Myofascial Pelvic Pain: Best Orientation and Clinical Practice. Position of the European Association of Urology Guidelines Panel on Chronic Pelvic Pain

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Abstract

Context: Despite the high prevalence of a myofascial pain component in chronic pelvic pain (CPP) syndromes, awareness and management of this component are lacking among health care providers.

Objective: To summarize the current state of the art for the management of myofascial pain in chronic primary pelvic pain syndromes (CPPPS) according to scientific research and input from experts from the European Association of Urology (EAU) guidelines panel on CPP.

Evidence acquisition: A narrative review was undertaken using three sources: (1) information in the EAU guidelines on CPP; (2) information retrieved from the literature on research published in the past 3 yr on myofascial pelvic pain; and (3) expert opinion from panel members.

Evidence synthesis: Studies confirm a high prevalence of a myofascial pain component in CPPS. Examination of the pelvic floor muscles should follow published recommendations to standardize findings and disseminate the procedure. Treatment of pelvic floor muscle dysfunction and pain in the context of CPP was found to contribute to CPP control and is feasible via different physiotherapy techniques. A multidisciplinary approach is the most effective.

Conclusions: Despite its high prevalence, the myofascial component of CPP has been underevaluated and undertreated to date. Myofascial pain must be assessed in all
patients with CPPPS. Treatment of the myofascial pain component is relevant for global treatment success. Further studies are imperative to reinforce and better define the role of each physiotherapy technique in CPPPS.

**Patