s): In this retrospective study, it was found that lower gestational age, birth weight, and increased use of IMV were independent risk factors for AKI in ventilated newborns. The poor prognosis might be indicated by the higher AKI stage.

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Publisher
Taylor and Francis Ltd
Year of Publication
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1285.

Baby NINJA (Nephrotoxic Injury Negated by Just-in-Time Action): Reduction of Nephrotoxic Medication-Associated Acute Kidney Injury in the Neonatal Intensive Care Unit.
Stoops C., Stone S., Evans E., Dill L., Henderson T., Griffin R., Goldstein S.L., Coghill C., Askenazi D.J.
Embase
Journal of Pediatrics. 215 (pp 223-228.e6), 2019. Date of Publication: December 2019.
[Article]
AN: 2003853569
Objective(s): To test if acute kidney injury (AKI) is preventable in patients in the neonatal intensive care unit and if infants at high-risk of nephrotoxic medication-induced AKI can be identified using a systematic surveillance program previously used in the pediatric non-intensive care unit setting. Study design: Quality improvement project that occurred between March 2015 and September 2017 in a single center, level IV neonatal intensive care unit. Infants were screened for high-risk nephrotoxic medication exposure (>=3 nephrotoxic medication within 24 hours or >=4 calendar days of an intravenous [IV] aminoglycoside). If infants met criteria, a daily serum creatinine (SCr) was obtained until 2 days after end of exposure or end of AKI, whichever occurred last. The study was divided into 3 eras: pre-Nephrotoxic Injury Negated by Just-in-time Action (NINJA), initiation, and sustainability. Differences for 5 metrics across 3 eras were compared: SCr surveillance, high nephrotoxic medication exposure rate (per 1000 patient-days), AKI rate (per 1000 patient-days), nephrotoxin-AKI percentage, and AKI intensity (number of AKI days per 100 susceptible patient-days).
Result(s): Comparing the initiation with sustainability era, there was a reduction in high nephrotoxic medication exposures from 16.4 to 9.6 per 1000 patient-days (P = .03), reduction in percentage of nephrotoxic medication-AKI from 30.9% to 11.0% (P < .001), and reduction in AKI intensity from 9.1 to 2.9 per 100 susceptible patient-days (P < .001) while maintaining a high SCr surveillance rate. This prevented 100 AKI episodes during the 18-month sustainability era.
Conclusion(s): A systematic surveillance program to identify high-risk infants can prevent nephrotoxic-induced AKI and has the potential to prevent short and long-term consequences of AKI in critically ill infants.

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2019

1286.

Proenkephalin a 119-159 (penKid) - a novel biomarker for acute kidney injury in sepsis: an observational study.
Rosenqvist M., Bronton K., Hartmann O., Bergmann A., Struck J., Melander O.
Embase
BMC Emergency Medicine. 19(1) (no pagination), 2019. Article Number: 75. Date of Publication: 28 Nov 2019.
[Article]
AN: 629976275
Background: Sepsis is a leading cause of death worldwide and a major challenge for physicians to predict and manage. Proenkephalin A 119-159 (penKid) is a reliable surrogate marker for the more unstable endogenous opioid peptide enkephalin, which has previously been shown to predict both acute and chronic kidney disease. The aim of this prospective observational study was to assess penKid as a predictor of acute kidney injury (AKI), multi-organ failure and mortality in sepsis among unselected sepsis patients presenting to the emergency department (ED).
Method(s): We enrolled 644 patients consecutively during office-hours (6 AM-6 PM) between December 1, 2013 and February 1, 2015. Fifty-six patients were excluded due to incomplete data. We measured penKid in 588 adult patients (patients under 18 years of age were excluded) with sepsis (>=2SIRS criteria + suspected infection) upon admission to the ED at Skane University Hospital, Malmo, Sweden. Logistic regression analysis was used to relate levels of penKid at presentation to AKI, multi-organ failure, 28-day mortality and progression of renal SOFA subscore. Odds ratios are presented as the number of standard deviations from the mean of log-transformed penKid.
Result(s): In age and sex adjusted models, penKid predicted AKI within 48 h and 7 days, but these associations were attenuated after additional adjustment for estimated creatinine-based glomerular filtration rate (eGFR). In models adjusted for age, sex and eGFR, penKid significantly predicted progression from rSOFA = 0 and <= 1 to higher rSOFA scores as well as multi-organ failure and mortality. In contrast, eGFR did not predict 28-day mortality.
Conclusion(s): PenKid is an effective predictor of renal injury, severe multi-organ failure and mortality in unselected sepsis patients presenting to the emergency department.

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1287.

Benign glandular lesions of urinary bladder: Diagnostic dilemma and clinical significance.
Mylarappa P., Puvvada S., Ramesh D.
Embase
Journal of Clinical and Diagnostic Research. 13(11) (pp PC9-PC12), 2019. Date of Publication: 2019.
[Article]
AN: 2003984912
Introduction: Different types of glandular lesions are seen in the urinary bladder which pose a significant diagnostic dilemma.
Aim(s): To report modalities of diagnosis, management and followup of patients with glandular lesions of the bladder.
Material(s) and Method(s): This was a retro-prospective study of 16 consecutive patients of urinary bladder glandular lesions. The data were obtained from hospital records. These patients underwent urine cytology, ultrasonography and contrast-enhanced computed tomography. All patients underwent cystoscopy with biopsy of the lesion or Transurethral Resection of Bladder Tumour (TURBT) and were followed-up for 6-34 months after surgery.
Result(s): There were 11 females (68.7%) and the median age was 34 (17-48) years. The most common symptom was dysuria, frequency, and nocturia. The most common site of tumour was at the trigone (68.8%) followed by lateral wall (25%) and dome (6.3%). The commonest macroscopic appearance was a papillary lesion (68.8%) followed by polypoidal (18.7%) and flat lesions (12.5%). Fourteen patients underwent TURBT (87.5%) and two patients underwent bladder biopsy (12.5%). Two patients (14.3%) with TURBT developed recurrence of tumour after 1.5 and 2 years, while one of the patient with bladder biopsy developed recurrence of the lesion after nine months. The most common histopathological finding was a combination of cystitis cystica with cystitis glandularis (31.3%).
Conclusion(s): Results suggest that a combination of various investigation modalities and a high index of suspicion is required in establishing the diagnosis. The accurate diagnosis could be established after histopathological examination of the resected specimen or bladder biopsy.

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Publisher
Journal of Clinical and Diagnostic Research (No 3, 1/9 Roop Nagar,GT Karnal Road, Delhi 110007, India)
Year of Publication
2019

1288.

Neutrophil gelatinase-associated lipocalin as an early diagnostic biomarker of acute kidney injury in snake bite.
Senthilkumaran S., Thirumalaikolundusubramanian P., Elangovan N.
Embase
Journal of Emergencies, Trauma and Shock. 12(4) (pp 260-262), 2019. Date of Publication: October-December 2019.
[Article]
AN: 629953098
Background: Snakebite envenomation is a major public health problem in the developing world, and the effects of viper envenomation on renal tissues leading to acute kidney injury (AKI) are well known. However, the usefulness of neutrophil gelatinase-associated lipocalin (NGAL) as a biomarker to detect AKI in viper envenomation cases were not studied much. Aims and Objectives: The present study was undertaken to find out plasma NGAL levels and assess its usefulness among the hospitalized Viperidae group of snakebite victims in predicting acute kidney injury.
Material(s) and Method(s): The plasma NGAL level was estimated within 6-8 h of all the 184 cases of viper bites along with other laboratory parameters.
Result(s): It was elevated much before the elevation of serum creatinine levels, irrespective of the age, gender, and bite to hospital time. The sensitivity and specificity was 99.37 and 96.15, respectively. Elevated plasma NGAL levels in viper bite helped not only to detect AKI early but also assisted to plan for appropriate intervention.
Conclusion(s): It is suggested to include estimation of plasma NGAL in the point of care testing, especially in emergency settings handling snakebite cases. However, more studies are recommended to find out its serial levels in snakebite cases following different kinds of snake envenomation with different clinical and laboratory manifestations in different age groups and gender belonging to different population so as to arrive at valid conclusions.

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Wolters Kluwer Medknow Publications (B9, Kanara Business Centre, off Link Road, Ghatkopar (E), Mumbai 400 075, India)
Year of Publication
2019

1289.

Risk factors analysis for acute kidney injury in the newborn infants, predictive strategies.
Mazaheri M., Rambod M.

Embase
Iranian Journal of Kidney Diseases. 13(5) (pp 310-315), 2019. Date of Publication: September 2019.
[Article]
AN: 2003238645
Introduction. Acute kidney injury (AKI) in the newborn infants is associated with increased mortality and morbidity. The purpose of this study was to investigate the prevalence, risk factors and outcome of AKI in the premature neonates. Methods. Between January 2014 and January 2015, 206 premature neonates between 27 and 36 weeks gestations were studied in the newborn intensive care unit of Amir-AL Momenin Hospital, in Semnan, Iran. All neonates were followed-up for seven days after birth. The diagnosis of AKI was based on urine output (UOP) < 1.5 mL/kg/h for 24 hours and serum creatinine SCr > 0.3 mg/dL or increased by 150% to 200% from baseline value. Data collected included gestational age, gender, birth weight, first, and fifthminutes Apgar scores, use of mechanical ventilation, continuous positive airway pressure (CPAP), sepsis, congenital heart disease, and respiratory distress syndrome (RDS). Results. Gestational age (OR = 12.09, 95% CI = 3.51-41.63; P <.001), the use of mechanical ventilation (OR = 6.72, 95% CI = 1.44-31.41; P <.05), and the first and fifth minutes Apgar scores (OR = 0.65, 95% CI = 0.44-0.95; P <.05) were significantly related with AKI occurrence. Presence of congenital heart disease, sepsis, birth weight and RDS also had a significant relationship with AKI development (P <.05). Conclusion. The most important risk factors associated with AKI development were prematurity and low-birth weight, low 1 and 5 minutes Apgar scores, and the need for mechanical ventilation, as well as the coexistent of sepsis.

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Year of Publication
2019

1290.

Predictors of hypopituitarism due to vasculotoxic snake bite with acute kidney injury.
Bhat S., Mukhopadhyay P., Raychaudhury A., Chowdhury S., Ghosh S.
Embase
Pituitary. 22(6) (pp 594-600), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 2003471382
Purpose: Hypopituitarism frequently develops following vasculotoxic snake bite complicated by acute kidney injury (AKI). Well defined prospective studies of prevalence of hypopituitarism and its predictors in vasculotoxic snake bites complicated by AKI are unavailable.
Method(s): Fifty-one consecutive patients of AKI following vasculotoxic snake bite were evaluated for various clinical/biochemical parameters (including Free T4, TSH, Cortisol, ACTH, total testosterone, FSH, LH, prolactin, and IGF-1). Diabetes insipidus was evaluated in relevant cases. Twenty minutes whole blood clotting time (WBCT) at presentation was measured in all. MRI of hypothalamo-pituitary region was done at 3 months in subjects with hypopituitarism to rule out structural lesion.

Result(s): 21.6% (11/51) patients developed hypopituitarism at baseline (within 7 days), 39.3% (13 /33) at 3 months developed hypopituitarism. Cortisol deficiency was the commonest abnormality. Subjects who developed hypopituitarism at baseline were younger compared to those without hypopituitarism (35.67 years vs. 46.59 years, p = 0.032) and required more sessions of hemodialysis (8 vs. 3, p = 0.041). Binary logistic regression confirmed that development of hypopituitarism could be predicted by increased number of sessions of hemodialysis (OR 1.51, p = 0.008) and 20 min WBCT (OR 1.2, p = 0.038).
Conclusion(s): Hypopituitarism is common following vasculotoxic snake bite in subjects who develop AKI requiring hemodialysis. Hypopituitarism can develop as early as 7 days following snake bite and should be evaluated for particularly in younger subjects, especially those requiring increasing number of sessions of hemodialysis and in subjects with abnormal 20 min WBCT at presentation.

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1291.

Neutrophil gelatinase-associated lipocalin as a marker of postoperative acute kidney injury following cardiac surgery in patients with preoperative kidney impairment.
Tidbury N., Browning N., Shaw M., Morgan M., Kemp I., Matata B.
Embase
Cardiovascular and Hematological Disorders - Drug Targets. 19(3) (pp 239-248), 2019. Date of Publication: 2019.
[Article]
AN: 2003247141
Introduction: Acute kidney injury (AKI) is a serious complication of cardiac surgery. The current 'gold standard' for determining AKI is change in serum creatinine and urine output, however, this change occurs relatively late after the actual injury occurs. Identification of new biomarkers that detect early AKI is required. Recently, new biomarkers, such as the NephroCheck Test and AKIRisk have also been tested and found to be good indicators of AKI. Neutrophil gelatinase-associated lipocalin (NGAL) has shown promise in paediatric patients but has displayed varied results in adult populations, particularly post cardiac surgery. The aim of this study was to assess the value of urinary NGAL as a biomarker of AKI in patients with pre-existing renal impairment (eGFR >15ml/min to eGFR<60ml/min).
Method(s): A post-hoc analysis of urinary NGAL concentrations from 125 patients with pre-existing kidney impairment, who participated in a randomised trial of haemofiltration during cardiac surgery, was undertaken. Urinary NGAL was measured using ELISA at baseline, post-operatively and 24 and 48 hours after surgery, and serum creatinine was measured pre and postoperatively and then at 24, 48, 72 and 96 hours as routine patient care. NGAL concentrations were compared in patients with and without AKI determined by changes in serum creatinine

concentrations. A Kaplan-Meier plot compared survival for patients with or without AKI and a Cox proportional hazards analysis was performed to identify factors with the greatest influence on survival.
Result(s): Following surgery, 43% of patients developed AKI (based on KDIGO definition). Baseline urinary NGAL was not found to be significantly different between patients that did and did not develop AKI. Urinary NGAL concentration was increased in all patients following surgery, regardless of whether they developed AKI and was also significant between groups at 24 (p=0.003) and 48 hours (p<0.0001). Urinary NGAL concentrations at 48 hours correlated with serum creatinine concentrations at 48 hours (r=0.477, p<0.0001), 72 hours (r=0.488, p<0.0001) and 96 hours (r=0.463, p<0.0001). Urinary NGAL at 48 hours after surgery strongly predicted AKI (AUC=0.76; P=0.0001). A Kaplan-Meier plot showed that patients with postoperative AKI had a significantly lower 7-year survival compared with those without AKI. Postoperative urinary NGAL at 48 hours >156ng/mL also strongly predicted 7-year survival. However, additive EuroSCORE, age, current smoking and post-operative antibiotics usage were distinctly significantly more predictive of 7-year survival as compared with postoperative urinary NGAL at 48 hours >156ng/mL.
Conclusion(s): Our study demonstrated that postoperative urinary NGAL levels at 48 hours postsurgery strongly predicts the onset or severity of postoperative AKI based on KDIGO classification in patients with preoperative kidney impairment and were also strongly related to 7-year survival.

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1292.

Associations between serum uric acid concentrations and cardiometabolic risk and renal injury in obese and overweight children.
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Embase
JCRPE Journal of Clinical Research in Pediatric Endocrinology. 11(3) (pp 262-269), 2019. Date of Publication: September 2019.
[Article]
AN: 2002754208
Objective: The aim of this study was to assess the association between serum uric acid concentration (SUAC) and the parameters of the metabolic syndrome (MetS) and insulin resistance (IR). The secondary aim was to evaluate whether hyperuricemia is associated with renal injury and cardiovascular risk in obese (OB) and overweight (OW) children.
Method(s): The subjects of this study consisted of OB/OW children and adolescents (ages: 8-18 years). Sex and age specific serum uric acid (SUA) olarak degistirilecek percentiles were used and a SUA >75th percentile was accepted as hyperuricemia. Anthropometric data, blood pressure (BP) measurements and biochemical parameters, including fasting blood glucose,

insulin, total cholesterol, high-density lipoprotein cholesterol (HDL-c), low-density lipoprotein cholesterol, triglycerides (TG), aspartate aminotransferase, alanine aminotransferase, homeostatic model assessments of IR (HOMA-IR) and SUAC were recorded. Oral glucose tolerance tests (OGTT) were performed in all patients. MetS was defined according to the International Diabetes Federation criteria. Total cholesterol/HDL-c ratio >4 and TG/HDL-c ratio >2.2 were used as the atherogenic index (AI) indicating cardiovascular risk. Urinary albumin excretion in a 24-hour and also in a first-morning urine sample were measured. Renal injury was assessed by microalbuminuria according to the National Kidney Foundation criteria.
Result(s): There were 128 participants; 52 (40%) had elevated (SUA >75th percentile) and 76 had (60%) normal SUAC. The mean+/-SD age was 13.1+/-2.6 years and 87 (67.4%) were female. The mean+/-SD weight was 73+/-18.97 kg and mean+/-SD height was 155.4+/-12.11 cm. There was no statistical difference between the groups with and without hyperuricemia in terms of age, sex, puberty stage and degree of obesity. Increased SUAC were significantly associated with higher waist-to-hip ratio (WHR), fasting insulin levels and insulin at 30 and 60 minutes during OGTT, HOMA-IR, lower HDL-c and presence of hypertriglyceridemia as well as with decreased HDL-c, increased AI, presence of IR and MetS. BP and microalbuminuria were not associated with SUAC. SUAC showed significant positive correlations with waist circumference, WHR, post-challenge glucose level at 60 minutes, with fasting insulin, post-challenge insulin levels at 30, 60, 90 and 120 minutes and also with HOMA-IR, total cholesterol/HDL-c ratio, TG/HDL-c ratio and a number of other criteria related to MetS. Also, an inverse correlation with HDL-c was noted.
Conclusion(s): In OB/OW children frequency of MetS, IR and dislipidemia increases with increased SUAC, a finding independent of age, puberty, gender and body mass index. Patients meeting all of the MetS criteria had the highest SUAC. These results demonstrate that the association between UA and metabolic and cardiovascular risk factors can be detected early in childhood. Thus, we recommend monitoring SUAC in OB children and we believe that prevention of SUAC elevation in early life has a potential protective effect on metabolic impairment and subsequent comorbidities.

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Galenos Yayincilik, (Molla Gurani Cad. 21, Findikzade-Istanul 34093, Turkey)
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1293.

Frequency of acute kidney injury in neonates admitted to Nicu at Shifa international hospital Islamabad.
Ullah I., ur Rehman S., Iqbal A.

Embase
Pakistan Paediatric Journal. 43(3) (pp 155-159), 2019. Date of Publication: September 2019.
[Article]
AN: 2002837088
Objective: To determine the frequency of acute kidney injury {AKI) in neonates admitted to the NiCU of Shifa International Hospital Islamabad.
Study Design: Descriptive case series. Place and duration: At NICU Shifa International Hospital, islamabad. Duration was 6 months.
Material(s) and Method(s): This study involved 200 neonates admitted to NICU. Serum creatinine and urine output were monitored and AKI was diagnosed as per study criteria. A written informed consent was obtained from parents of every patient.
Result(s): The mean age of the patients was 7.41 +/- 6.28 days. 6.5% neonates acquired AKI during their stay in NICU. There was no significant difference in the mean serum creatinine and mean urine output at admission, however, the mean serum creatinine was significantly higher while the mean urine output was significantly lower at 48 hours follow-up in children who developed AKI as compared to neonates who didn't.
Conclusion(s): AKi was observed in 6.5% of neonates in NICU and was associated with significant rise of serum creatinine with significant decrease of mean urine output in such neonates regardless of age, gender and cause of NICU admission.

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Pakistan Pediatric Journal
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1294.

Clinicopathological characteristics and renal outcomes of childhood-onset lupus nephritis with acute kidney injury: A multicenter study.
Ishimori S., Kaito H., Shima Y., Kamioka I., Hamahira K., Nozu K., Nakanishi K., Tanaka R., Yoshikawa N., Iijima K.
Embase
Modern Rheumatology. 29(6) (pp 970-976), 2019. Date of Publication: 02 Nov 2019.
[Article]
AN: 625545851
Objectives: Acute kidney injury (AKI) at onset of adult systemic lupus erythematosus (SLE) is a risk factor for end stage kidney disease (ESKD). However, data on childhood-onset lupus nephritis (LN) with AKI are scarce.
Method(s): We retrospectively reviewed the complete files of pediatric SLE patients from 1995 to 2010. All patients underwent kidney biopsy promptly after diagnosis.
Result(s): Thirty-six patients (10 males and 26 females) were enrolled. Mean age at diagnosis and observation period were 11.6 +/- 2.4 and 8.1 +/- 4.4 years, respectively. Seven patients had AKI at onset of SLE. Compared with those without AKI, patients with AKI had significantly higher proportions of pathologically proliferative LN. Only one patient with AKI progressed to ESKD without complete recovery of renal function. Overall and renal survival rates were 100and 97.2%,

respectively. There was no significant difference in estimated glomerular filtration rate at the final visit (85ml/min/1.73 m2 in the AKI group vs. 103.2 ml/min/1.73 m2 in the non-AKI group; p =.11). Conclusion(s): Our study demonstrated favorable renal outcomes in childhood-onset LN with AKI in the near to midterm period. Inducing complete remission may be important for preserving renal function.

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Publisher
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1295.

Acute kidney injury associated with Yersinia pseudotuberculosis infection: Forgotten but not gone.
Kim Y.K., Cho M.H., Hyun H.S., Park E., Ha I.-S., Cheong H.I., Kang H.G.
Embase
Kidney Research and Clinical Practice. 38(3) (pp 347-355), 2019. Date of Publication: September 2019.
[Article]
AN: 2002659633
Background: Yersinia pseudotuberculosis is known to cause fever, gastroenteritis, or acute kidney injury (AKI). There have been several Y. pseudotuberculosis infection outbreaks to date associated with ingestion of contaminated food or unsterile water. While this disease was considered to have practically been eradicated with the improvement in public health, we encountered several cases of AKI associated with Yersinia infection.
Method(s): We retrospectively collected data from medical records of patients with suspected Y. pseudotuberculosis infection who visited Seoul National University Children's Hospital in 2017.
Result(s): There were nine suspected cases of Yersinia infection (six males and three females; age range 2.99-12.18 years). Among them, five cases occurred in May, and seven patients were residing in the metropolitan Seoul area. Three patients had history of drinking mountain water. Every patient first presented with fever for a median of 13 days, followed by gastrointestinal symptoms and oliguria. Imaging studies revealed mesenteric lymphadenitis, terminal ileum wall thickening, and increased renal parenchymal echogenicity. Creatinine levels increased to 5.72 +/- 2.18 mg/dL. Urinalysis revealed sterile pyuria, proteinuria, and glycosuria. Oliguria continued for 4 to 17 days, and two patients required dialysis; however, all of them recovered from AKI. Mucocutaneous manifestations developed later. In the diagnostic work-up, Yersinia was isolated

from the stool culture in one patient. Anti-Yersinia immunoglobulin (Ig) A and IgG were positive in 6 patients.
Conclusion(s): Y. pseudotuberculosis infection is an infrequent cause of interstitial nephritis presenting with AKI. When a patient presents with fever, gastroenteritis, and AKI not resolving despite hydration, the clinician should suspect Y. pseudotuberculosis infection.

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The Korean Society of Nephrology (E-mail: ksn@ksn.or.kr)
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1296.

Kidney damage and associated risk factors in rural and urban sub-Saharan Africa (AWI-Gen): a cross-sectional population study.
George J.A., Brandenburg J.-T., Fabian J., Crowther N.J., Agongo G., Alberts M., Ali S., Asiki G., Boua P.R., Gomez-Olive F.X., Mashinya F., Micklesfield L., Mohamed S.F., Mukomana F., Norris S.A., Oduro A.R., Soo C., Sorgho H., Wade A., Naicker S., Ramsay M.
Embase
The Lancet Global Health. 7(12) (pp e1632-e1643), 2019. Date of Publication: December 2019. [Article]
AN: 2003680023
Background: Rapid epidemiological health transitions occurring in vulnerable populations in Africa that have an existing burden of infectious and non-communicable diseases predict an increased risk and consequent prevalence of kidney disease. However, few studies have characterised the true burden of kidney damage and associated risk factors in Africans. We investigated the prevalence of markers for kidney damage and known risk factors in rural and urban settings in sub-Saharan Africa.
Method(s): In this cross-sectional population study (Africa Wits-International Network for the Demographic Evaluation of Populations and their Health Partnership for Genomic Studies [AWI-Gen]), we recruited unrelated adult participants aged 40-60 years from four rural community research sites (Nanoro, Burkina Faso; Navrongo, Ghana; Agincourt and Dikgale, South Africa), and two urban community research sites (Nairobi, Kenya; and Soweto, South Africa). Participants were identified and selected using random sampling frames already in use at each site. Participants completed a lifestyle and medical history questionnaire, had anthropometric and blood pressure measurements taken, and blood and urine samples were collected. Markers of kidney damage were defined as low estimated glomerular filtration rate (eGFR; <60 mL/min per 1.73 m2), presence of albuminuria (urine albumin creatinine ratio >3 mg/mmol); or chronic kidney disease (low eGFR or albuminuria, or both). We calculated age-adjusted prevalence of chronic

kidney disease, low eGFR, and albuminuria by site and sex and used logistic regression models to assess risk factors of kidney damage.
Finding(s): Between August, 2013, and August, 2016, we recruited 10 702 participants, of whom 8110 were analysable. 4120 (50.8%) of analysable participants were male, with a mean age of 49.9 years (SD 5.8). Age-standardised population prevalence was 2.4% (95% CI 2.1-2.8) for low eGFR, 9.2% (8.4-10.0) for albuminuria, and 10.7% (9.9-11.7) for chronic kidney disease, with higher prevalences in South African sites than in west African sites (14.0% [11.9-16.4] in Agincourt vs 6.6% [5.5-7.9] in Nanoro). Women had a higher prevalence of chronic kidney disease (12.0% [10.8-13.2] vs 9.5% [8.3-10.8]) and low eGFR (3.0% [2.6-3.6] vs 1.7% [1.3-2.3]) than did men, with no sex-specific differences for albuminuria (9.9% [8.8-11.0] vs 8.4% [7.3-9.7]). Risk factors for kidney damage were older age (relative risk 1.04, 95% CI 1.03-1.05; p<0.0001), hypertension (1.97, 1.68-2.30; p<0.0001), diabetes (2.22, 1.76-2.78; p<0.0001), and HIV (1.65, 1.36-1.99; p<0.0001); whereas male sex was protective (0.85, 0.73-0.98; p=0.02).
Interpretation(s): Regional differences in prevalence and risks of chronic kidney disease in sub-Saharan Africa relate in part to varying stages of sociodemographic and epidemiological health transitions across the area. Public health policy should focus on integrated strategies for screening, prevention, and risk factor management in the broader non-communicable disease and infectious diseases framework.
Funding(s): National Human Genome Research Institute, Office of the Director, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institute of Environmental Health Sciences, the Office of AIDS Research, and National Institute of Diabetes and Digestive and Kidney Diseases, all of the National Institutes of Health, and the South African Department of Science and Technology.

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1297.

Piperacillin/tazobactam and antibiotic-associated acute kidney injury in critically ill children.
Joyce E.L., Kane-Gill S.L., Priyanka P., Fuhrman D.Y., Kellum J.A.
Embase
Journal of the American Society of Nephrology. 30(11) (pp 2243-2251), 2019. Date of Publication: 2019.
[Article]
AN: 2003678382
Background There continues to be uncertainty about whether piperacillin/tazobactam(TZP) increases the risk of AKI in critically ill pediatric patients.We sought to compare rates of AKI among critically ill children treated with TZP or cefepime, an alternative frequently used in intensive care units, with and without vancomycin. Methods We conducted a retrospective cohort study assessing the risk of AKI in pediatric intensive care unit patients after exposure to vancomycin, TZP, and cefepime, alone or in combination,within 48 hours of admission. The primary outcome was development of stage 2 or 3 AKI or an increase in AKI stage from2 to 3 within the 6 days after the 48-hour exposure window. Secondary outcomes included lengths of stay, need for RRT, and mortality. Results Of 5686 patients included, 494 (8.7%) developed stage 2 or 3 AKI. The adjusted odds of developing AKI after medication exposure were 1.56 for TZP (95% confidence interval [95% CI], 1.23 to 1.99), 1.13 for cefepime (95% CI, 0.79 to 1.64), and 0.86 for vancomycin (95% CI, 0.69 to 1.07). The adjusted odds of developing AKI for vancomycin plus TZP versus vancomycin plus cefepime was 1.38 (95% CI, 0.85 to 2.24). Conclusions Observational data in critically ill children showthat TZP use is associatedwith increased odds of AKI. A weaker, nonsignificant association between vancomycin plus TZP and AKI compared with vancomycin plus cefepime, creates some uncertainty about the nature of the association between TZP and AKI. However, cefepime is an alternative not associated with AKI.

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1298.

Renal oxidative injury in newborns.
D'angelo G., Marseglia L., Salvo V., Calabro M.P., Fede C., Chimenz R., Cuppari C., Salpietro C., Gitto E.
Embase
Journal of Biological Regulators and Homeostatic Agents. 33(5 Supplement 1) (pp 75-78), 2019. Date of Publication: September-October 2019.
[Article]
AN: 2002896408
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Year of Publication
2019

1299.

Bladder management practices in spinal cord injury patients: A single center experience from a developing country.
Mansoor S.N., Rathore F.A.
Embase
Journal of Spinal Cord Medicine. 42(6) (pp 786-790), 2019. Date of Publication: 02 Nov 2019.
[Article]
AN: 621190180
Context/Objective: Inadequate bladder management in spinal cord injury (SCI) patients results in significant morbidity and even mortality. Clean intermittent catheterization (CIC) is the recommended option for SCI patients. The objective of the study was to document the bladder management practices of SCI patients in a developing country.
Design(s): Questionnaire based cross sectional survey Setting: Armed Forces Institute of Rehabilitation Medicine, Rawalpindi, Pakistan Participants: All patients with SCI (irrespective of duration, level and etiology) Interventions: Data documentation included demographics, level, severity and time since injury, bladder management techniques used, details of CIC, results of

Urodynamic studies (if available), complications resulting from bladder management technique and patient awareness of the yearly follow up. SPSS V 20 was used for analysis. Outcome Measures: Not applicable Results: Thirty four consenting patients were enrolled. All were males. Mean age was 31.24 +/- 10.9. Most (17) of the patients were thoracic level paraplegics, while 12 patients had sustained a cervical SCI. Majority (23) had complete injury (ASIA A). Fifteen patients used CIC for bladder management followed by in dwelling Foley catheters in thirteen patients. Those using CIC performed the procedure every four hours and used disposable catheters. The same 'disposable' catheter was used for 5-7 days by half of these patients. Only Six patients independently performed CIC. Three patients on CIC reported urinary tract infection. Conclusion(s): In the largest spinal rehabilitation unit of a developing country; Pakistan CIC was the preferred method of bladder management followed by indwelling catheter. Re-use of disposable catheters is a common practice due to cost issues. The rate of UTI was significantly lower in patients on CIC.

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1300.

Preoperative metabolic acidosis and acute kidney injury after open laparotomy in the neonatal intensive care unit.
Yum S.K., Seo Y.M., Youn Y.-A., Sung I.K.
Embase
Pediatrics International. 61(10) (pp 994-1000), 2019. Date of Publication: 01 Oct 2019.
[Article]
AN: 2003492621
Background: This study evaluated potential risk factors associated with acute kidney injury (AKI) in infants undergoing bedside open laparotomy in the neonatal intensive care unit (NICU), and analyzed the association between postoperative AKI and outcomes.
Method(s): Retrospective data, including neonatal characteristics, perioperative findings (i.e. vital signs and fluid status), postoperative AKI incidence, and postoperative mortality rate of infants who underwent bedside open laparotomy in the NICU between May 2013 and May 2018 were collected and analyzed.
Result(s): A total of 53 cases (26 in AKI group vs 27 in non-AKI group) were analyzed. On univariable analysis, transfusion, pre- and postoperative blood gas analysis and number of inotropic agents, cumulative postoperative percentage fluid overload (48 h), and preoperative hourly urine output were associated with the development of postoperative AKI. On multivariable logistic regression analysis, preoperative acidosis (pH <7.15 or base deficit >10; P = 0.002; OR, 11.067; 95%CI: 2.499-49.017) and preoperative urine output (P = 0.035; OR, 0.548; 95%CI:

0.314-0.959) were significant factors associated with postoperative AKI. Postoperative mortality rate 30 days after surgery was higher in the AKI group, but the difference was not significant. Conclusion(s): Preoperative metabolic acidosis and urine output are important factors potentially associated with the development of postoperative AKI in neonates undergoing bedside open laparotomy. Strategies such as alkali therapy, which protect the kidney from further injury, should be validated in future studies. A decreasing urine output may suggest deteriorating kidney function prior to surgery, potentially amplifying the risk of postoperative AKI.

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Status
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Publisher
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1301.

Hemodynamic status as a determinant variable of presentation and management with high-grade renal injuries.
Hadi A.M., Mahmood M.M.
Embase
Indian Journal of Forensic Medicine and Toxicology. 13(3) (pp 493-499), 2019. Date of Publication: July-September 2019.
[Article]
AN: 2002865755
Background: Renal injury is considered an important cause of significant mortality and morbidity at trauma centers worldwide. It occurs in up to 5% of all trauma patients and accounts for 10 - 25 % of traumatic abdominal organ injuries. The kidney is the most common injured organ in the urinary system in both adult and pediatric patients which comprises about 65% of urological trauma. The aim of the study: To evaluate the Hemodynamic condition as a determinant variable in presentation and management of high-grade renal trauma. Patients and Method: This cross-sectional analytic study included 36 patients with high-grade renal injury. The diagnosis of renal injury was based on the patient's history, findings on physical examination and different radiological studies.
Result(s): Adult male patients with renal injury were prevalent in this study. Penetrating renal injury constituted 52.8% of patients, 69.4% of patients were hemodynamically unstable at the time of admission and hematuria presented in 97.2%. Urinalysis was done for 16.7% while PCV/Hb, blood group and Rh, blood urea and serum creatinine were done in all studied patients. Focused abdominal sonography for trauma was done for 66.7% of patients, contrast CT scan was done for 38.9% of patients, IVU was done for 8.33% of stable patients only while intraoperative single shot IVU was not done for any of the studied patients. The majority of renal injury was grade IV (66.7%). Left side renal trauma constituted 52.8% and associated organ injuries were presented in 72.2%. Operative management was necessary and represented 91.7% of patients, from those, 48.5% were managed with nephrectomy. Reimaging was done for 6 patients only.

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Indian Journal of Forensic Medicine and Toxicology (E-mail: ijfmt@hotmail.com)
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1302.

Risk Factors for Recurrent Acute Kidney Injury in Children Who Undergo Multiple Cardiac Surgeries: A Retrospective Analysis.
Hasson D.C., Brinton J.T., Cowherd E., Soranno D.E., Gist K.M.
Embase
Pediatric Critical Care Medicine. 20(7) (pp 614-620), 2019. Date of Publication: 01 Jul 2019.
[Article]
AN: 629702207
Objectives: Determine the risk factors for repeated episodes of acute kidney injury in children who undergo multiple cardiac surgical procedures.
Design(s): Single-center retrospective chart review.
Setting(s): Cardiac ICU at a quaternary pediatric care center.
Patient(s): Birth to 18 years who underwent at least two cardiac surgical procedures with cardiopulmonary bypass.
Intervention(s): None.
Measurements and Main Results: One-hundred eighty patients underwent two cardiac surgical procedures and 89 underwent three. Acute kidney injury was defined by the Kidney Disease: Improving Global Outcomes serum creatinine criteria. Acute kidney injury frequency was 26% (n = 46) after surgery 1, 20% (n = 36) after surgery 2, and 24% (n = 21) after surgery 3, with most acute kidney injury occurring on postoperative days 1 and 2. The proportion of patients with severe acute kidney injury increased from surgery 1 to surgery 3. Patients with acute kidney injury had a significantly longer duration of ventilation and length of stay after each surgery. The odds of acute kidney injury after surgery 3 was 2.40 times greater if acute kidney injury was present after surgery 1 or 2 (95% CI, 1.26-4.56; p = 0.008) after adjusting for confounders. The time between surgeries was not significantly associated with acute kidney injury (p = 0.85).
Conclusion(s): In a heterogeneous population of pediatric patients with congenital heart disease undergoing multiple cardiopulmonary bypass surgeries, odds of acute kidney injury after a third surgery was increased by the presence of acute kidney injury after prior procedures. Time between surgery did not play a role in increasing odds of acute kidney injury. Further studies in a larger multicenter investigation are necessary to confirm these findings.

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Publisher
Lippincott Williams and Wilkins (E-mail: kathiest.clai@apta.org)
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1303.

Acute kidney injury in an infant with severe combined immunodeficiency: Answers.
Malakasioti G., Alders N., Lucchini G., Cheng I.L., Bockenhauer D.
Embase
Pediatric Nephrology. 34(12) (pp 2541-2544), 2019. Date of Publication: 01 Dec 2019.
[Article]
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Publisher
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Year of Publication
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1304.

Insufficiency of urinary acid excretion of overweight or obese patients with chronic kidney disease and its involvement with renal tubular injury.
Eguchi K., Izumi Y., Nakayama Y., Inoue H., Marume T., Matsuo N., Hiramatsu A., Ono M., Kakizoe Y., Kuwabara T., Nonoguchi H., Mukoyama M.
Embase
Nephrology. 24(11) (pp 1131-1141), 2019. Date of Publication: 01 Nov 2019.
[Article]
AN: 627554590

Aim: Metabolic acidosis occurs due to insufficient urinary ammonium excretion as chronic kidney disease (CKD) advances. Because obese subjects tend to have excessive consumption of protein and sodium chloride, they are prone to chronic acid loading and may therefore be predisposed to acid-induced kidney injury. We investigated the involvement of obesity in ammoniagenesis within damaged kidneys.
Method(s): In the clinical study, urinary ammonium excretion was compared between 13 normal-weight and 15 overweight/obese CKD outpatients whose creatinine clearance was higher than 25 mL/min. For animal experiments, NH4Cl was loaded to KKAy/TaJcl (KKAy), a metabolic syndrome model, and control BALB/c mice for 20 weeks. Kidney injury was evaluated through histological analysis and the expression of proinflammatory markers.
Result(s): Urinary ammonium excretion was lower in overweight/obese patients than in normal-weight patients, while intakes of protein and sodium chloride were higher in overweight/obese patients, implying that subclinical metabolic acidosis occurs in overweight/obese patients. The increase in urinary ammonium excretion induced by NH4Cl loading was attenuated in KKAy mice after 16 weeks, whereas the increase was maintained in BALB/c mice throughout the study period. Histological study and real-time polymerase chain reaction analysis showed proximal tubular injury and enhanced expression levels of neutrophil gelatinase-associated lipocalin (NGAL) protein and messenger RNA, respectively, in KKAy mice but not in BALB/c mice. Finally, urinary NGAL concentration was higher in overweight/obese patients than in normal-weight patients in the early stage of CKD.
Conclusion(s): Obesity could facilitate the induction of subclinical metabolic acidosis and acid accumulation in the kidney, which may potentially exacerbate kidney injury in CKD patients.

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Publisher
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Year of Publication
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1305.

Oliguria and acute kidney injury in critically ill children: Implications for diagnosis and outcomes.
Kaddourah A., Basu R.K., Goldstein S.L., Sutherland S.M.
Embase
Pediatric Critical Care Medicine. 20(4) (pp 332-339), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 629640233
Objectives: Consensus definitions for acute kidney injury are based on changes in serum creatinine and urine output. Although the creatinine criteria have been widely applied, the contribution of the urine output criteria remains poorly understood. We evaluated these criteria individually and collectively to determine their impact on the diagnosis and outcome of severe acute kidney injury. Design and Setting: Post hoc analysis of Assessment of Worldwide Acute

Kidney Injury, Renal Angina, and Epidemiology study-a prospective international observational multicenter study.
Patient(s): Critically ill children enrolled in Assessment of Worldwide Acute Kidney Injury, Renal Angina and, Epidemiology database. Measurement: To assess the differential impact of creatinine and urine output criteria on severe acute kidney injury (Kidney Disease: Improving Global Outcomes stage >= 2). Patients were divided into four cohorts: no-severe acute kidney injury, severe acute kidney injury by creatinine criteria only, severe acute kidney injury by urine output criteria only, and severe acute kidney injury by both creatinine and urine output criteria.
Result(s): Severe acute kidney injury occurred in 496 of 3,318 children (14.9%); 343 (69.2%) were creatinine criteria only, 90 (18.1%) were urine output criteria only, and 63 (12.7%) were both creatinine and urine output criteria. Twenty-eight-day mortality for creatinine criteria only and urine output criteria only patients was similar (6.7% vs 7.8%) and higher than those without severe acute kidney injury (2.9%; $p < 0.01$). Both creatinine and urine output criteria patients had higher mortality than creatinine criteria only and urine output criteria only patients (38.1%; $p < 0.001$). Compared with patients without severe acute kidney injury, the relative risk of receiving dialysis increased from 9.1 (95% CI, 3.9-21.2) in creatinine criteria only, to 28.2 (95% CI, 11.8-67.7) in urine output criteria only, to 165.7 (95% CI, 86.3-318.2) in both creatinine and urine output criteria ($p < 0.01$).
Conclusion(s): Nearly one in five critically ill children with acute kidney injury do not experience increase in serum creatinine. These acute kidney injury events, which are only identified by urine output criteria, are associated with comparably poor outcomes as those diagnosed by changes in creatinine. Children meeting both criteria had worse outcomes than those meeting only one. We suggest oliguria represents a risk factor for poorer outcomes among children who develop acute kidney injury. Application of both the creatinine and urine output criteria leads to a more comprehensive epidemiologic assessment of acute kidney injury and identifies a subset of children with acute kidney injury who are at higher risk for morbidity and mortality. (Pediatr Crit Care Med 2019; 20:332-339)

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Publisher
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Year of Publication
2019

1306.

Positive cumulative fluid balance is associated with mortality in pediatric acute respiratory distress syndrome in the setting of acute kidney injury.
Zinter M.S., Spicer A.C., Liu K.D., Orwoll B.E., Alkhouli M.F., Brakeman P.R., Calfee C.S., Matthay M.A., Sapru A.
Embase
Pediatric Critical Care Medicine. 20(4) (pp 323-331), 2019. Date of Publication: 01 Apr 2019.

[Article]
AN: 629640165
Objectives: As acute kidney injury and elevated cumulative fluid balance commonly co-occur in pediatric acute respiratory distress syndrome, we aimed to identify risk factors for their development and evaluate their independent relationships with mortality. We hypothesized that acute kidney injury and elevated cumulative fluid balance would be associated with markers of inflammation and that children with elevated cumulative fluid balance and concomitant acute kidney injury would have worse outcomes than other children.
Design(s): Prospective observational study using the pediatric Risk, Injury, Failure, Loss, End-Stage acute kidney injury classification.
Setting(s): Five academic PICUs.
Patient(s): Two-hundred sixty patients 1 month to 18 years old meeting the Berlin definition of acute respiratory distress syndrome between 2008 and 2014.
Intervention(s): None. Measurements and Results: PICU mortality was 13% (34/260). Relative to survivors, nonsurvivors had greater cumulative fluid balance on day 3 of acute respiratory distress syndrome (+90.1 mL/kg; interquartile range 26.6-161.7 vs +44.9 mL/kg; interquartile range 10.0-111.3; p = 0.008) and also had higher prevalence of acute kidney injury on day 3 of acute respiratory distress syndrome (50% vs 23%; p = 0.001). On stratified analysis, greater cumulative fluid balance on day 3 of acute respiratory distress syndrome was associated with mortality among patients with concomitant acute kidney injury (+111.5 mL/kg for nonsurvivors; interquartile range 82.6-236.8 vs +58.5 mL/kg for survivors; interquartile range 0.9-176.2; p = 0.041) but not among patients without acute kidney injury (p = 0.308). The presence of acute kidney injury on acute respiratory distress syndrome day 3 was associated with mortality among patients with positive cumulative fluid balance (29.1% vs 10.4% mortality; p = 0.001) but not among patients with even or negative cumulative fluid balance (p = 0.430). Day 1 plasma interleukin-6 levels were associated with the development of day 3 positive cumulative fluid balance, day 3 acute kidney injury, and PICU mortality and the association between elevated day 1 interleukin-6 and PICU mortality was partially mediated by the interval development of day 3 positive cumulative fluid balance and day 3 acute kidney injury (p < 0.001).
Conclusion(s): In pediatric acute respiratory distress syndrome, elevated cumulative fluid balance on day 3 of acute respiratory distress syndrome is associated with mortality specifically in patients with concomitant acute kidney injury. Plasma interleukin-6 levels are associated with the development of positive cumulative fluid balance and acute kidney injury, suggesting a potential mechanism by which inflammation might predispose to mortality. (Pediatr Crit Care Med 2019; 20:323-331)

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1307.

Acute kidney injury is associated with impaired cognition and chronic kidney disease in a prospective cohort of children with severe malaria.
Conroy A.L., Opoka R.O., Bangirana P., Idro R., Ssenkusu J.M., Datta D., Hodges J.S., Morgan C., John C.C.
Embase
BMC Medicine. 17(1) (no pagination), 2019. Article Number: 98. Date of Publication: 21 May 2019.
[Article]
AN: 628189758
Background: Acute kidney injury (AKI) is a recognized complication of pediatric severe malaria, but its long-term consequences are unknown.
Method(s): Ugandan children with cerebral malaria (CM, n = 260) and severe malaria anemia (SMA, n = 219) or community children (CC, n = 173) between 1.5 and 12 years of age were enrolled in a prospective cohort study. Kidney Disease: Improving Global Outcomes (KDIGO) criteria were used to retrospectively define AKI and chronic kidney disease (CKD). Cognitive testing was conducted using the Mullen Scales of Early Learning in children < 5 and Kaufman Assessment Battery for Children (K-ABC) second edition in children >= 5 years of age.
Result(s): The prevalence of AKI was 35.1%, ranging from 25.1% in SMA to 43.5% in CM. In-hospital mortality was 11.9% in AKI compared to 4.2% in children without AKI (p = 0.001), and post-discharge mortality was 4.7% in AKI compared to 1.3% in children without AKI (p = 0.030) corresponding to an all-cause adjusted hazard ratio of 2.30 (95% CI 1.21, 4.35). AKI was a risk factor for short- and long-term neurocognitive impairment. At 1 week post-discharge, the frequency of neurocognitive impairment was 37.3% in AKI compared to 13.5% in children without AKI (adjusted odds ratio (aOR) 2.31 [95% CI 1.32, 4.04]); at 1-year follow-up, it was 13.3% in AKI compared to 3.4% in children without AKI (aOR 2.48 [95% CI 1.01, 6.10]), and at 2-year follow-up, it was 13.0% in AKI compared to 3.4% in children without AKI (aOR 3.03 [95% CI 1.22, 7.58]). AKI was a risk factor for CKD at 1-year follow-up: 7.6% of children with severe malaria-associated AKI had CKD at follow-up compared to 2.8% of children without AKI (p = 0.038) corresponding to an OR of 2.81 (95% CI 1.02, 7.73). The presenting etiology of AKI was consistent with prerenal azotemia, and lactate dehydrogenase as a marker of intravascular hemolysis was an independent risk factor for AKI in CM and SMA (p < 0.0001). In CM, AKI was associated with the presence and severity of retinopathy (p < 0.05) and increased cerebrospinal fluid albumin suggestive of blood-brain barrier disruption.
Conclusion(s): AKI is a risk factor for long-term neurocognitive impairment and CKD in pediatric severe malaria.

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1308.

Acute Kidney Injury in Critically Ill Children and Subsequent Chronic Kidney Disease.
Hessey E., Perreault S., Dorais M., Roy L., Zappitelli M.
Embase
Canadian Journal of Kidney Health and Disease. 6 (no pagination), 2019. Date of Publication: 2019.
[Article]
AN: 2003342763
Background: The progression from acute kidney injury (AKI) to chronic kidney disease (CKD) is not well understood in children.
Objective(s): We aimed to develop a pediatric CKD definition using administrative data and use it to evaluate the association between AKI in critically ill children and CKD 5 years after hospital discharge.
Design(s): Retrospective cohort study using chart collection and administrative data.
Setting(s): Two-center study in Montreal, Canada.
Patient(s): Children (<=18 years old) admitted to two pediatric intensive care units (ICUs) between 2003 and 2005. We a priori excluded patients with end-stage renal disease or no health care number. Only the first admission during the study period was included. We excluded patients who could not be linked to administrative data, did not survive hospitalization, or had preexisting renal disease. Measurements: Acute kidney injury was defined using Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Patients were defined as having CKD 5 years post-discharge if they had >=1 CKD diagnostic code or >=1 CKD-specific medication prescription.
Method(s): Chart data used to define the exposure (AKI) were merged with provincial administrative data used to define the outcome (CKD). Cox regression was used to evaluate the AKI-CKD association.
Result(s): A total of 2235 (56% male) patients were included, and the median admission age was 3.7 years. A total of 464 (21%) patients developed AKI during pediatric ICU admission. At 5 years post-discharge, 43 (2%) patients had a CKD diagnosis. Patients with both stage 1 and stage 2-3 AKI had increased risk of a CKD diagnosis, with the adjusted hazard ratios (95% confidence intervals) of 2.2 (1.1-4.5) and 2.5 (1.1-5.7), respectively (P <.001).
Limitation(s): Results may not be generalizable to non-ICU patients. We were not able to control for post-discharge variables; future research should try to explore these additional potential risk factors further.
Conclusion(s): Acute kidney injury is associated with 5-year post-discharge CKD diagnosis defined by administrative health care data.

Status

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1309.

Traumatic renal injury in a UK major trauma centre - current management strategies and the role of early re-imaging.
Aldiwani M., Georgiades F., Omar I., Angel-Scott H., Tharakan T., Vale J., Mayer E.
Embase
BJU International. 124(4) (pp 672-678), 2019. Date of Publication: 01 Oct 2019.
[Article]
AN: 627273870
Objectives: To analyse the contemporary management of renal injuries in a UK major trauma centre and to evaluate the utility and value of re-imaging.
Patients and Methods: The prospectively maintained 'Trauma Audit and Research Network' database was interrogated to identify patients with urinary tract injuries between January 2014 and December 2017. Patients' records and imaging were reviewed to identify injury grades, interventions, outcomes, and follow-up.
Result(s): Renal injury was identified in 90 patients (79 males and 11 females). The mean (sd; range) age was 35.5 (17.4; 1.5-94) years. Most of the renal traumas were caused by blunt mechanisms (74%). The overall severity of injuries was: 18 (20%) Grade I, 19 (21%) Grade II, 27 (30%) Grade III, 22 (24%) Grade IV, and four (4%) Grade V. Most patients (84%) were managed conservatively. Early intervention (<24 h) was performed in 14 patients (16%) for renal injuries. Most of these patients were managed by interventional radiology techniques (nine of 14). Only two patients required an emergency nephrectomy, both of whom died from extensive polytrauma. In all, 19 patients underwent laparotomy for other injuries and did not require renal exploration. The overall 30-day mortality was 13%. Re-imaging was performed in 66% of patients at an average time of 3.4 days from initial scan. The majority of re-imaging was planned (49 patients) and 12% of these scans demonstrated a relevant finding (urinoma, pseudoaneurysm) that altered management in three of the 49 patients (6.1%).
Conclusion(s): Non-operative management is the mainstay for all grades of injury. Haemodynamic instability and persistent urine leak are primary indications for intervention. Open surgical management is uncommon. Repeat imaging after injury is advocated for stable patients with high-grade renal injuries (Grade III-V), although more research is needed to determine the optimal timing.

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Publisher
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1310.

Evaluation of Acute Kidney Injury Associated With Anticancer Drugs Used in Gastric Cancer in the Japanese Adverse Drug Event Report Database.
Uchida M., Kondo Y., Suzuki S., Hosohata K.
Embase
Annals of Pharmacotherapy. 53(12) (pp 1200-1206), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 628873258
Background: Development of acute kidney injury (AKI) depends on the severity of renal dysfunction, clinical setting, comorbid factors, and geographical location. Gastric cancer is one of the deadliest malignancies worldwide, and its incidence is significantly high in Japan.
Objective(s): We analyzed the rank-order of the association of anticancer agents for gastric cancer with AKI using a spontaneous reporting system database, the Japanese Adverse Drug Event Report database.
Method(s): We performed a retrospective pharmacovigilance disproportionality analysis using the adverse event reports submitted to the Pharmaceuticals and Medical Devices Agency between April 2004 and March 2017.
Result(s): Anticancer drug-related AKI was common in patients in their 60s and 70s (39.2% and 43.2%, respectively). AKI occurred most frequently within 1 month after anticancer drug administration. The signals of AKI were reported after treatment with S-1 (tegafur/gimeracil/oteracil), cisplatin (CDDP), and capecitabine, with significant adjusted reporting odds ratios (95% CI) of 1.50 (1.09-2.07), 3.43 (2.48-4.74), and 1.82 (1.15-2.90), respectively. CDDP-induced AKI was more likely to occur in patients who were male, hypertension, or diabetes mellitus. Conclusion and Relevance: This study showed that most AKI cases were related to S-1 and/or CDDP adjuvant chemotherapy for gastric cancer treatment. The data also clarified that AKIs occurred within 1 month and that their clinical outcomes were more severe than previous reports of drug-induced AKI in general medicine. Our study provides useful information to minimize the risks of administration to patients at high risk for S-1 and/or CDDP containing chemotherapy-induced AKI.

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1311.

Acute kidney injury in newborns with necrotizing enterocolitis: Risk factors and mortality. Dano renal agudo en recien nacidos con enterocolitis necrotizante: Factores de riesgo y mortalidad <Dano renal agudo en recien nacidos con enterocolitis necrotizante: Factores de riesgo y mortalidad.>
Sanchez C., Garcia M.A., Valdes B.D.
Embase
Boletin Medico del Hospital Infantil de Mexico. 76(5) (pp 210-214), 2019. Date of Publication: July-September 2019.
[Article]
AN: 2002693046
Background: Both necrotizing enterocolitis and acute kidney injury are tightly related conditions, which independently increase mortality in newborns. Necrotizing enterocolitis is an inflammatory disease with a systemic repercussion that leads to inflammatory kidney changes predisposing to renal damage.
Method(s): This study assessed risk factors for the development of acute kidney injury in patients diagnosed with necrotizing enterocolitis and compared mortality between patients with or without acute kidney injury. Thirty-nine patients with the diagnosis of necrotizing enterocolitis were included, regardless of the gestational age.
Result(s): Of 39 patients, 38.5% developed acute kidney injury. Survival showed to be significantly lower in patients with acute kidney injury (54.4 days) when compared to newborns without acute kidney injury (76.22 days; p = 0.014). Mortality in patients with acute kidney injury was 46.7%, increasing up to 62.5% with severe kidney damage. The hazard ratio for mortality was 4.708 for acute kidney injury (p = 0.025). The severity of enterocolitis showed to be an independent risk factor in developing acute kidney injury and severe kidney injury (odds ratio [OR] = 1.841, p = 0.034 and OR = 1.917, p = 0.027, respectively).
Conclusion(s): Newborns with necrotizing enterocolitis should be evaluated for early recognition of acute kidney injury. Prospective studies with a higher number of patients are needed to identify modifiable risk factors to impact in the prevention of these conditions.

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1312.

Clinical features and risk factors of acute kidney injury in children with acute paraquat intoxication.
Song Y., Li C., Luo F., Tao Y.
Embase
Journal of International Medical Research. 47(9) (pp 4194-4203), 2019. Date of Publication: 01 Sep 2019.
[Article]
AN: 2002908862
Objective: This study aimed to investigate the clinical features and risk factors of acute kidney injury (AKI) in children with acute paraquat intoxication.
Method(s): A retrospective study of 110 hospitalized children with acute paraquat intoxication in West China Second University Hospital, Sichuan University was conducted from January 2010 to May 2017. The Kaplan-Meier method was used to compare the survival rates of children with different AKI stages. Multivariate logistic regression was applied to analyse the risk factors for paraquat-induced AKI.
Result(s): AKI occurred in 42 of 110 (38.2%) children. We observed AKI stage 1 in two (4.8%) children, AKI stage 2 in 11 (26.2%), and AKI stage 3 in 29 (69.0%). The survival rate of children in AKI stage 3 (34.5%) was significantly lower than that in children in AKI stage 2 (63.6%) and AKI stage 1 (100%). Multivariate analysis showed that oral ulcers and elevated blood glucose levels were significant independent risk factors for paraquat-induced AKI in children (odds ratio = 4.223 and 5.545, respectively).
Conclusion(s): The incidence and mortality rates of paraquat-induced AKI in children are high. Oral ulcers and elevated blood glucose levels are independent risk factors affecting the occurrence of paraquat-induced AKI in children.

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1313.

Concurrent Kidney Glomerular and Interstitial Lesions Associated with Kimura's Disease.
Yang S., Wang J., Chen Y., Jiang Z., Zhong T., Dong Y., Guan W., Chen W.

Embase
Nephron. 143(2) (pp 92-99), 2019. Date of Publication: 01 Oct 2019.
[Article]
AN: 628930140
Background: Kimura disease (KD) is a chronic benign inflammatory disorder that is usually manifested as a deep, subcutaneous mass with or without regional lymphadenopathy in the head and neck region. Various types of glomerulonephritis are associated with KD, including minimal change disease (MCD), membranous glomerulopathy (MN), and immunoglobulin (Ig)A-nephropathy. Kidney interstitial lesion associated with KD is rarely reported. The aim of this study was to expand the spectrum of kidney lesions associated with KD.
Method(s): From 2007 to 2016, 12 cases of KD with kidney lesions were retrospectively reviewed. Pathological examinations included hematoxylin and eosin staining, periodic acid-schiff staining, periodic acid-methenamine silver staining, and Masson staining, immunofluorescence, and electron microscope analyses.
Result(s): Anatomic sites of subcutaneous involvement included head and neck area, arm, and groin. Most cases had elevated IgE level and peripheral eosinophilia. Nephrotic syndrome was the most common kidney manifestation. Pathological results showed 3 types of glomerulonephritis, including 9 cases of MCD, 2 cases of IgA nephropathy, and 1 case of MN. Of note, 4 MCD cases showed concurrent glomerular and interstitial lesions associated with KD, including 2 distinct patterns: (1) a diffusely eosinophilic and lymphatic infiltration similar to KD lesion developed elsewhere and (2) exclusively eosinophilic infiltration in the interstitium. Eight out of 10 patients were responsive to steroid treatment and had complete remission of proteinuria and recovery of kidney function.
Conclusion(s): Our report suggested that, in addition to glomerulonephritis, interstitial lesions may also be associated with KD. Pathologist should pay special attention to differentiated diagnosis when such pathological changes are identified in patients with subcutaneous mass or cervical lymphadenopathy with concurrent kidney manifestation.

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Publisher
S. Karger AG
Year of Publication
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1314.

Zika virus infection induces acute kidney injury through activating NLRP3 inflammasome via suppressing Bcl-2.
Liu T., Tang L., Tang H., Pu J., Gong S., Fang D., Zhang H., Li Y.-P., Zhu X., Wang W., Wu M., Liao Y., Li C., Zhou H., Huang X.
Embase
Frontiers in Immunology. 10(AUG) (no pagination), 2019. Article Number: 1925. Date of Publication: 2019.
[Article]
AN: 629222464

Zika virus (ZIKV) is a newly emerging flavivirus that broadly exhibits in various bodily tissues and fluids, especially in the brain, and ZIKV infection often causes microcephaly. Previous studies have been reported that ZIKV can infect renal cells and can be detected in the urine samples of infected individuals. However, whether ZIKV infection causes renal diseases and its pathogenic mechanisms remains unknown. Here, we identified that ZIKV infection resulted in acute kidney injury (AKI) in both newborn and adult mouse models by increasing the levels of AKI-related biomarkers [e.g., serum creatinine (Scr), kidney injury molecular-1 (Kim-1), and neutrophil gelatinase-associated lipocalin (NGAL)]. ZIKV infection triggered the inflammatory response and renal cell injury by activating Nod-like receptor 3 (NLRP3) inflammasome and secreting interleukin-1beta (IL-1beta). IL-1beta inhibited aquaporins expression and led to water re-absorption disorder. Furthermore, ZIKV infection induced a decreased expression of B-cell lymphoma-2 (Bcl-2) in the kidney. Overexpression of Bcl-2 attenuated ZIKV-induced NLRP3 inflammasome activation in renal cells and down-regulated PARP/caspase-3-mediated renal apoptosis. Overall, our findings demonstrated that ZIKV infection induced AKI by activating NLRP3 inflammasome and apoptosis through suppressing Bcl-2 expression, which provided potential therapeutic targets for ZIKV-associated renal diseases.

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1315.

Spectrum of management options for pediatric pelvic fracture urethral injury and outcome analysis: 12-year tertiary center experience.
Garg G., Kumar M., Singh M., Pandey S., Sharma A., Sankhwar S.N.
Embase
Journal of Pediatric Urology. 15(4) (pp 392.e1-392.e5), 2019. Date of Publication: August 2019.
[Article]
AN: 2002193089
Introduction: Pediatric pelvic fracture-associated urethral injuries (PFUIs) are relatively rare injuries that occur in secondary to high impact pelvic trauma. There is no consensus yet on the optimal management approach.
Objective(s): In this study, the authors reviewed their experience of pediatric PFUIs and discussed the current spectrum of potential management options. Study design: The authors retrospectively evaluated a cohort of 33 children (<=14 years) treated for PFUI between January 2005 and December 2017.
Result(s): The mean age of presentation was 11.2 +/- 2.1 years (range 6-14). All the subjects were male. Average stricture length was 2.5 + 1.4 cm. Transperineal anastomotic repair (TPAR)

was done in 27 patients; Mitrofanoff procedure was done in three patients; Badenoch's procedure, preputial flap, and transpubic urethroplasty (TPU) was done in 1 patient each. Overall success rate for TPAR was 85%. Minor complications (Clavien grade I and II) were seen in eight cases (24.2%). Average hospital stay was 11.3 days (range 6-15). The mean follow-up duration was 13.8 months (range 9-18).
Discussion(s): As not many large overview studies were known, this retrospective study is small step for developing a protocol for patients with a pediatric PFUI that needs treatment. The goal of surgery in pediatric PFUI-associated posterior urethral strictures is to achieve a tension-free bulboprostatic anastomosis after excision of the distraction segment. Transperineal anastomotic repair is the best and most commonly performed surgery for pediatric PFUI with 85-98% success rates. The success rates for TPAR may be lower in children because of smaller pelvic cavity, small caliber urethra, and poorly formed elastic spongiosa. Hence, a TPAR should be attempted in every case of posterior urethral stricture post-PFUI. If a tension-free anastomosis is not possible, then procedures depending on local stricture characteristics such as TPU may be required.
Conclusion(s): Most pediatric posterior urethral strictures post-PFUI (<=2 cm) can be managed by delayed TPAR with reasonable success rates. Few selected patients may require procedures such as TPU based on local stricture characteristics. [Table presented]

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1316.

Age-Dependent Changes of Kidney Injury Biomarkers in Pediatrics.
van Donge T., Welzel T., Atkinson A., van den Anker J., Pfister M.
Embase
Journal of Clinical Pharmacology. 59(S1) (pp S21-S32), 2019. Date of Publication: 01 Sep 2019.
[Article]
AN: 2002827940
Currently used creatinine-based parameters for monitoring kidney function are not reliable for early detection of kidney injury (KI), particularly tubular damage. Several KI biomarkers allow for early detection of glomerular and tubular damage and may help to prevent drug-related chronic kidney diseases in pediatrics. This literature review describes the state of current research and investigates reference values for these KI biomarkers in neonates, infants, and children to better understand age-related changes. A total of 12 of 237 screened studies fulfilled predefined criteria, including 219 preterm neonates, 70 neonates, 596 infants, and 1726 children. KI biomarkers were analyzed in urine (6 studies), in serum/plasma (5 studies) and in serum and urine (1 study). Four studies (n = 555) measured urinary kidney injury molecule-1, whereas urinary neutrophil gelatinase-associated lipocalin was assessed in 5 studies (n = 888), and 2 studies (n = 203) investigated serum cystatin C. This review of KI biomarkers in different pediatric age groups indicates that (1) the majority of KI biomarkers are measured in urine; (2) the 3 most commonly analyzed KI biomarkers are urinary neutrophil gelatinase-associated lipocalin, urinary kidney

injury molecule-1, and serum cystatin C; (3) values of KI biomarkers appear to decrease from prematurity to infancy; and (4) there is an unmet need to further enhance knowledge on age-dependent changes of KI biomarkers in pediatrics. Studies are needed to better characterize reference values for these key KI biomarkers in healthy pediatric populations and to evaluate the value of these markers in the early detection of drug-related KI in neonates, infants, and children.

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Publisher
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1317.

Diagnostic accuracy of urine neutrophil gelatinase-associated lipocalin and urine kidney injury molecule-1 as predictors of acute pyelonephritis in young children with febrile urinary tract infection.
Krzemien G., Panczyk-Tomaszewska M., Kotula I., Demkow U., Szmigielska A.
Embase
Central European Journal of Immunology. 44(2) (pp 174-180), 2019. Date of Publication: 2019.
[Article]
AN: 2002893647
Introduction: We assessed whether two urinary biomarkers of acute kidney injury, neutrophil gelatinase associated lipocalin (uNGAL) and kidney injury molecule-1 (uKIM-1), can be useful for predicting acute pyelonephritis (APN) in children aged 1-24 months with the first febrile urinary tract infection (UTI).
Material(s) and Method(s): A prospective study included 54 children divided into two groups (24 with APN, 30 with lower UTI), according to the dimercaptosuccinic acid (DMSA) renal scintigraphy results. Laboratory tests: uNGAL, uKIM-1, procalcitonin (PCT), C-reactive protein (CRP), white blood count (WBC) were performed.
Result(s): We did not find significant differences in normalized and non-normalized values of uNGAL and uKIM-1 in children with APN and lower UTI. Positive correlations were determined between uNGAL and pyuria ($r = 0.28$, $p < 0.05$) and between uNGAL/uCr and uKIM-1/uCr ($r = 0.53$, $p < 0.001$) in the all UTI groups. Univariate logistic regression analysis demonstrated that only PCT ($p < 0.0001$) and CRP ($p < 0.05$) were important diagnostic factors of APN. Receiver operating curve (ROC) analysis showed good diagnostic profiles of PCT with the best cut-off value of 1.66 ng/ml and of CRP with the best cut-off value of 4.3 mg/dl for predicting APN (area under the curve [AUC]: 0.894 and 0.719, sensitivity: 75% and 96%, specificity: 93% and 43%, respectively).
Conclusion(s): uNGAL and uKIM-1 are not effective diagnostic markers for APN in young children with febrile UTI and cannot be used in clinical practice to differentiate APN from lower UTI.

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1318.

Pre-, intra-, and post-operative factors for kidney injury of patients underwent cardiac surgery: A retrospective cohort study.
Kang W., Wu X.
Embase
Medical Science Monitor. 25 (pp 5841-5849), 2019. Date of Publication: 2019.
[Article]
AN: 2002428344
Background: Kidney injury is common in patients who have undergone cardiac surgery, and it has high morbidity and mortality. The objective of the study was to identify pre-, intra-, and post-operative risk factors responsible for kidney injury among patients who had undergone cardiac surgery. Material/Methods: Patients (n=1468) who had undergone cardiac surgery were stratified into those with kidney injury (n=488) and those without kidney injury (n=980) using the KDIGO (Kidney Disease: Improving Global Outcomes) criteria. Data of pre-, intra- and post-operative variables were collected and analyzed.
Result(s): Acute kidney injury occurred in 33.2% of study patients. Patients with post-operative acute kidney injury had older age, comorbidities, higher preoperative serum creatinine, coronary artery bypass grafting, longer operation time, high cardiopulmonary bypass and cross-clamping time, low central venous pressure, and prolonged mechanical ventilation as compared to patients without kidney injury (P<0.05 for all). Age >65 years (OR 1.4), preoperative hypertension (OR 2.0), preoperative anemia (OR 2.3), preoperative low ejection fraction (OR 3.7), Charlson comorbidity index >2 (OR 2.5), longer cardiopulmonary bypass time (OR 4.0), blood transfusions (OR 2.1), postoperative hypotension (OR 5.2), and low central venous pressure (OR 8.1) were responsible for kidney injury. Mortality of patients with kidney injury was significantly higher than those without acute kidney injury (52 versus 1, P<0.001).
Conclusion(s): Appropriate and effective control of pre-, intra-, and post-operative variables can reduce the risk of kidney injury development in patients following cardiac surgeries.

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1319.

A novel strategy for identifying early acute kidney injury in pediatric hematopoietic stem cell transplantation.
Benoit S.W., Dixon B.P., Goldstein S.L., Bennett M.R., Lane A., Lounder D.T., Rotz S.J., Gloude N.J., Lake K.E., Litts B., Davies S.M.
Embase
Bone Marrow Transplantation. 54(9) (pp 1453-1461), 2019. Date of Publication: 01 Sep 2019.
[Article]
AN: 626219666
Acute kidney injury (AKI) is a common complication in pediatric hematopoietic stem cell transplantation (HSCT). Serum creatinine is an imprecise biomarker of AKI. We hypothesized that combining creatinine with serum cystatin C (cysC) and urinary neutrophil gelatinase-associated lipocalin (NGAL) more effectively characterizes AKI during the first 28 days of HSCT and better identifies patients at risk of adverse outcomes than creatinine alone. We prospectively assessed the type and severity of AKI in 80 consecutive allogeneic HSCT patients using weekly creatinine, cysC, and NGAL. We combined the biomarkers to define 7 Composite Types of AKI, including All Positive AKI (simultaneously detected creatinine, cysC, and NGAL AKI). Outcomes included renal replacement therapy and transplant-related mortality. In all, 75% of patients had AKI by at least one measure; 33% developed >1 type of AKI. Mild AKI often preceded Severe AKI. Patients with creatinine or NGAL AKI that were Severe or Repeated tended to have worse outcomes. The five patients with All Positive AKI had the highest rates of morbidity and mortality. AKI evaluation with creatinine, cysC, and NGAL provides a comprehensive profile of early AKI and narrowly identifies patients at highest risk of adverse outcomes, providing opportunities for early, impactful intervention.

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1320.

MicroRNA-145 Involves in the Pathogenesis of Renal Vascular Lesions and May Become a Potential Therapeutic Target in Patients with Juvenile Lupus Nephritis.
Cai Z., Xiang W., Peng X., Ding Y., Liao W., He X.
Embase
Kidney and Blood Pressure Research. 44(4) (pp 643-655), 2019. Date of Publication: 01 Aug 2019.
[Article]
AN: 629222261
Aims: The current study was conducted with the central objective of investigating the expression of microRNA-145 (miR-145) in renal vascular lesions (RVLs) in juvenile lupus nephritis (JLN) and its possible mechanism.
Method(s): The clinical data of 49 JLN patients confirmed by renal biopsy were collected and followed by grouping according to the RVLs score after hematoxylin-eosin staining: mild, moderate, and severe groups. In situ hybridization was used to detect the expression of miR-145 in renal vessels which was then being compared among different RVLs groups. Up-LV-miR-145 and LV-miR-NC lentiviral vectors were constructed and transfected into human vascular smooth muscle cells (HVSMCs), respectively. After HVSMCs were treated with 10.0 mug/L platelet-derived growth factor (PDGF)-BB for 24 h, the proliferation, migration, and apoptosis of endothelial cells were detected by MTT, Transwell assay, and flow cytometry, respectively. Western blot was used to detect expression of alpha-smooth muscle actin (alpha-SM-actin) and osteopontin (OPN).
Result(s): The expression of miR-145 in renal vascular cells was statistically significant. The higher the inner membrane ratio, the lesser the miR-145 expression. After treatment with PDGF-BB, expression of miR-145 in HVSMCs decreased, proliferation and migration ability enhanced, apoptosis decreased, alpha-SM-actin decreased, and OPN increased. The proliferation and migration ability of HVSMCs in the LV-miR-145 group suppressed, apoptosis enhanced, alpha-SM-actin increased, and OPN decreased.
Conclusion(s): Our study revealed that miR-145 expression decreased with the increase of vascular damage. miR-145 can inhibit proliferation, migration, and differentiation phenotypic transformation of HVSMCs induced by PDGF-BB. miR-145 may be involved in the pathogenesis of RVLs and may be a new target for treatment of RVLs in lupus nephritis.

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1321.

Prediction of Severe Acute Kidney Injury using Renal Angina Index in a Pediatric Intensive Care Unit.
Gawadia J., Mishra K., Kumar M., Saikia D.
Embase
Indian Pediatrics. 56(8) (pp 647-652), 2019. Date of Publication: 01 Aug 2019.
[Article]
AN: 2002689857
Objectives: To determine the proportion of children in a pediatric intensive care unit with a positive Day 0 Renal angina index who develop severe acute kidney injury (AKI) on Day 3; and to compare the predictive ability of the index with that of individual markers of renal injury, for the development of severe acute kidney injury.
Design(s): Observational study.
Setting(s): Pediatric intensive care unit of a tertiary-care hospital.
Participant(s): Consecutive children, 1 month to 12 years, admitted in Level 3 pediatric intensive care unit for a minimum of 8 hours, having weight and intake-output records, were eligible. Children known to have chronic kidney disease or already in stage 2/3 acute kidney injury/dialysis were excluded. Procedure: Day 0 Renal angina index was calculated from the product of Risk Group score (Pediatric intensive care admission/Ventilation and inotropy) and Renal Injury score (fluid overload over previous 8 hours or the % fall in estimated creatinine clearance from baseline). Renal angina index >=8 was considered positive.
Main Outcome Measure(s): The proportion of children with positive Day 0 Renal angina index who develop severe AKI (Kidney Disease Improving Global Outcomes (KDIGO) >=Stage 2) on Day 3.
Result(s): Of 162 enrolled children (median (IQR) age 10.5 (3,39) months), 86 (53%) had positive Renal angina index. On Day 3, a higher proportion of children with positive index developed severe AKI, compared to negative group (RR 95.5; 95% CI 21.7,420.5; P<.001). Day 0 positive Renal angina index had a sensitivity, specificity, positive predictive value and negative predictive value of 96.9%, 75.5%, 72% and 97.4% respectively, for predicting severe AKI on Day 3. The Receiver Operating Characteristic curve of Day 0 renal angina scores showed AUC of 0.90 (95% CI 0.85, 0.95), better than the AUC obtained from either Day 0 serum creatinine or Day 0 percent fall in estimated creatinine clearance from baseline.
Conclusion(s): Day 0 Renal angina index positivity is a promising tool to identify critically ill children with impending severe AKI.

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Publisher

Springer
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1322.

A Validation Study of Administrative Health Care Data to Detect Acute Kidney Injury in the Pediatric Intensive Care Unit.
D'Arienzo D., Hessey E., Ali R., Perreault S., Samuel S., Roy L., Lacroix J., Jouvet P., Morissette G., Dorais M., Lafrance J.-P., Phan V., Pizzi M., Chanchlani R., Zappitelli M.
Embase
Canadian Journal of Kidney Health and Disease. 6 (no pagination), 2019. Date of Publication: 01 Feb 2019.
[Article]
AN: 628845495
Background: Large studies evaluating pediatric acute kidney injury (AKI) epidemiology and outcomes are lacking, partially due to underuse of large administrative health care data.
Objective(s): To assess the diagnostic accuracy of administrative health care data-defined AKI in children admitted to the pediatric intensive care unit (PICU).
Design(s): Retrospective cohort study utilizing chart and administrative data.
Setting(s): Children admitted to the PICU at 2 centers in Montreal, QC.
Patient(s): Patients between 0 and 18 years old with a provincial health insurance number, without end-stage renal disease and admitted to the PICU between January 1, 2003, and March 31, 2005, were included. Measurements: The AKI was defined from chart data using the Kidney Disease: Improving Global Outcomes (KDIGO) definition (Chart-AKI). The AKI defined using administrative health data (Admin-AKI) was based on International Classification of Disease, Ninth Revision (ICD-9) AKI codes.
Method(s): Data available from retrospective chart review, including baseline and PICU patient characteristics, and serum creatinine (SCr) and urine output (UO) values during PICU admission, were merged with provincial administrative health care data containing diagnostic and procedure codes used for ascertaining Admin-AKI. Sensitivity, specificity, positive, and negative predictive value of Admin-AKI compared with Chart-AKI (reference standard) were calculated. Univariable associations between Admin-AKI and hospital mortality were evaluated.
Result(s): A total of 2051 patients (55% male, mean age at admission 6.1 +/- 5.8 years, 355 cardiac surgery, 1696 noncardiac surgery) were included. The AKI defined by SCr or UO criteria occurred in 52% of cardiac surgery patients and 24% of noncardiac surgery patients. Overall, Admin-AKI detected Chart-AKI with low sensitivity, but high specificity in cardiac and noncardiac surgery patients. Sensitivity increased by 1.5 to 2 fold with each increase in AKI severity stage. Admin-AKI was associated with hospital mortality (13% in Admin-AKI vs 2% in non-AKI, P <.001).
Limitation(s): These data were generated in a PICU population; future research should study non-PICU populations.
Conclusion(s): Use of administrative health care data to define AKI in children leads to AKI incidence underestimation. However, for detecting more severe AKI, sensitivity is higher, while maintaining high specificity.

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1323.

Acute Kidney Injury After Pediatric Liver Transplantation.
Ferah O., Akbulut A., Acik M.E., Gokkaya Z., Acar U., Yenidunya O., Yentur E., Tokat Y.
Embase
Transplantation Proceedings. 51(7) (pp 2486-2491), 2019. Date of Publication: September 2019.
[Article]
AN: 2002639992
Background: The aim of the present study is to assess acute kidney injury (AKI) incidence according to the pRIFLE and AKIN criteria and to evaluate the risk factors for early developing AKI in postoperative intensive care unit after pediatric liver transplantation (LT). Materials: After exclusion of retransplantations, 7 cadaveric and 44 living donors, totaling 51 pediatric LT patients that were performed between 2005 and 2017, were reviewed retrospectively. AKI was defined according to both pediatric RIFLE (Risk for renal dysfunction, Injury to the kidney, Failure of kidney function, Loss of kidney function, and End-stage renal disease) and Acute Kidney Injury Network (AKIN) criteria. Documented data were compared between AKI and non-AKI patients. Result(s): AKI incidences were 17.6% by AKIN and 37.8% by pRIFLE criteria. AKIN-defined AKI group had statistically lower serum albumin level, higher serum sodium level, higher furosemide dose, and higher rate of red blood cell (RBC) transfusion than the non-AKI group (P = .02, P = .02, P = .01 and P = .04, respectively). AKI patients had significantly prolonged mechanical ventilation (P = .01) and hospital LOS (P = .02). The pRIFLE-defined AKI group had significantly lower serum albumin level, higher blood urea nitrogen (BUN) level, and higher ascites drained and also showed higher requirement for RBC and 20% human albumin transfusions than the non-AKI group (P = .02, P = .04, P: =.007, P = .02 and P = .05, respectively).
Conclusion(s): We evaluated that hypoalbuminemia, high requirement for RBC and 20% human albumin transfusions, high serum sodium, high furosemide use, and high flow of ascites are risk factors for AKI and high BUN levels can be predictive for AKI in pediatric LT patients. The effect of AKI on outcome variables were prolonged mechanical ventilation and hospital LOS.

PMID

31443924 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31443924]
Status
Embase
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Publisher
Elsevier USA
Year of Publication
2019

1324.

Nephrotoxin-related acute kidney injury and predicting high-risk medication combinations in the hospitalized child.
Yonekawa K.E., Zhou C., Haaland W.L., Wright D.R.
Embase
Journal of Hospital Medicine. 14(8) (pp 462-467), 2019. Date of Publication: August 2019.
[Article]
AN: 2002376051
BACKGROUND: In the hospitalized patient, nephrotoxin exposure is one potentially modifiable risk factor for acute kidney injury (AKI). Clinical decision support based on nephrotoxin ordering was developed at our hospital to assist inpatient providers with the prevention or mitigation of nephrotoxin-related AKI. The initial decision support algorithm (Algorithm 1) was modified in order to align with a national AKI collaborative (Algorithm 2).
OBJECTIVE(S): Our first aim was to determine the impact of this alignment on the sensitivity and specificity of our nephrotoxin-related AKI detection system. Second, if the system efficacy was found to be suboptimal, we then sought to develop an improved model. DESIGN: A retrospective cohort study in hospitalized patients between December 1, 2013 and November 30, 2015 (N = 14,779) was conducted. INTERVENTIONS: With the goal of increasing nephrotoxin-related AKI detection sensitivity, a novel model based on the identification of combinations of high-risk medications was developed.
RESULT(S): Application of the algorithms to our nephrotoxin use and AKI data resulted in sensitivities of 46.9% (Algorithm 1) and 43.3% (Algorithm 2, P = .22) and specificities of 73.6% and 89.3%, respectively (P < .001). Our novel AKI detection model was able to deliver a sensitivity of 74% and a specificity of 70%.
CONCLUSION(S): Modifications to our AKI detection system by adopting Algorithm 2, which included an expanded list of nephrotoxins and equally weighting each medication, did not improve our nephrotoxin-related AKI detection. It did improve our system's specificity. Sensitivity increased by >50% when we applied a novel algorithm based on observed data with identification of key medication combinations.

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30986180 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30986180]
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Embase
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Publisher
Frontline Medical Communications
Year of Publication
2019

1325.

Histopathological spectrum of kidney lesions at autopsy.
Goyal A., Shah M., Shah N.
Embase
Indian Journal of Forensic Medicine and Toxicology. 13(3) (pp 7-10), 2019. Date of Publication: July-September 2019.
[Article]
AN: 2002416103
Kidney Diseases are known to present late in the course only after a significant portion of the renal tissue has been damaged before being evident clinically. The study of renal pathology in the medico legal autopsies reflects the prevalence of silent renal pathologies in the general population. The renal pathologies detected at autopsy was grouped according to the age & histopathological type into various categories & compared with the other similar studies.

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Embase
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(Goyal, Shah, Shah) Department of Pathology, Smt. NHL Municipal Medical College and Hospital, Ahmedabad, India
Publisher
Indian Journal of Forensic Medicine and Toxicology (E-mail: ijfmt@hotmail.com)
Year of Publication
2019

1326.

Early identification of acute kidney injury in Russell's viper (Daboia russelii) envenoming using renal biomarkers.
Ratnayake I., Mohamed F., Buckley N.A., Gawarammana I.B., Dissanayake D.M., Chathuranga U., Munasinghe M., Maduwage K., Jayamanne S., Endre Z.H., Isbister G.K.
Embase
PLoS Neglected Tropical Diseases. 13(7) (no pagination), 2019. Article Number: e0007486. Date of Publication: July 2019.
[Article]
AN: 2002439920
Background: Acute kidney injury (AKI) is a major complication of snake envenoming, but early diagnosis remains problematic. We aimed to investigate the time course of novel renal biomarkers in AKI following Russell's viper (Daboia russelii) bites. Methodology/Principal findings: We recruited a cohort of patients with definite Russell's viper envenoming and collected serial

blood and urine samples on admission (<4h post-bite), 4-8h, 8-16h, 16-24h, 1 month and 3 months post-bite. AKI stage (1-3) was defined using the Acute Kidney Injury Network criteria. AKI stages (1-3) were defined by the Acute Kidney Injury Network (AKIN) criteria. There were 65 Russell's viper envenomings and 49 developed AKI: 24 AKIN stage 1, 13 stage 2 and 12 stage 3. There was a significant correlation between venom concentrations and AKI stage (p = 0.007), and between AKI stage and six peak biomarker concentrations. Although most biomarker concentrations were elevated within 8h, no biomarker performed well in diagnosing AKI <4h post-bite. Three biomarkers were superior to serum creatinine (sCr) in predicting AKI (stage 2/3) 4-8h post-bite: serum cystatin C (sCysC) with an area under the receiver operating curve (AUC-ROC), 0.78 (95%CI:0.64-0.93), urine neutrophil gelatinase-associated lipocalin (uNGAL), 0.74 (95%CI:0.59-0.87) and urine clusterin (uClu), 0.81 (95%CI:0.69-0.93). No biomarker was better than sCr after 8h. Six other urine biomarkers urine albumin, urine beta2-microglobulin, urine kidney injury molecule-1, urine cystatin C, urine trefoil factor-3 and urine osteopontin either had minimal elevation, and/or minimal prediction for AKI stage 2/3 (AUC-ROC<0.7). Conclusions/Significance: AKI was common and sometimes severe following Russell's viper bites. Three biomarkers uClu, uNGAL and sCysC, appeared to become abnormal in AKI earlier than sCr, and may be useful in early identification of envenoming.

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31260445 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31260445]
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Publisher
Public Library of Science (E-mail: plos@plos.org)
Year of Publication
2019

1327.

Tubular and glomerular biomarkers of acute kidney injury in newborns.
Kamianowska M., Szczepanski M., Wasilewska A.
Embase
Current Drug Metabolism. 20(5) (pp 332-349), 2019. Date of Publication: 2019.

[Article]
AN: 2002397406
Background: Acute Kidney Injury (AKI) is a sudden decrease in kidney function. In the early period, the highest percentage of AKI occurs among newborns hospitalized in the neonatal intensive care units, especially premature neonates. The prognosis of AKI depends on the type and severity of the cause of an injury, the accuracy and the time of diagnosis and treatment. The concentration of serum creatinine is still the main diagnostic test, although it changes in the course of AKI later than glomerular filtration rate GFR. In addition, the reliability of the determination of creatinine level is limited because it depends on many factors. New studies have presented other, more useful laboratory markers of renal function that can be measured in serum and/or in urine.
Objective(s): The aim of the work was to present the latest data about tubular and glomerular biomarkers of acute kidney injury in newborns.
Method(s): We undertook a structured search of bibliographic databases for peer-reviewed research literature by using focused review topics. According to the conceptual framework, the main idea of research literature has been summarized and presented in this study.
Result(s): The concentrations of some novel biomarkers are higher in serum and/or urine of term and preterm newborns with AKI, especially in the course of perinatal asphyxia.
Conclusion(s): In this systematic review of the literature, we have highlighted the usefulness of biomarkers in predicting tubular and/or glomerular injury in newborns. However, novel biomarkers need to prove their clinical applicability, accuracy, and cost-effectiveness prior to their implementation in clinical practice.

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Publisher
Bentham Science Publishers B.V. (P.O. Box 294, Bussum 1400 AG, Netherlands)
Year of Publication
2019

1328.

Reduction in Nephrotoxic Antimicrobial Exposure Decreases Associated Acute Kidney Injury in Pediatric Hematopoietic Stem Cell Transplant Patients.
Benoit S.W., Goldstein S.L., Dahale D.S., Haslam D.B., Nelson A., Truono K., Davies S.M.
Embase
Biology of Blood and Marrow Transplantation. 25(8) (pp 1654-1658), 2019. Date of Publication: August 2019.
[Article]
AN: 2002045224
Exposure to nephrotoxic medications is a common risk factor for acute kidney injury (AKI) in pediatric stem cell transplantation (SCT). We hypothesized that reducing nephrotoxic antimicrobial exposure for SCT patients would be associated with lower nephrotoxin-associated AKI (NTMx-AKI) rates and no increase in infection treatment failures. We conducted a prospective cohort analysis of all inpatient SCT patients at Cincinnati Children's Hospital Medical Center between January 2014 and December 2017. In January 2016, first line fever coverage

was changed from piperacillin-tazobactam to cefepime, acknowledging that the change resulted in a loss of enterococcal coverage, and the duration of antimicrobial exposures was limited, specifically including vancomycin. We collected data using prospective NTMx-AKI and antimicrobial utilization monitoring platforms within the electronic health record. AKI days and severity were extracted for patients exposed to 3+ nephrotoxins, 3+ days of IV aminoglycosides, or 3+ days of IV vancomycin. AKI was identified using KDIGO serum creatinine criteria. We assessed rates of nephrotoxin exposure and NTMx-AKI in all SCT inpatients for 2 years pre- and post-intervention. Data were grouped and analyzed by calendar month, normalized to a denominator of 1000 patient-days. Statistical process control methods were used to monitor adherence to the intervention and identify changes in mean rate of nephrotoxin exposure and NTMx-AKI. Infection rates, alternate antimicrobial usage rates, and the fraction of repeat positive cultures were used to identify treatment failures. PTZ usage decreased from 196 to 33 days/1000 patient days, cefepime usage increased from 62 to 290 days/1000 patient days, and vancomycin usage decreased from 62 to 41 days/1000 patient days. High nephrotoxin exposure decreased by 33% (143 to 96 days/1000 patient days), and NTMx-AKI decreased by 74% (24 to 6 days/1000 patient days). Rates of all KDIGO stages of NTMx-AKI decreased >=50% after the intervention. Stage 3, the most severe, decreased by >80%. The fraction of repeat positive cultures remained stable between the two eras at.1 (standard deviation 0.21) and.07 (standard deviation 0.17), respectively. There were no increases in infection rates, alternate antimicrobial usage rates, or treatment failures. Reduction of nephrotoxic antimicrobial exposure can decrease the amount and severity of NTMx-AKI in SCT patients without an increase in treatment failures.

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Publisher
Elsevier Inc. (E-mail: usjcs@elsevier.com)
Year of Publication
2019

1329.

Trauma induced acute kidney injury.
Perkins Z.B., Captur G., Bird R., Gleeson L., Singer B., O'Brien B.
Embase
PLoS ONE. 14(1) (no pagination), 2019. Article Number: e0211001. Date of Publication: January 2019.
[Article]
AN: 626070572

Background: Injured patients are at risk of developing acute kidney injury (AKI), which is associated with increased morbidity and mortality. The aim of this study is to describe the incidence, timing, and severity of AKI in a large trauma population, identify risk factors for AKI, and report mortality outcomes.
Method(s): A prospective observational study of injured adults, who met local criteria for trauma team activation, and were admitted to a UK Major Trauma Centre. AKI was defined by the Kidney Disease Improving Global Outcomes (KDIGO) criteria. Multivariable logistic regression and Cox proportional hazard modelling was used to analyse parameters associated with AKI and mortality.
Result(s): Of the 1410 patients enrolled in the study, 178 (12.6%) developed AKI. Age; injury severity score (ISS); admission systolic blood pressure, lactate and serum creatinine; units of Packed Red Blood Cells transfused in first 24 hours and administration of nephrotoxic therapy were identified as independent risk factors for the development of AKI. Patients that developed AKI had significantly higher mortality than those with normal renal function (47/ 178 [26.4%] versus 128/1232 [10.4%]; OR 3.09 [2.12 to 4.53]; p<0.0001). After adjusting for other clinical prognostic factors, AKI was an independent risk factor for mortality.
Conclusion(s): AKI is a frequent complication following trauma and is associated with prolonged hospital length of stay and increased mortality. Future research is needed to improve our ability to rapidly identify those at risk of AKI, and develop resuscitation strategies that preserve renal function in trauma patients.

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30682106 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30682106]
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Publisher
Public Library of Science (E-mail: plos@plos.org)
Year of Publication
2019

1330.

A Holistic Approach to Risk for Early Kidney Injury in Indigenous Youth With Type 2 Diabetes: A Proof of Concept Paper From the iCARE Cohort.
Dart A.B., Wicklow B., Blydt-Hansen T.D., Sellers E.A.C., Malik S., Chateau D., Sharma A., McGavock J.M.
Embase
Canadian Journal of Kidney Health and Disease. 6 (no pagination), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 628830606
Background: Indigenous youth with type 2 diabetes (T2D) are disproportionately affected by early onset albuminuria and are at high risk of kidney failure in early adulthood. Traditional biological approaches have failed to fully explain the renal morbidity seen in this population. The improving renal Complications in Adolescents with type 2 diabetes through REsearch cohort (iCARE) study

was therefore designed in collaboration with patients, to more holistically evaluate risk factors for renal morbidity. We hypothesize that both biological factors and mental health influence renal outcomes, mediated via inflammatory pathways.
Objective(s): The objective of this study was to evaluate the iCARE analytic framework which evaluates relationships between biological factors, mental health, inflammation, and albuminuria utilizing a structural equation modeling (SEM) approach.
Method(s): The first 187 youth with T2D (10-25 years) from the Manitoba iCARE cohort are presented here to evaluate our theoretical and analytic framework. An SEM was chosen to evaluate the statistical significance of proposed associations. The primary outcome was a nonorthostatic urine albumin:creatinine ratio >=2 mg/mmol. Main exposures (ie, latent factors) included psychological health (distress, perceived stress, positive mental health and resilience), hypertension (24 hour monitored), and inflammatory markers (C-reactive protein [CRP], erythrocyte sedimentation rate [ESR], fibrinogen). Hemoglobin A1c (HbA1c) and duration of diabetes were covariates.
Result(s): Within the initial cohort (median age = 15 years, duration of diabetes = 2.3 years, 66.8% female), 30.5% (n = 57) had nonorthostatic albuminuria (ALB), and the majority of ALB was persistent (confirmed in 2/3 samples over a 6-month period; n = 47). Youth with ALB had higher HbA1c (10.9% vs 8.9%; P <.001), more hypertension (94.2% vs 78.2%; P =.02), longer duration of diabetes (3.4 vs 2.4 years; P =.01), higher distress (9.2 vs 7.3; P =.02), and stress scores (28.7 vs 26.4; P =.03), and elevated inflammatory markers (CRP: 4.9 vs 3.1 mg/L; P =.01, fibrinogen: 3.7 vs 3.3 micromol/L; P =.02). Factors directly associated with ALB in the SEM were hypertension (0.28; P =.001), inflammation (0.41; P <.001), and HbA1c (0.50; P <.001). Psychological health was independently associated with inflammation (-0.20; P <.001) but not directly associated with ALB.
Conclusion(s): Albuminuria is highly prevalent in Indigenous youth with T2D. This preliminary analysis supports a theoretical framework linking glycemic control, hypertension, and inflammation, potentially mediated by psychological factors with albuminuria. These data support the need for more holistic models of evaluation and care for youth with T2D and multifactorial interventions to prevent complications.

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Publisher
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Year of Publication
2019

1331.

Renal injury and recovery in pediatric patients after ventricular assist device implantation and cardiac transplant.

Hollander S.A., Cantor R.S., Sutherland S.M., Koehl D.A., Pruitt E., McDonald N., Kirklin J.K., Ravekes W.J., Ameduri R., Chrisant M., Hoffman T.M., Lytrivi I.D., Conway J.
Embase
Pediatric Transplantation. 23(5) (no pagination), 2019. Article Number: e13477. Date of Publication: 2019.
[Article]
AN: 628018575
Background: The use of ventricular assist devices (VADs) in children with heart failure may be of particular benefit to those with accompanying renal failure, as improved renal function is seen in some, but not all recipients. We hypothesized that persistent renal dysfunction at 7 days and/or 1 month after VAD implantation would predict chronic kidney disease (CKD) 1 year after heart transplantation (HT).
Method(s): Linkage analysis of all VAD patients enrolled in both the PEDIMACS and PHTS registries between 2012 and 2016. Persistent acute kidney injury (P-AKI), defined as a serum creatinine >=1.5x baseline, was assessed at post-implant day 7. Estimated glomerular filtration rate (eGFR) was determined at implant, 30 days thereafter, and 12 months post-HT. Pre-implant eGFR, eGFR normalization (to >=90 mL/min/1.73 m2), and P-AKI were used to predict post-HT CKD (eGFR <90 mL/min/1.73 m2).
Result(s): The mean implant eGFR was 85.4 +/- 46.5 mL/min/1.73 m2. P-AKI was present in 19/188 (10%). Mean eGFR at 1 month post-VAD implant was 131.1 +/- 62.1 mL/min/1.73 m2, significantly increased above baseline (P < 0.001). At 1 year post-HT (n = 133), 60 (45%) had CKD. Lower pre-implant eGFR was associated with post-HT CKD (OR 0.99, CI: 0.97-0.99, P = 0.005); P-AKI was not (OR 0.96, CI: 0.3-3.0, P = 0.9). Failure to normalize renal function 30 days after implant was highly associated with CKD at 1 year post-transplant (OR 12.5, CI 2.8-55, P = 0.003).
Conclusion(s): Renal function improves after VAD implantation. Lower pre-implant eGFR and failure to normalize renal function during the support period are risk factors for CKD development after HT.

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Publisher
Blackwell Publishing Inc. (E-mail: subscrip@blackwellpub.com)
Year of Publication
2019

1332.

Factors Associated with Secondary Overtriage in Renal Trauma.
Hagedorn J.C., Quistberg D.A., Arbabi S., Wessells H., Vavilala M.S.
Embase
Urology. 130 (pp 175-180), 2019. Date of Publication: August 2019.
[Article]
AN: 2002024453
Objective: To examine secondary overtriage for isolated renal trauma patients and to use secondary overtriage criteria to determine factors associated with unnecessary interhospital transfers in patients with isolated renal trauma.
Method(s): The National Trauma Data Bank was used to identify isolated renal trauma patients of any age who were transferred to a level I or II trauma center from 2007 to 2014. Secondary overtriage criteria were defined as hospital length of stay <72 hours, no ICU admission, no emergent transfer from the ED to the OR, no operating room procedure, and no renal IR/OR procedure. Adjusted risk ratios (RR) and 95% confidence intervals were estimated using Poisson regression.
Result(s): A total of 8156 isolated renal injury patients who were transferred to either a level I or II trauma center were identified. More than half (53%) of the transferred patients had low-grade renal injuries (American Association for the Surgery of Trauma (AAST) Grade I/II). Our definition of secondary overtriage was met in 3005 patients (37%). In this group, 59% had low-grade renal injuries. The risk of being overtriaged was significantly reduced with increasing renal injury grade, hypotension in the emergency department, firearm injuries, older age (>65 years), medicare payer status, and any substance abuse.
Conclusion(s): Secondary overtriage is common in isolated renal trauma. Factors associated with secondary overtriage are age <=65 years, falls, and low renal injury grade. The high rate of unnecessary transfers shows that there is a need for disease-specific transfer guidelines to assure safe, cost-effective, and efficient health care in isolated renal trauma.

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31029673 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31029673]
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Elsevier Inc. (E-mail: usjcs@elsevier.com)
Year of Publication
2019

1333.

Accuracy of urinary kidney injury molecule-1 in predicting acute kidney injuries associated with cardiac surgery: A systematic review and meta-analysis.

Wang H., Wang W.-J., Zhou C.-C., Cen D.
Embase
International Journal of Clinical and Experimental Medicine. 12(6) (pp 6570-6578), 2019. Date of Publication: 2019.
[Review]
AN: 2002236494
Objectives: Urinary kidney injury molecule-1 (uKIM-1) is a very promising diagnostic biomarker for acute kidney injuries (AKI), but its accuracy has varied widely in different studies. The current study reviewed clinical observation studies, investigating the accuracy of uKIM-1 in predicting AKI associated with cardiac surgery.
Method(s): Central, PubMed, Embase, and Congress abstracts databases were searched for studies reporting uKIM-1 levels predicting AKI after cardiac surgery. Standardized data sheets were used to perform a meta-analysis of diagnostic studies. Bivariate and hierarchical summary models were used to calculate diagnostic odds ratios (DOR) and areas under the curve for the receiver-operating characteristic (AUROC).
Result(s): Analysis included 15 observational studies in 7 countries, with a total of 4,120 patients. Of these, 983 (23.9%) developed AKI. The DOR of uKIM-1 was 2.4, with a sensitivity of 0.76, specificity of 0.84, and an AUROC of 0.71. Levels of uKIM-1 in adults (DOR: 3.7, AUROC: 0.79) and children (DOR: 2.6, AUROC: 0.76) were predicted to be more accurate than those in infants (DOR: 1.5, AUROC: 0.60). Moreover, the accuracy of using standardized detection of uKIM-1 (DOR: 2.5, AUROC: 0.78) was significantly higher than that of the research-based assay (DOR: 1.8, AUROC: 0.71).
Conclusion(s): Levels of uKIM-1 can be used to diagnose AKI associated with cardiac surgery, with high sensitivity and specificity.

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Publisher
E-Century Publishing Corporation (40 White Oaks Lane, Madison WI 53711, United States)
Year of Publication
2019

1334.

Blunt renal trauma in pediatric population.
Alsaywid B., Alkhashan M.Y., Alrimawi M., Abu-Alsaud N., Al-Rimawi H.
Embase
Urology Annals. 11(3) (pp 241-246), 2019. Date of Publication: July-September 2019.
[Article]
AN: 628563949
Aims: This study aims to evaluate the magnitude and impact of renal trauma among pediatric population and to assess the effectiveness of conservative versus operative management.
Subjects and Methods: All pediatric patients (age <18 years) with blunt renal trauma, who presented to King Khalid National Guard Hospital in Jeddah between January 2000 and December 2012, were retrospectively reviewed. Medical records were reviewed for demographics, mechanism of injury, length of hospital stay, grade of renal trauma, hematuria, renovascular injuries, associated nonrenal injuries, conservative versus operative management, renal outcomes, and complications.

Result(s): Fifteen children with a blunt renal injury were identified, of which 14 met data inclusion criteria. The renal injury population had a mean age of 12.7 years (standard deviation 4.6) and was 85.7% male. The renal injuries were distributed as follows: Grade 1, n = 3 (21.4%); Grade 2, n = 3 (21.4%); Grade 3, n = 3 (21.4%); Grade 4, n = 3 (21.4%); and Grade 5, n = 2 (14.2%). Macroscopic hematuria was present in 64.3% of children. The median hospital length of stay was 13 days. Eleven children (78.5%) had traumatic injuries in multiple organs. Overall, 10 children (71.4%) were managed conservatively. Four children (28.5%) with high-grade trauma required operative intervention. Renovascular injuries were found in 4 cases (80%) of high-grade renal injuries.
Conclusion(s): Conservative management of kidney injuries was highly successful in children with low-grade renal trauma. Furthermore, operative intervention in high-grade renal injuries proved to be successful and had good renal outcomes. Renal preservation was achieved in 92.8% of cases.

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Publisher
Wolters Kluwer Medknow Publications (B9, Kanara Business Centre, off Link Road, Ghatkopar (E), Mumbai 400 075, India)
Year of Publication
2019

1335.

APOL1 Risk Genotypes Are Associated With Early Kidney Damage in Children in Sub-Saharan Africa.
Ekulu P.M., Nkoy A.B., Betukumesu D.K., Aloni M.N., Makulo J.R.R., Sumaili E.K., Mafuta E.M., Elmonem M.A., Arcolino F.O., Kitetele F.N., Lepira F.B., van den Heuvel L.P., Levtchenko E.N.
Embase
Kidney International Reports. 4(7) (pp 930-938), 2019. Date of Publication: July 2019.
[Article]
AN: 2002037248
Introduction: Apolipoprotein-L1 (APOL1) risk variants G1 and G2 increase the risk of chronic kidney disease (CKD), including HIV-related CKD, among African Americans. However, such data from populations living in Africa, especially children, remain limited. Our research aimed to determine the prevalence of APOL1 risk variants and to assess the association between these variants and early-stage CKD in the general pediatric population and HIV-infected children.
Method(s): In a cross-sectional study, we enrolled 412 children from the general population and 401 HIV-infected children in Kinshasa, Democratic Republic of Congo (DRC). APOL1 high-risk genotype (HRG) was defined by the presence of 2 risk variants (G1/G1, G2/G2, or G1/G2), and low-risk genotype (LRG) by the presence of 0 or 1 risk variants. The main outcome was elevated albuminuria, defined as a urinary albumin/creatinine ratio >=30 mg/g.
Result(s): APOL1 sequence analysis revealed that in the general population, 29 of 412 participants (7.0%) carried HRG, 84 of 412 (20.4%) carried the G1/G0 genotype, and 61 of 412 (14.8%) carried the G2/G0 genotype. In HIV-infected children, 23 of 401 (5.7%) carried HRG, and the same trend as in the general population was observed in regard to the prevalence of LRG. Univariate analysis showed that in the general population, 5 of 29 participants (17.2%) carrying

HRG had elevated albuminuria, compared with 35 of 383 (9.0%) with LRG (odds ratio [OR] 2.1, 95% confidence interval [CI] 0.6-6.0; P = 0.13). In HIV-infected children, participants who carried APOL1 HRG had almost 22-fold increased odds of albuminuria compared to those with LRG. Conclusion(s): The APOL1 risk variants are prevalent in children living in DRC. HRG carriers have increased odds of early kidney disease, and infection with HIV dramatically increases this probability.

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Publisher
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1336.

Is NSAID use in children associated with the risk of renal injury?.
Kirpalani A., Rieder M.
Embase
Paediatrics and Child Health (Canada). 24(2) (pp 119-121), 2019. Date of Publication: 01 May 2019.
[Article]
AN: 628286793
Renal injury is known to be a risk of nonsteroidal anti-inflammatory drug (NSAID) therapy in adults. While this appears to be much less common in children, there are some groups of children who do appear to be at risk of renal injury associated with NSAID therapy and clinicians caring for these patients need to be cognizant of this potential risk.

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Publisher

Oxford University Press
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1337.

Fluid overload and kidney injury score as a predictor for ventilator-associated events.
Vaewpanich J., Akcan-Arikan A., Coss-Bu J.A., Kennedy C.E., Starke J.R., Thammasitboon S.
Embase
Frontiers in Pediatrics. 7(MAY) (no pagination), 2019. Article Number: 204. Date of Publication: 2019.
[Article]
AN: 628126160
Objective: The Pediatric and Neonatal Working group developed new ventilator associated events (VAE) definitions for children and neonates. VAE includes ventilator-associated condition (VAC), infection-related ventilator-associated complication (IVAC), and ventilator-associated pneumonia (VAP). Acute kidney injury (AKI) and fluid overload (FO) have been associated with worse clinical outcomes of ventilated children. Fluid Overload and Kidney Injury Score (FOKIS) is an automatically calculated score that combines AKI and FO in one numeric quantifiable metric. This study analyzed the association between FOKIS and VAE.
Design(s): Retrospective matched case control study.
Setting(s): A freestanding children's hospital.
Patient(s): A total of 168 who were ventilated > 2 days.
Intervention(s): None.
Measurements and Main Results: We identified 42 VAC cases (18 IVAC and 24 non-infection-related VAC cases). Controls were matched to cases for age, immunocompromised status and ventilator days prior to VAC. VAC cases had longer ICU days, median (IQR), 28.5 (15, 47) vs. controls 11 (6, 16), p < 0.001; longer ventilation days, 19.5 (13, 32) vs. 9 (4,13), p < 0.001; and higher hospital mortality, 45.2 vs. 18%, p < 0.001. VACs had a higher incidence of AKI, 85.7 vs. 47.3%, p < 0.001; higher peak daily FO% within 3 days preceding VAC, mean (SD), 8.1(7.8) vs. 4.1 (3.4), p < 0.005; and higher peak FOKIS, 6.4(3.8) vs. 3.7(2.8), (p < 0.001). Multivariate regression model adjusted for severity of illness identified peak FOKIS (odds ratio [OR] 1.29, 95%CI: 1.14-1.48, p < 0.001) and peak inspiratory pressure (OR 1.08, 95%CI: 1.02-1.15, p = 0.007) as risk factors for VAC.
Conclusion(s): The FOKIS and its clinical variables were associated risk factors for ventilator-associated events. Further studies will determine the utility of FOKIS as a predictor for VAEs.

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1338.

Long-term follow-up of urethral reconstruction for blunt urethral injury at a young age: urinary and sexual quality of life outcomes.
Baradaran N., McAninch J.W., Copp H.L., Quanstrom K., Breyer B.N., Hampson L.A.
Embase
Journal of Pediatric Urology. 15(3) (pp 224.e1-224.e6), 2019. Date of Publication: May 2019.
[Article]
AN: 2001783888
Introduction: Little is known about long-term patient-reported outcomes following surgical repair for pediatric blunt urethral trauma.
Objective(s): The purpose was to evaluate long-term urinary outcomes, sexual function, and quality of life (QOL) of patients who undergo urethroplasty for blunt urethral trauma in childhood.
Study Design: After IRB approval, we retrospectively reviewed the records of patients who sustained blunt urethral injury at <=18 years and underwent urethroplasty at our institution between 1978 and 2013. We then used a web-based survey to assess urinary/sexual/ejaculatory function and overall QOL using validated questionnaires.
Result(s): Of 68 eligible patients, 15 were able to be contacted (table). Median age of injury, age at urethroplasty, and age at follow-up were 17 (4-18), 17 (5-20), and 19 (13.5-21.5) years, respectively. The stricture was membranoprostatic in eight and bulbar in seven patients, with median length of 2 (1.6-2.6) cm. Excision/primary anastomosis was performed in all but three patients who required a buccal graft. Overall, 80% were 'very satisfied' and 20% were 'satisfied' with surgery. One patient reported a subsequent urethral intervention. On urethral stricture surgery patient-reported outcome measurement, the median bother (0 least, 24 worst) was 10 (8-12.5). The force of urine stream (1 strongest, 4 weakest) was 2 (1.5-2), with no report of urinary incontinence. The median Sexual Health Inventory for Men score (0 worst, 25 perfect) was 24 (22.5-24). The median ejaculatory function score (0 worst, 15 normal) was 14 (13-14.75). Six patients had fathered children and none reported infertility. Three patients reported <30degree penile curvature not interfering with sex. Median QOL (0 worse, 10 best) was 8 (7.5-8).
Conclusion(s): Urethroplasty after blunt urethral injury in young adult population is associated with a high long-term success rate with a low rate of long-term urinary and sexual consequences in adulthood. [Table presented]

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Publisher
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Year of Publication
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1339.

Validation of acute kidney injury according to the modified KDIGO criteria in infants after cardiac surgery for congenital heart disease.
Ueno K., Seki S., Shiokawa N., Matsuba T., Miyazono A., Hazeki D., Imoto Y., Kawano Y.
Embase
Nephrology. 24(3) (pp 294-300), 2019. Date of Publication: March 2019.
[Article]
AN: 627203402
Aim: We aimed to validate the incidence of, risk factors for, and postoperative outcomes of acute kidney injury (AKI) according to the modified Kidney Disease Improving Global Outcomes (m-KDIGO) criteria and compare this criteria with both the paediatric Risk, Injury, Failure, Loss, End-stage disease (pRIFLE) and Acute Kidney Injury Network (AKIN) criteria in infants after cardiac surgery.
Method(s): We retrospectively enrolled 145 consecutive infants who underwent open-heart surgery at Kagoshima University Hospital.
Result(s): Acute kidney injury was present in 55 (37.9%), 111 (75.9%), and 95 (65.5%) patients according to the m-KDIGO, pRIFLE, and AKIN criteria, respectively. Among these, 71.9% of patients pRIFLE Risk patients and 60.5% of AKIN 1 patients were categorized in the 'no-AKI' group according to the m-KDIGO criteria. Low body weight (m-KDIGO odds ratio [OR], 0.73; P = 0.015; pRIFLE OR, 0.66; P = 0.001; AKIN OR 0.69, P = 0.002) and prolonged cross-clamp time (m-KDIGO OR, 1.02; <P = 0.001; pRIFLE OR, 1.02; P = 0.003; AKIN OR, 1.02; P = 0.001) were independent risk factors for the development of AKI. Further, m-KDIGO-based AKI grade was more strongly associated with higher incidence of requiring renal replacement therapy and mortality than both the pRIFLE- and AKIN- based AKI grade.
Conclusion(s): Application of the three criteria resulted in different AKI incidences, but each criterion could be useful for detecting risk factors for AKI. Notably, using m-KDIGO criteria provides more important subsequent postoperative outcomes. The m-KDIGO AKI criteria describe clinically relevant AKI in infants after cardiac surgery.

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Publisher
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1340.

Incidence of acute kidney injury among pediatric hematology/oncology patients receiving vancomycin in combination with piperacillin/tazobactam or cefepime.
Quach H.T., Esbenshade A.J., Zhao Z., Banerjee R.
Embase
Pediatric Blood and Cancer. 66(7) (no pagination), 2019. Article Number: e27750. Date of Publication: July 2019.
[Article]
AN: 627274646
There is mounting evidence that combination of antibiotic therapy with vancomycin and piperacillin/tazobactam (pip/tazo) is associated with acute kidney injury (AKI). To determine whether vancomycin plus pip/tazo is associated with higher rates of AKI compared to vancomycin plus cefepime among pediatric hematology/oncology (heme/onc) patients, we examined 121 heme/onc patients receiving at least two consecutive days of therapy with vancomycin and either pip/tazo or cefepime. Rate of AKI was higher in the pip/tazo than the cefepime group (4/27 [14.8%] vs 2/94 [2.1%], P = 0.022).

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Publisher
John Wiley and Sons Inc. (P.O.Box 18667, Newark NJ 07191-8667, United States)
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1341.

Developmental Pharmacokinetics and Age-Appropriate Dosing Design of Milrinone in Neonates and Infants with Acute Kidney Injury Following Cardiac Surgery.
Mizuno T., Gist K.M., Gao Z., Wempe M.F., Alten J., Cooper D.S., Goldstein S.L., Vinks A.A.
Embase
Clinical Pharmacokinetics. 58(6) (pp 793-803), 2019. Date of Publication: 01 Jun 2019.
[Article]
AN: 625820311
Background and Objective: Milrinone is used for the prevention of low cardiac output syndrome in pediatric patients after cardiac surgery. Milrinone is mainly eliminated by the kidneys; however, there is limited information on milrinone pharmacokinetics in infants who have acute kidney injury (AKI). The aim of this study was to develop a milrinone population pharmacokinetic model in

neonates and infants with or without AKI. The developed milrinone pharmacokinetic model was utilized for a Monte Carlo simulation analysis to identify age-appropriate dosing regimens in neonates and infants.
Method(s): Population pharmacokinetic analysis was performed with a total of 1088 serum milrinone concentrations obtained from 92 infants as part of a prospective clinical study in neonates and infants following cardiac surgery (ClinicalTrials.gov identifier NCT01966237). AKI stages were determined based on the Kidney Injury Improving Global Outcomes (KDIGO) Clinical Practice Guideline within the first three postoperative days.
Result(s): A two-compartment model was found to adequately describe the pharmacokinetic data. Allometrically scaled body weight, AKI stages, and maturation function were identified as significant predictors of milrinone clearance. The proposed dosing regimens for milrinone continuous infusions were determined based on a target concentration attainment of simulated steady-state concentration and covered three age groups across 0-12 months of age for each AKI stage.
Conclusion(s): This study provides a milrinone population pharmacokinetic model in neonates and infants and captures the developmental changes in clearance. Age-appropriate dosing regimens were determined based on the simulation analysis with the developed pharmacokinetic model. The findings will facilitate model-informed precision dosing of milrinone in infants with or without AKI.

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Clinical Trial Number
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1342.

A Prospective Study Analyzing the Association Between High-grade Ureteral Access Sheath Injuries and the Formation of Ureteral Strictures.
Stern K.L., Loftus C.J., Doizi S., Traxer O., Monga M.
Embase
Urology. 128 (pp 38-41), 2019. Date of Publication: June 2019.

[Article]
AN: 2001791297
Objective: To assess the intermediate- and long-term effect of high-grade ureteral injuries from ureteral access sheaths.
Method(s): Patients undergoing ureteroscopy for upper tract calculi were prospectively enrolled at 2 sites from 2010 to 2015. A 12/14 French sheath was used and the ureter was inspected with a flexible ureteroscope during withdrawal of the sheath and recorded. The videos were then evaluated by 2 blinded endourologists, and any injuries were graded per the Traxer ureteral injury scale. Only high-grade injuries were included. The primary endpoint was defined as ongoing hydronephrosis without an obstructing stone on follow-up imaging indicating a ureteral stricture. Logistic regression analysis was used to assess the relationship between hydronephrosis, ureteral injury, and other patient variables.
Result(s): Fifty-six patients were identified with high-grade ureteral injuries. Sixteen patients (28.6%) were female. Median age was 56.4 years (range 14-85). Median follow-up was 35.8 months (range 0-88). Three patients (5.5%) had hydronephrosis on follow-up imaging, only 1 of whom developed a de novo ureteral stricture. On univariate analysis, hydronephrosis was associated with a shorter stent duration (P = .11) and older age (P = .17).
Conclusion(s): Endoscopically identified high-grade ureteral lesions following ureteral access sheath placement do not lead to clinically significant sequelae on intermediate term follow-up, with a stricture rate comparable to those without visible injuries of 1.8%.

PMID
30878681 [https://www.ncbi.nlm.nih.gov/pubmed/?term=30878681]
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Publisher
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1343.

Low Renal Oxygen Saturation at Near-Infrared Spectroscopy on the First Day of Life Is Associated with Developing Acute Kidney Injury in Very Preterm Infants.
Bonsante F., Ramful D., Binquet C., Samperiz S., Daniel S., Gouyon J.-B., Iacobelli S.
Embase
Neonatology. 115(3) (pp 198-204), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 626047189
Background: Acute kidney injury (AKI) is a frequent complication in preterm infants, and the identification of early markers of renal hypoperfusion is a chief challenge in neonatal intensive care units.
Objective(s): To describe the association between early markers of cardiovascular function and renal perfusion with AKI occurrence in a cohort of preterm infants < 32 weeks' gestation.
Method(s): 128 infants were prospectively included from birth to discharge. During the first day of life, we assessed cardiovascular function, systemic and organ blood flow by Doppler ultrasound,

and monitored cerebral and renal regional oxygen saturation (rSO2) using near-infrared spectroscopy (NIRS). These measures were analyzed in relation to developing AKI and serum creatinine (SCr) peak from day 2 to 7 of life.
Result(s): 12 of 128 infants presented with AKI (9.4%). SCr peak was 155.3 +/- 30.2 mumol/L in infants with AKI versus 82.0 +/- 16.5 in non-AKI infants (p < 0.001). Among all measures of cardiovascular function and renal perfusion, low mean cerebral and renal rSO2 during the first day of life and a low resistive index at renal artery Doppler were significantly associated with developing AKI. After adjustment for possible confounding factors, low renal rSO2 on the first day of life remained associated with a high SCr peak from day 2 to 7 of life.
Conclusion(s): Low renal rSO2 values during the first day of life correlate with developing AKI in preterm infants < 32 weeks' gestation. NIRS monitoring of renal function during adaptation seems promising, and its very early use after birth to detect kidney hemodynamic dysfunction deserves further investigations.

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Publisher
S. Karger AG
Clinical Trial Number
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Year of Publication
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1344.

Time to acute kidney injury and its predictors among newly diagnosed Type 2 diabetic patients at government hospitals in Harari Region, East Ethiopia.
Regassa L.D., Gete Y.K., Mekonnen F.A.
Embase
PLoS ONE. 14(5) (no pagination), 2019. Article Number: e0215967. Date of Publication: May 2019.
[Article]
AN: 2001958185
Background Incidence of Acute Kidney Injury (AKI) among Type 2 diabetic patients is significantly increasing. But, earlier studies has focused on the admitted patients which may hide the true nature of the Acute Kidney Injury among Type 2 Diabetic (T2D) patients. So, this study was conducted to determine the time to Acute Kidney Injury and its predictors among Type 2 Diabetic patients in Harari Region, East Ethiopia. Methods We conducted a retrospective cohort study among type 2 diabetic patients who had been receiving treatment at government hospitals of Harari region, Ethiopia from 2013 to 2017. We extracted data from patients' medical records. We

estimated incidence rate and compared survival curves between different exposure groups using Kaplan-Meier and log-rank test. Weibull regression model was fitted to the data to identify the predictor variables. Variables with p-value <0.05 were considered statistically significant. Results Overall, 14.5% (95%CI: 11.7-17.9) of the study population developed acute kidney injury, with median survival time of 57 months. The significant predictors were physical activity [Adjusted Time Ratio (ATR):95%CI; 0.6 (0.49-0.75)], congestive heart failure [ATR:95%CI; 0.84 (0.71-0.99)], chronic kidney disease [ATR:95%CI; 0.77(0.65-0.91)], hypertension [ATR:95%CI; 0.78(0.65-0.91)], obesity [ATR:95%CI; 0.84(0.74-0.96)], diabetic nephropathy [ATR:95%CI; 0.80(0.65-0.98)], diuretics & beta blockers [ATR:95%CI; 0.85(0.74-0.97)], and delay of follow-up [ATR:95%CI; 0.97(0.96-0.98)]. Conclusions Incidence of acute kidney injury was high in our study area. Hence, identification and controlling of comorbidities along with regular monitoring of kidney function are needed to prevent or delay the risk of acute kidney injury in type 2 diabetic patients.

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Publisher
Public Library of Science (E-mail: plos@plos.org)
Year of Publication
2019

1345.

Efficacy and Safety of Chinese Herbs for the Prevention of the Risk of Renal Damage in Henoch-Schonlein Purpura in Children: Meta-Analysis of Randomized Controlled Trials and GRADE Evaluation.
Li B., Yang M., He G.-L., Gao X.-G., Li L., Zhai W.-S.
Embase
Evidence-based Complementary and Alternative Medicine. 2019 (no pagination), 2019. Article Number: 4089184. Date of Publication: 2019.
[Article]
AN: 627475247
Objective. To evaluate the efficacy and safety of traditional Chinese medicine in preventing kidney damage caused by Henoch-Schonlein Purpura (HSP) in Children by meta-analysis. Methods. We systematically searched the main Chinese and English electronic databases and collected randomized controlled trials of Chinese herbs in children with HSP until July 2018. Then we used the bias risk assessment tool in Cochrane Handbook 5. 1. 0 to complete the risk assessment of the included studies. We utilized STATA12.0 and RevMan 5.3 for meta-analysis and GRADE pro. for quality evaluation of evidence. Result. (1) Meta-analysis: data from 39 studies, representing 3643 individuals, were included in the analysis. Thirty-seven studies were treated with traditional Chinese medicine for clearing away heat and cooling blood, which were combined. On this basis, subgroup analysis was conducted according to the bias risk of the original study. It showed that Chinese herbs can significantly improve the treatment effect (OR: 4.31, 95% CI [3.34, 5.57], P < 0.01) and reduce the risk of renal damage (RR: 0.36; 95% CI [0.21,

0.61], P < 0.01) and the risk of recurrence (RR: 0.43, 95% CI [0.34, 0.54], P<0.01). (2) Side effect: a total of 7 studies described adverse reactions, and 12 of 319 patients in therapy group had adverse events and 20 of 263 patients in control group. (3) Publication bias: the bias risk Egger's test for the incidence of kidney injury was P=0.572, the relapse rate Egger's test was P=0.175, the efficiency was combined with the low-risk original study, and the bias risk Egger's test was P=0.175. There was not any significant publication bias based on the funnel plot and Egger's test. (4) GRADE evaluation: GRADE evaluation showed that the quality of evidence in the risk of renal damage and recurrence rate was moderate. Conclusion. Chinese medicine treatment can prevent the occurrence of renal damage in children with HSP and can reduce the recurrence rate, the incidence of adverse reactions, and the effect in terms of efficiency. However, the quality of the included studies in the meta-analysis and the quality of the evidence of outcomes were not high; the clinical use of the evidence needs to be cautious.

Status
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1346.

A retrospective pilot study to examine the potential of aspartate aminotransferase to alanine aminotransferase ratio as a predictor of postoperative acute kidney injury in patients with hepatocellular carcinoma.
Xu J., Xia Y., Li S., Cheng X., Hu S., Gao Y., Zhou X., Wang G., Zheng Q.
Embase
Annals of Clinical Biochemistry. 56(3) (pp 357-366), 2019. Date of Publication: 01 May 2019.
[Article]
AN: 626652463
Background: The aspartate aminotransferase (AST)/alanine aminotransferase (ALT) ratio (AST/ALT) is an independent predictor of hepatic disease.
Objective(s): To evaluate the association between preoperative AST/ALT and postoperative acute kidney injury in hepatocellular carcinoma patients.
Method(s): A total of 422 hepatitis B- or C- virus-associated hepatocellular carcinoma patients, who underwent hepatectomy between September 2012 and April 2018, were enrolled this retrospective study. From all patients, aspartate aminotransferase and alanine aminotransferase parameters were collected, and the AST/ALT ratio was calculated. For diagnostic criteria of postoperative acute kidney injury, the Kidney Disease Improving Global Outcomes (KDIGO) criteria guidelines were used.
Result(s): In 48 patients (11.4%), postoperative acute kidney injury was confirmed. In patients with postoperative acute kidney injury, the mean preoperative serum AST/ALT was significantly higher when compared with patients without postoperative acute kidney injury. After multivariate logistic regression analysis, AST/ALT, haemoglobin, age, hypertension, Child-Turcotte-Pugh classification and the Milan criteria were all confirmed as predictive factors of postsurgical acute

kidney injury. We found that an AST/ALT of 1.29 was the best cut-off point for predicting postoperative acute kidney injury. The positive predictive value (23.9%) of the cut-off is actually poor. After matching the propensity score, AST/ALT >=1.29 was still confirmed as an independent predictor of postoperative acute kidney injury by multivariate analysis.
Conclusion(s): Preoperative elevated serum AST/ALT may be a potential independent predictor of postoperative acute kidney injury in hepatocellular carcinoma patients who have undergone hepatectomy. This needs to be tested in further prospective studies.

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Year of Publication
2019

1347.

Paracentesis-induced acute kidney injury in decompensated cirrhosis - Prevalence and predictors.
Patil V., Jain M., Venkataraman J.
Embase
Clinical and Experimental Hepatology. 5(1) (pp 55-59), 2019. Date of Publication: 2019.
[Article]
AN: 627508905
Aim of the study: A subgroup of cirrhotic patients undergoing therapeutic paracentesis develop acute kidney injury (AKI) despite adequate colloidal replacement. The aim of the study was to determine the prevalence and predictors of paracentesis-induced AKI in cirrhotic patients with normal baseline renal parameters and adequate colloidal replacement.
Material(s) and Method(s): This prospective, observational analytical study was undertaken between April 2015 and April 2017. All patients undergoing therapeutic paracentesis were enrolled as per inclusion and exclusion criteria. Based on Acute Kidney Injury Network (AKIN) criteria for AKI, comparative analysis was performed between those developing and not developing AKI for demography, renal parameters, frequency and quantity of paracentesis per session. Univariate and multivariate regression analyses were performed to determine the predictors of AKI.
Result(s): Altogether, 177 patients underwent 859 therapeutic paracenteses. Ninety-four paracentesis sessions resulted in an AKI (10.9%). The median number of paracenteses was 10 (range 1-25) and the median volume of fluid drained per paracentesis was 6 l (1-20 l). In univariate analysis, younger age ($p < 0.02$), higher MELD (Model For End-Stage Liver Disease) score ($p < 0.0001$), CTP (Child-Turcotte-Pugh) class C ($p < 0.017$) and prior history of renal dysfunction ($p < 0.0001$) were significantly associated with AKI. For each liter of fluid drained, the

risk of AKI increased by 1.24 times. Frequency of paracentesis did not influence the AKI. In multivariate logistic regression, the significant predictors of AKI were past renal dysfunction, a higher MELD and volume of fluid tapped at paracentesis.
Conclusion(s): Post-paracentesis AKI occurs in 10.9% of cases, despite adequate colloid replacement. For each 1 l of fluid drained during paracentesis, the risk of AKI increased by 1.24 times.

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1348.

Injury severity score as a predictor for requirement of surgical exploration in high grade renal trauma.
Vispute B.R., Pawar P.W., Sawant A.S., Arora A.M., Kasat G.V., Tamhankar A.S.
Embase
Journal of Clinical and Diagnostic Research. 13(4) (pp PC01-PC04), 2019. Date of Publication: April 2019.
[Article]
AN: 2001847843
Introduction: With the current advances in intensive care protocols, conservative management is successful in a large proportion of renal trauma patients who are haemodynamically stable. In spite of the current trend towards conservative management of renal trauma, there still remains a dilemma regarding need for surgery in patients with grade IV renal trauma. Various predictors of failure of conservative management for high grade renal trauma have been studied.
Aim(s): To assess the utility of the Injury Severity Score (ISS) in predicting the need for surgical exploration in patients with high grade renal trauma.
Material(s) and Method(s): We retrospectively studied 38 patients with renal injury over a period of 4 years. The Injury Severity Score (ISS) was calculated for all patients on admission. Renal injury grading on contrast enhanced computed tomography followed the American Association for the Surgery of Trauma (AAST) system. Patients were divided into three management groups: Group A- conservative management; Group B- double J ureteric stenting; and Group C- surgical exploration. The ISS in different management groups were compared using the Mann-Whitney U test.
Result(s): Fifteen (39.47%) patients required intervention and 23 (60.5%) were managed conservatively. In the conserved Group A, 39.1%, 47.8% and 13% had injury grades 1, 2 and 3 respectively. Seven patients (18.4%) required ureteric stenting or pigtailing of perinephric collection (Group B) for urinary extravasation. All 7 had grade 4 injury. Eight patients (21.8%) were explored (Group C), out of which five had grade 4 injuries while three had grade 5 injuries. Average ISS in the 3 groups were 12.3, 11 and 19 respectively. Group C had significantly higher ISS than A (p=0.005) and B (p=0.0002). Of the grade 4 injuries, those who required surgical exploration had a higher ISS (17.80) compared to those who could be managed with minimal intervention (9.85); and this difference was statistically significant (p=0.007). ROC curve analysis showed an AUC of 0.863 for the predictive value of ISS for surgical exploration in renal trauma.
Conclusion(s): Grade 4 renal injuries with a lower ISS can be managed with minimally invasive management in the form of double J stenting. The ISS can guide clinical decision making when

faced with a dilemma of conservative vs surgical management of patients with high grade renal trauma.

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Journal of Clinical and Diagnostic Research (No 3, 1/9 Roop Nagar,GT Karnal Road, Delhi 110007, India)
Year of Publication
2019

1349.

Pediatric blunt renal trauma practice management guidelines: Collaboration between the Eastern Association for the Surgery of Trauma and the Pediatric Trauma Society.
Hagedorn J.C., Fox N., Ellison J.S., Russell R., Witt C.E., Zeller K., Ferrada P., Draus J.M.
Embase
Journal of Trauma and Acute Care Surgery. 86(5) (pp 916-925), 2019. Date of Publication: 01 May 2019.
[Conference Paper]
AN: 627521973
BACKGROUND Injury to the kidney from either blunt or penetrating trauma is the most common urinary tract injury. Children are at higher risk of renal injury from blunt trauma than adults, but no pediatric renal trauma guidelines have been established. The authors reviewed the literature to guide clinicians in the appropriate methods of management of pediatric renal trauma. METHODS Grading of Recommendations Assessment, Development and Evaluation methodology was used to aid with the development of these evidence-based practice management guidelines. A systematic review of the literature including citations published between 1990 and 2016 was performed. Fifty-one articles were used to inform the statements presented in the guidelines. When possible, a meta-analysis with forest plots was created, and the evidence was graded. RESULTS When comparing nonoperative management versus operative management in hemodynamically stable pediatric patient with blunt renal trauma, evidence suggests that there is a reduced rate of renal loss and blood transfusion in patients managed nonoperatively. We found that in pediatric patients with high-grade American Association for the Surgery of Trauma grade III-V (AAST III-V) renal injuries and ongoing bleeding or delayed bleeding, angioembolization has a decreased rate of renal loss compared with surgical intervention. We found the rate of posttraumatic renal hypertension to be 4.2%. CONCLUSION Based on the completed meta-analyses and Grading of Recommendations Assessment, Development and Evaluation profile, we are making the following recommendations: (1) In pediatric patients with blunt renal trauma of all grades, we strongly recommend nonoperative management versus operative management in hemodynamically stable patients. (2) In hemodynamically stable pediatric patients with high-grade (AAST grade III-V) renal injuries, we strongly recommend angioembolization versus surgical intervention for ongoing or delayed bleeding. (3) In pediatric patients with renal trauma, we strongly recommend routine blood pressure checks to diagnose hypertension. This review of the literature reveals limitations and the need for additional research on diagnosis and management of pediatric renal trauma.

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1350.

Colour doppler and biomarkers utility for renal damage due to congenital hydronephrosis.
Guo Y.-N., Chen X.-Y., Liu L.-L.
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Journal of the College of Physicians and Surgeons Pakistan. 29(2) (pp 141-144), 2019. Date of Publication: 01 Feb 2019.
[Article]
AN: 626190145
Objective: To determine colour doppler and serum biomarkers spectrum in children with congenital hydronephrosis.
Study Design: An observational study. Place and Duration of Study: Department of Pediatric Nephrology, West China 2nd University Hospital of Sichuan University and Key Laboratory of Birth Defects and Related Disease of Women and Children (Sichuan University), China, from January to December 2017. Methodology: A total of 95 children with hydronephrosis were selected as case group. According to the degree of hydronephrosis, the patients were divided into mild hydronephrosis group, moderate hydronephrosis group, and severe hydronephrosis group. Forty children with normal renal function were selected as normal comparison group. Peak systolic velocity (Vmax), end diastolic velocity (Vmin), resistance index (RI), pulsatility index (PI), and serum cystatin C (CysC),2-microglobulin (2-MG), and1-microglobulin (1-MG) of all subjects in both groups were recorded and compared.
Result(s): The Vmax, Vmax of main renal artery (MRA) and interlobar renal artery (IRA) in case group were lower than those of normal group (all $p<0.001$). RI of MRA and IRA in case group were higher than those of normal control group (both $p<0.001$). There were no significant differences in the PI of MRA and IRA between the two groups ($p=0.700$, and 0.250 respectively). The levels of serum CysC,2-MG and1-MG in normal control group, mild hydronephrosis group, moderate hydronephrosis group, and severe hydronephrosis group were significantly different (all $p<0.001$), and the levels of serum CysC,2-MG,1-MG were also different in children with different degrees of hydronephrosis.

Conclusion(s): Combined detection of colour doppler and serum biomarkers CysC,2-MG and1-MG in the diagnosis of renal damage in congenital hydronephrosis is feasible and reliable.

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1351.

Assessment and prediction of acute kidney injury in patients with decompensated cirrhosis with serum cystatin C and urine N-acetyl-beta-D-glucosaminidase.
Kim T.H., Lee H.A., Seo Y.S., Lee Y.R., Yim S.Y., Lee Y.S., Suh S.J., Jung Y.K., Kim J.H., An H., Yim H.J., Yeon J.E., Byun K.S., Um S.H.
Embase
Journal of Gastroenterology and Hepatology (Australia). 34(1) (pp 234-240), 2019. Date of Publication: January 2019.
[Article]
AN: 623882813
Background and Aim: For appropriate management of acute kidney injury (AKI) in cirrhotic patients, accurate differentiation of the types of AKI, prerenal azotemia (PRA), hepatorenal syndrome (HRS), and acute tubular necrosis (ATN) is very important. Urine N-acetyl-beta-D-glucosaminidase (NAG) has been proposed as a good tubular injury marker in many studies, but its efficacy in cirrhosis is unclear. This study was performed to evaluate the usefulness of urine NAG in patients with decompensated cirrhosis.
Method(s): In 114 hospitalized patients with decompensated cirrhosis, we assessed serum creatinine, cystatin C, and urine NAG levels as markers for AKI differentiation and development and patient mortality.
Result(s): Thirty patients diagnosed with AKI at baseline had significantly higher serum creatinine and cystatin C levels, urine NAG levels, and Child-Pugh scores than those without AKI. Only urine NAG levels were significantly higher in patients with ATN than those with PRA or HRS (116.1 +/- 46.8 U/g vs 39.4 +/- 20.2 or 54.0 +/- 19.2 U/g urinary creatinine, all $P < 0.05$). During a median follow up of 6.1 months, AKI developed in 17 of 84 patients: PRA in nine, HRS in six, and ATN in three. Higher serum cystatin C and urine NAG levels were independent predictors of AKI development in patients with decompensated cirrhosis. Survival was significantly associated with low serum cystatin C and urine NAG levels.
Conclusion(s): Serum cystatin C and urine NAG levels are useful to differentiate types of AKI and are strong predictors for AKI development and mortality in patients with decompensated cirrhosis.

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1352.

Hypernatremia and acute kidney injury in exclusive breast fed babies-time to reconsider!.
Sharma S., Poddar S., Yadav A., Debata P.K., Roy N.
Embase
Journal of Clinical and Diagnostic Research. 13(3) (pp SC18-SC22), 2019. Date of Publication: March 2019.
[Article]
AN: 2001613606
Aim: To study clinical presentation, severity and outcome in hypernatremic term breast fed young infants who develop AKI.
Material(s) and Method(s): This was a retrospective study in which data analysis of all consecutive admitted young infants <=2 months age who had hypernatremia as well as deranged kidney functions in last six months was done. AKI was assessed by neonatal RIFLE criteria. Analysis was done by student's t-test or Fischer-exact test or one-way ANOVA (multiple groups) or non-parametric test as applicable. Pearson correlation coefficient was used to analyse correlation between groups. Statistical analysis of data was done using SPSS version 21.0.
Result(s): Sixteen babies were included. Majority i.e., 81% (13/16 in each group) was born to primiparous women and was on exclusive breast feeding; 75% babies presented with poor oral acceptance and 56% with fever. Other complaints were lethargy, poor urine output and excessive crying. An 80% of the babies had severe AKI (AKI stage III). A total of 31% (5 out of 16) died. Mean serum sodium was 165+/-8.4 mEq/L with range of 156-183 mEq/L. Median creatinine value was 2.4 mg/dL. Presence of sepsis, requirement of mechanical ventilation, vasopressors, high mean values of blood urea and serum creatinine ($p<0.05$) were significantly associated with poorer outcome.
Conclusion(s): Hypernatremia is severe enough to cause AKI in exclusive breast fed babies which is not uncommon and is difficult to recognize clinically. Presence of other co-morbidities like sepsis portends poorer outcome. High index of suspicion in all babies specially without predisposing factors may lead to early diagnosis and timely management.

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Journal of Clinical and Diagnostic Research (No 3, 1/9 Roop Nagar,GT Karnal Road, Delhi 110007, India)

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2019

1353.

Acute kidney injury and 1-year mortality after colorectal cancer surgery: A population-based cohort study.
Slagelse C., Gammelager H., Iversen L.H., Sorensen H.T., Christiansen C.F.
Embase
BMJ Open. 9(3) (no pagination), 2019. Article Number: e024817. Date of Publication: 01 Mar 2019.
[Article]
AN: 626741512
Objectives Acute kidney injury (AKI) is a frequent postoperative complication, but the mortality impact within different postoperative time frames and severities of AKI are poorly understood. We examined the occurrence of postoperative AKI among colorectal cancer (CRC) surgery patients and the impact of AKI on mortality during 1 year after surgery. Design Observational cohort study. We defined the exposure, AKI, as a 50% increase in plasma creatinine or initiation of renal replacement therapy within 7 days after surgery or an absolute increase in creatinine of 26 mumol/L within 48 hours. Setting Population-based Danish medical databases. Participants A total of 6580 patients undergoing CRC surgery in Northern Denmark during 2005-2011 were included from the Danish Colorectal Cancer Group database. Outcomes measure Occurrence of AKI and 8-30, 31-90 and 91-365 days mortality in patient with or without AKI. Results AKI occurred in 1337 patients (20.3%) of the 6580 patients who underwent CRC surgery. Among patients with AKI, 8-30, 31-90 and 91-365 days mortality rates were 10.1% (95% CI 8.6% to 11.9%), 7.8% (95% CI 6.4% to 9.5%) and 12.0% (95% CI 10.3% to 14.2%), respectively. Compared with patients without AKI, AKI was associated with increased 8-30 days mortality (adjusted HR (aHR)=4.01,95% CI 3.11 to 5.17) and 31-90 days mortality (aHR 2.08,95% CI 1.60 to 2.69), while 91-365 days aHR was 1.12 (95% CI 0.89 to 1.41). We observed no major differences in stratified analyses. Conclusions AKI after surgery for CRC is a frequent postoperative complication associated with a substantially increased 90-day mortality. AKI should be considered a potential target for reducing 90-day mortality.

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Publisher
BMJ Publishing Group (E-mail: subscriptions@bmjgroup.com)
Year of Publication
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1354.

EResearch in acute kidney injury: A primer for electronic health record research.
Joyce E.L., DeAlmeida D.R., Fuhrman D.Y., Priyanka P., Kellum J.A.
Embase
Nephrology Dialysis Transplantation. 34(3) (pp 401-407), 2019. Date of Publication: 01 Mar 2019.
[Review]
AN: 626745962
Acute kidney injury (AKI) has a significant impact on patient morbidity and mortality as well as overall health care costs. eResearch, which integrates information technology and information management to optimize research strategies, provides a perfect platform for necessary ongoing AKI research. With the recent adoption of a widely accepted definition of AKI and near-universal use of electronic health records, eResearch is becoming an important tool in AKI research. Conducting eResearch in AKI should ideally be based on a relatively uniform methodology. This article is the first of its kind to describe a methodology for pursuing eResearch specific to AKI and includes an illustrative database example for critically ill patients. We discuss strategies for using serum creatinine and urine output in large databases to identify and stage AKI and ways to interpolate missing values and validate data. Issues specific to the pediatric population include variation in serum creatinine with growth, varied severity of illness scoring systems and medication dosage based on weight. Many of these same strategies used to optimize AKI eResearch can be applicable to real-time AKI alerts with potential integration of additional clinical variables.

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Oxford University Press
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2019

1355.

Birth weight, Apgar scores and gentamicin were associated with acute kidney injuries in VLBW neonates requiring treatment for patent ductus arteriosus.
Aygun A., Poryo M., Wagenpfeil G., Wissing A., Ebrahimi-Fakhari D., Zemlin M., Gortner L., Meyer S.
Embase
Acta Paediatrica, International Journal of Paediatrics. 108(4) (pp 645-653), 2019. Date of Publication: April 2019.
[Article]
AN: 624144987

Aim: We assessed the risk factors for transient acute kidney injury in very low birth weight (VLBW) infants treated for patent ductus arteriosus (PDA) using the serum creatinine-based criteria in Kidney Disease: Improving Global Outcomes.
Method(s): This retrospective study of infants requiring ibuprofen and, or, surgery for haemodynamic relevant PDAs was performed at the University Children's Hospital of Saarland, Homburg, Germany, from January 2009 to December 2015.
Result(s): We studied 422 infants with a mean birth weight of 1059 +/- 308.2 g. Acute kidney injuries developed in 150/295 infants (50.9%) with spontaneous PDA closure, in 46/82 (56.1%) who received intravenous ibuprofen treatment, in 18/24 (75.0%) who had surgery and in 15/21 infants (71.4%) who received both medical and surgical treatment. Acute kidney injuries were associated with birth weight and gestational age, Apgar scores at 10 minutes, the PDA size corrected for birth weight, a PDA with three affected circulatory territories, PDA surgery and gentamicin. Multiple logistic regression analysis showed particular associations between acute kidney injury and birth weight ($p = 0.001$), the 10-minute Apgar score ($p = 0.02$) and gentamicin ($p = 0.043$).
Conclusion(s): Birth weight, the 10-minute Apgar score and gentamicin were particularly associated with acute kidney injuries in our cohort.

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Publisher
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Year of Publication
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1356.

The Tubular Damage Markers: Neutrophil Gelatinase-Associated Lipocalin and Kidney Injury Molecule-1 in Newborns with Intrauterine Growth Restriction.
Kamianowska M., Szczepanski M., Kulikowska E.E., Bebko B., Wasilewska A.
Embase
Neonatology. 115(2) (pp 169-174), 2019. Date of Publication: 01 Feb 2019.
[Article]
AN: 625419825
Background: Intrauterine growth restriction (IUGR) is a poorly understood complication of pregnancy. It may be associated with various diseases in adulthood, such as hypertension, cardiovascular disease, insulin resistance, and end-stage renal disease.

Objective(s): The aim of this study was to check whether IUGR affects the function of renal tubules, as assessed by the tubular damage markers neutrophil gelatinase-associated lipocalin (NGAL) and kidney injury molecule 1 (KIM-1).
Method(s): The study included 126 term neonates. Thirty-eight newborns were the result of pregnancies complicated by IUGR. Eighty-eight healthy newborns were the result of normal pregnancies with no prenatal or perinatal complications. The concentrations of urinary NGAL and KIM-1 were determined with a commercially available ELISA kit and were normalized for urinary creatinine (Cr) concentration.
Result(s): We found a significantly higher urinary concentration of NGAL and NGAL/Cr ratio in newborns from pregnancies complicated by IUGR when compared to the reference group. We found that female gender was associated with a higher concentration of urinary NGAL and also urinary NGAL/Cr.
Conclusion(s): This is the first work that demonstrates that urinary NGAL concentration and urinary NGAL/Cr are significantly higher in infants that are small for gestational age than in appropriate-for-gestational-age infants. This might indicate subclinical kidney damage in newborns with IUGR.

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Publisher
S. Karger AG
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1357.

Acute kidney injury and short-term renal support in the post-operative management of neonates following repair of transposition of the great arteries.
Harmer M.J., Southgate G., Smith V., Bharucha T., Viola N., Griksaitis M.J.
Embase
Progress in Pediatric Cardiology. 52 (pp 26-32), 2019. Date of Publication: March 2019.
[Article]
AN: 2001102967
Neonates requiring congenital cardiac surgery are at risk of acute kidney injury, associated with significant morbidity, mortality, and increased hospital length of stay; treatment may require renal replacement therapy. Data for single cardiac defect cohorts is important to stratify risk, but is lacking for transposition of the great arteries. Our study aimed at collecting data for this single lesion. A single-centre, retrospective analysis of 71 cases of arterial switch operation in neonates with isolated transposition of the great arteries, or transposition of the great arteries with ventricular septal defect, including length of stay, renal function and need for renal replacement therapy was performed. Acute kidney injury developed in 50.7%, and was associated with longer paediatric intensive care and hospital stays ($p < 0.05$). Paediatric intensive care unit length of stay correlated with higher peak creatinine and urea ($p < 0.05$) and also with higher lactate levels at paediatric intensive care unit admission and 1 and 6 h post-admission ($p < 0.05$). Renal replacement therapy via peritoneal dialysis was delivered to 11.1%, but this was not found to prolong paediatric intensive care unit length of stay. Initiation of renal replacement therapy was

associated with a positive fluid balance at 1 and 6 h ($p < 0.05$). This study analyses renal outcomes in a cohort of neonates with transposition of the great arteries undergoing an arterial switch operation. Acute kidney injury is a significant complication, with accompanying need for renal replacement therapy. Development of acute kidney injury and a positive fluid balance were associated with increased length of stay. Initiation of renal replacement therapy was not associated with increased length of stay, and with some evidence from the literature that early or prophylactic peritoneal dialysis catheter insertion improves outcomes, these data report minimal complication rates which may be important when deciding to utilise peritoneal dialysis.

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1358.

Epidemiology of acute kidney injury in hospitalized pregnant women in China.
Liu D., He W., Li Y., Xiong M., Wang L., Huang J., Jia L., Yuan S., Nie S.
Embase
BMC Nephrology. 20(1) (no pagination), 2019. Article Number: 67. Date of Publication: 26 Feb 2019.
[Article]
AN: 626519328
Background: Epidemiologic data of acute kidney injury (AKI) during pregnancy is lacking in China. This study aims to determine the effect of pregnancy on the risk of AKI among hospitalized women of childbearing age, and to describe the incidence, risk factors and outcomes of AKI in hospitalized pregnant women in China.
Method(s): We previously conducted a nationwide, multi-centered cohort of hospitalized patients from 25 hospitals in China during 1/1/2013 to 31/12/2015. Women of childbearing age (14-50 year) who had at least two serum creatinine tests within any 7-day window were selected as analysis set. Patient-level data were obtained from the electronic hospitalization information system and laboratory databases. AKI events were identified according to the creatinine criteria of Kidney Disease Improving Global Outcomes.
Result(s): Among 110,873 women of childbearing age, pregnant women (n = 10,920) had a 51% higher risk of AKI than non-pregnant women (n = 99,953). Community acquired and hospital acquired AKI occurred in 3.6% (n = 393) and 3.7% (n = 402) of the pregnant women, respectively, giving rise to an overall AKI incidence of 7.3%. While, hospital coding would have identified less than 5% of AKI episodes. The top three risk factors of AKI during pregnancy, ranked in order of decreasing population attributable fractions were pregnancy-induced hypertension syndrome (21.1%), acute fatty liver (13.5%), and chronic kidney disease (6.2%).

Conclusion(s): AKI in pregnancy is associated with increased maternal mortality rate, longer length of stay and higher daily cost. AKI is a common and severe complication during pregnancy in China.

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1359.

Computed tomography with intravenous contrast is not associated with development of acute kidney injury in severely injured pediatric patients.
McGaha P.K., Johnson J., Garwe T., Sarwar Z., Motghare P., Daly W., Letton R.
Embase
American Surgeon. 85(1) (no pagination), 2019. Date of Publication: January 2019.
[Article]
AN: 2001616744
Data for the incidence of acute kidney injury (AKI) related to intravenous contrast administration in the pediatric trauma population are limited. Obtaining a creatinine value before elective CT scans is a relatively accepted standard of care. We sought to determine whether there was any significant difference in the incidence of AKI between severely injured patients who received IV contrast and those who did not. We reviewed data from the trauma registry at our Level I pediatric trauma center. We limited the patients to severely injured pediatric traumas (<15 years old) directly transported from the scene of injury with a creatinine level measured on arrival. Two hundred and eleven patients were included in the study. AKI was defined by the criteria of the AKI Network. We then compared incidence of AKI in those who received a CT scan with IV contrast with those who did not receive IV contrast. The two groups were comparable in age, gender, Glasgow Coma Scale, Injury Severity Score, mean creatinine on arrival, and mean creatinine post-CT scan/arrival. There was no significant difference in AKI between the two. In a subgroup analysis of patients presenting in shock, there was no significant difference in AKI. Our study suggests that IV contrast is not associated with the development of AKI in severely injured pediatric trauma patients. Although obtaining a creatinine value before exposure is ideal, a CT scan with IV contrast in severely injured children should not be delayed to obtain a creatinine value.

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1360.

Kidney injury molecule-1, a sensitive and specific marker for identifying acute proximal tubular injury, can be used to predict renal functional recovery in native renal biopsies.
Yin W., Kumar T., Lai Z., Zeng X., Kanaan H.D., Li W., Zhang P.L.
Embase
International Urology and Nephrology. 51(12) (pp 2255-2265), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 2003492137
Kidney injury molecule-1 (KIM-1) staining has been shown to be very useful in identifying acute proximal tubular injury, but its sensitivity, specificity and predicting values for the recovery of renal function after injury in renal biopsies have not been well established. In the first study, we randomly selected 184 renal biopsies from a wide age range of patients (children to elderly) with various renal diseases. KIM-1 staining scores were significantly correlated with serum creatinine (sCr) levels ($P < 0.05$) in all age groups. Receiver-operating characteristic curve (ROC) was generated to evaluate true-positive rate (sensitivity) and true-negative rate (1-specificity). The area under the curve (AUC) in pediatric cases was 0.74, which demonstrated KIM-1 was a fair index in correlating with sCr. In adults, the AUC was 0.87, indicating that KIM-1 was an even better index in the adult population in correlating to sCr. The second study was to determine whether KIM-1 could be a potential predictor of the recovery of acute kidney injury (AKI), and 51 indicated native biopsies with acute tubular injury were randomly selected for KIM-1 staining and sCr follow-up over a 6-month period. A higher KIM-1/sCr ratio (0.57 +/- 0.06) was significantly and positively associated with a better reduction in sCr over 6 months. In summary, our data demonstrated that KIM-1 staining in renal biopsies is a sensitive and specific marker to identify acute tubular injury and KIM-1/sCr ratio is useful for predicting the recovery of renal function after injury, although some patients' sCr levels cannot return to their baseline levels.

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1361.

Vancomycin Prescribing and Therapeutic Drug Monitoring in Children With and Without Acute Kidney Injury After Cardiac Arrest.
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Embase
Pediatric Drugs. (no pagination), 2019. Date of Publication: 2019.
[Article]
AN: 626791590
Background: Acute kidney injury (AKI) commonly occurs after cardiac arrest. Those subsequently treated with vancomycin are at additional risk for drug-induced kidney injury.
Objective(s): We aimed to determine whether opportunities exist for improved drug monitoring after cardiac arrest.
Method(s): This was a retrospective cohort study of children aged 30 days-17 years treated after cardiac arrest in an intensive care unit from January 2010 to September 2014 who received vancomycin within 24 h of arrest. Vancomycin dosing and monitoring were compared between those with and without AKI, with AKI defined as pRIFLE (pediatric risk, injury, failure, loss, end-stage renal disease) stage 2-3 AKI at day 5 using Schwartz formula-calculated estimated glomerular filtration rate (eGFR).
Result(s): Of 43 children, 16 (37%) had AKI at day 5. Age, arrest duration, median time to first vancomycin dose, and the number of doses before and time to first vancomycin concentration measurement were similar between groups. Children with AKI had higher initial vancomycin concentrations than those without AKI (median 16 vs. 7 mg/L; p = 0.003). A concentration was not measured before the second dose in 44% of children with AKI. Initial eGFR predicted day 5 AKI. In children with AKI, the initial eGFR was lower in those with than those without a concentration measurement before the second dose (29 mL/min/1.73 m2 [interquartile range (IQR) 23-47] vs. 52 [IQR 50-57]; p = 0.03) but well below normal in both.
Conclusion(s): In children with AKI after cardiac arrest, decreased vancomycin clearance was evident early, and early monitoring was not performed universally in those with low initial eGFR. Earlier vancomycin therapeutic drug monitoring is indicated in this high-risk population.

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1362.

Urine biomarkers of chronic kidney damage and renal functional decline in childhood-onset systemic lupus erythematosus.
Brunner H.I., Gulati G., Klein-Gitelman M.S., Rouster-Stevens K.A., Tucker L., Ardoin S.P., Onel K.B., Mainville R., Turnier J., Aydin P.O.A., Witte D., Huang B., Bennett M.R., Devarajan P.
Embase
Pediatric Nephrology. 34(1) (pp 117-128), 2019. Date of Publication: 01 Jan 2019.
[Article]
AN: 623749328
Objectives: To delineate urine biomarkers that reflect kidney structural damage and predict renal functional decline in pediatric lupus nephritis (LN).
Method(s): In this prospective study, we evaluated kidney biopsies and urine samples of 89 patients with pediatric LN. Urinary levels of 10 biomarkers [adiponectin, ceruloplasmin, kidney injury molecule-1, monocyte chemotactic protein-1, neutrophil gelatinase-associated lipocalin, osteopontin, transforming growth factor-s (TGFs), vitamin-D binding protein, liver fatty acid binding protein (LFABP), and transferrin] were measured. Regression analysis was used to identify individual and combinations of biomarkers that determine LN damage status [NIH-chronicity index (NIH-CI) score <= 1 vs. >= 2] both individually and in combination, and biomarker levels were compared for patients with vs. without renal functional decline, i.e., a 20% reduction of the glomerular filtration rate (GFR) within 12 months of a kidney biopsy.
Result(s): Adiponectin, LFABP, and osteopontin levels differed significantly with select histological damage features considered in the NIH-CI. The GFR was associated with NIH-CI scores [Pearson correlation coefficient (r) = - 0.49; p < 0.0001] but not proteinuria (r = 0.20; p > 0.05). Similar to the GFR [area under the ROC curve (AUC) = 0.72; p < 0.01], combinations of osteopontin and adiponectin levels showed moderate accuracy [AUC = 0.75; p = 0.003] in discriminating patients by LN damage status. Renal functional decline occurred more commonly with continuously higher levels of the biomarkers, especially of TGFs, transferrin, and LFABP.
Conclusion(s): In combination, urinary levels of adiponectin and osteopontin predict chronic LN damage with similar accuracy as the GFR. Ongoing LN activity as reflected by high levels of LN activity biomarkers heralds renal functional decline. Key messages: * Levels of osteopontin and adiponectin measured at the time of kidney biopsy are good predictors of histological damage with lupus nephritis. * Only about 20% of children with substantial kidney damage from lupus nephritis will have an abnormally low urine creatinine clearance. * Continuously high levels of biomarkers reflecting lupus nephritis activity are risk factors of declining renal function.

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1363.

Acute kidney injury in children with chronic liver disease.
Deep A., Saxena R., Jose B.
Embase
Pediatric Nephrology. 34(1) (pp 45-59), 2019. Date of Publication: 01 Jan 2019.
[Review]
AN: 621590507
Acute kidney injury (AKI) is a common accompaniment in patients with liver disease. The causes, risk factors, manifestations and management of AKI in these patients vary according to the liver disease in question (acute liver failure, acute-on-chronic liver failure, post-liver transplantation or metabolic liver disease). There are multiple causes of AKI in patients with liver disease-pre-renal, acute tubular necrosis, post-renal, drug-induced renal failure and hepatorenal syndrome (HRS). Definitions of AKI in liver failure are periodically revised and updated, but pediatric definitions have still to see the light of the day. As our understanding of the pathophysiology of liver disease and renal involvement improves, treatment modalities have become more advanced and rationalized. Treatment includes reversing precipitating factors, such as infections and gastrointestinal bleeding, volume expansion, paracentesis and vasoconstrictors. This approach is tried and tested in adults. A pediatric tailored approach is still lacking due to inadequate numbers of patients, differences in causes of AKI and paucity of literature. In this review, we attempt to explore the pathophysiological basis, treatment modalities and controversies in the diagnosis and treatment of AKI in pediatric patients with chronic liver disease and discuss our own personal practice. We recognize that, although it is not a very commonly encountered entity in pediatric population, HRS has specific diagnostic criteria and treatment modalities that differ from other causes of AKI in patients with chronic liver disease; hence among the etiologies of kidney injury in patients with chronic liver disease, we focus here on HRS.

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1364.

Sacral neuromodulation in congenital lumbo-sacral and traumatic spinal cord defects with neurogenic lower urinary tract symptoms: a single-center experience in children and adolescents.
Sharifiaghdas F.
Embase
World journal of urology. 37(12) (pp 2775-2783), 2019. Date of Publication: 01 Dec 2019.
[Article]
AN: 628109513
PURPOSE: This study evaluated sacral neuromodulation's effectiveness for managing refractory neuropathic lower urinary tract dysfunction in children and adolescents.
METHOD(S): Twenty-five children and adolescents underwent peripheral nerve evaluation test phase of sacral neuromodulation at our center. Thirteen (seven boys and six girls) cases suffered from neuropathic lower urinary tract dysfunction refractory to the maximum medical treatment. The test was done with temporary wire in all patients. Patients with more than 50% improvement in symptoms were chosen for the second stage of implantation of quadripolar tined lead and implantable pulse generator. Bowel transit symptoms were recorded before and after the surgery.
RESULT(S): Eight patients (61.53%; five boys and three girls) had positive responses to the peripheral nerve evaluation test phase. They underwent implantation of permanent quadripolar tined lead and implantable pulse generator. The etiologies were lumbosacral myelomeningocele, occult spina bifida, partial sacral agenesis and incomplete spinal cord injury. Positive clinical response (>50% improvement in symptoms) was achieved in seven (85%) at a mean follow-up of 14.25 months. Three patients became capable to stop clean intermittent catheterization (P=0.125). The 24-h pad test decreased from 484 to 78 g from before to after the surgery (P=0.043).
CONCLUSION(S): This clinical study on a small sample size of children and adolescents demonstrates positive results in short-term follow-up. However, as the procedure is still not approved officially, multicenter studies with more patients can prove the safety and efficacy of sacral neuromodulation in long term among this special group of patients.
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1365.

Acute Kidney Injury after Cardiac Surgery: Risk Factors and Novel Biomarkers.
Yuan S.-M.
Embase
Brazilian journal of cardiovascular surgery. 34(3) (pp 352-360), 2019. Date of Publication: 01 Jun 2019.
[Review]
AN: 628768434
Acute kidney injury (AKI) is a common and severe complication after cardiac surgery. Currently, a series of novel biomarkers have favored the assessment of AKI after cardiac surgery in addition to the conventional indicators. The biomartkers, such as urinary liver fatty acid binding protein (L-FABP), urinary neutrophil gelatinase-associated lipocalin (NGAL), serum L-FABP, heart-type FABP, kidney injury molecule 1 (KIM-1), and interleukin-18 were found to be significantly higher in patients who developed AKI after cardiac surgery than those who did not. Apart from urinary interleukin-18, the novel biomarkers have been recognized as reliable indicators for predicting the diagnosis, adverse outcome, and even mortality of AKI after cardiac surgery. The timing of the renal replacement therapy is a significant predictor relating to patients' prognoses. In patients with AKI after cardiac surgery, renal replacement therapy should be performed as early as possible in order to achieve promising outcomes. In children, AKI after cardiac surgery can be managed with peritoneal dialysis. AKI after cardiac surgery has received extensive attention as it may increase early mortality and impact long-term survival of patients as well. The purpose of this article was to analyze the changes of the pertinent biomarkers, to explore the related risk factors leading to the occurrence of AKI after cardiac surgery, and to provide a basis for the clinical prevention and reduction of AKI.
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31310475 [https://www.ncbi.nlm.nih.gov/pubmed/?term=31310475]
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1366.

Traumatic posterior urethral strictures in children and adolescents.
Podesta M.
Embase
Frontiers in Pediatrics. 7(FEB) (no pagination), 2019. Article Number: 24. Date of Publication: 2019.
[Review]
AN: 627206667
Background: Management of partial or complete traumatic urethral disruptions of the posterior urethra in children and adolescents, secondary to pelvic fracture poses a challenge. Controversy exists as to the correct acute treatment of posterior urethral injuries and delayed management of

PFPUDDs. We reviewed the urological literature related to the treatment of traumatic posterior urethral injuries and delayed repair of these distraction defects in children and adolescents.
Material(s) and Method(s): There are few long-term outcomes studies of patients who underwent PFPUDDs repairs in childhood; most reports included few cases with short follow up. We excluded studies in which the cohort of patients was heterogeneous in terms of stricture disease, etiology and location.
Result(s): Primary cystostomy and delayed urethroplasty is the traditional management for PFPUIs. Immediate repair is rarely possible to perform. Realignment of posterior urethral rupture in children is indicated in special situations: (a) concomitant bladder neck tears, (b) associated rectal lacerations, (c) long disruptions of the urethral ends. Before delayed reconstruction ascending urethrography and micturating cystourethrogram along with retrograde and antegrade urethroscopy define site and length of the urethral gap. However, the most accurate evaluation of the characteristics of the distraction defect is made when surgical exposure reveals the complexity of the ruptured urethra. Partial ruptures may be managed with urethral stenting or suprapubic cystostomy, which may result in a patent urethra or a short stricture treated by optical urethrotomy. The gold standard treatment for PFPUDDs in children is deferred excision of pelvic fibrosis and bulbo-prostatic tension-free anastomosis, provided a healthy anterior urethra is present. Timing of delayed repair is at 3 to 4 months after trauma. Some urologists prefer either the perineal access or the transpubic approach to restore urethral continuity in children with PFPUDDs. Substitution urethroplasties are used in children with PFPUDDs, when anastomotic repair can't be achieved due to severe damage of the bulbar urethra.
Conclusion(s): As evidenced in this review the progressive perineo-abdominal partial transpubic anastomotic repair has advantages over the isolated perineal anastomotic approach in patients with "complex" PFPUDD. This approach provides wider exposure and facilitates reconstruction of long or complicated posterior urethral distraction defects.

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1367.

Acute kidney injury in nephrotic syndrome.
Menon S.
Embase
Frontiers in Pediatrics. 6(JAN) (no pagination), 2019. Article Number: 428. Date of Publication: 2019.
[Short Survey]
AN: 627192074
Nephrotic syndrome (NS) is one of the commonest kidney diseases seen in childhood and is characterized by a relapsing remitting course. Various complications have been reported in children with NS, including infections, thromboembolism, hypovolemia, and acute kidney injury (AKI). There is often a modest decrease in renal function in patients with active proteinuria due to decreased glomerular permeability that improves when they go into remission. However, more pronounced AKI in NS is multifactorial in origin. It is most often secondary to hypovolemia, nephrotoxic medications, and infections, although other reasons may also be seen. Recent years

have seen an increase in the incidence of AKI in NS. There is limited data on the correlation between AKI in pediatric NS and long-term outcomes. A better understanding of this increasingly common condition will help improve patient outcomes.

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1368.

Erratum: Proenkephalin A 119-159 (Penkid) Is an Early Biomarker of Septic Acute Kidney Injury: The Kidney in Sepsis and Septic Shock (Kid-SSS) Study (Kidney International Reports (2018) 3(6) (1424-1433), (S2468024918301918) (10.1016/j.ekir.2018.08.006)).
Anonymous
Embase
Kidney International Reports. 4(1) (pp 187), 2019. Date of Publication: January 2019.
[Erratum]
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In the above-mentioned article, 2 authors' names were misspelled. The correct spellings are Benjamin Glenn Chousterman and Jean-Michel Constantin.

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1369.

Renal injury in pediatric anorexia nervosa: a retrospective study.
Stheneur C., Bergeron S.J., Frappier J.-Y., Jamoulle O., Taddeo D., Sznajder M., Lapeyraque A.-L.
Embase
Eating and Weight Disorders. 24(2) (pp 323-327), 2019. Date of Publication: 01 Apr 2019.
[Article]
AN: 619365364
Purpose: Although primarily a mental health disorder, anorexia nervosa (AN) has many physical consequences. Among them, the consequences on kidney function are often underestimated. We evaluated renal function in adolescent AN inpatients and investigated the correlation between the GFR and intrinsic patient characteristics.

Method(s): A single-center retrospective study was conducted on 51 patients hospitalized for the restrictive type of AN in 2013. Data were divided into: (1) medical history of AN; (2) growth parameters and vital signs upon admission; and (3) blood tests. The glomerular filtration rate (GFR) was calculated using the Cockroft-Gault, MAYO Clinical Quadratic (MCQ), Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI), the Modification of Diet in Renal Disease (MDRD), and Schwartz equations.
Result(s): The calculated percentages of patients with a GFR below 90 mL/min/1.73 m2 according to the different equations were as follows: Cockroft-Gault, 45%; MDRD, 28%; CKD-EPI, 14%; MCQ, 12%, and Schwartz, 4%. There was a strong association between the body mass index (BMI) and the GFR according to all equations ($p < 0.0001$). The lowest heart rate was significantly associated with a reduced GFR according to the Cockroft-Gault equation ($p = 0.03$). The GFR values did not differ significantly after rehydration.
Conclusion(s): Clinicians should evaluate AN patients for renal complications, especially when the BMI and heart rate are very low. Dehydration was not solely responsible for renal impairment.
Level of Evidence: Level III, single-center retrospective cohort study.

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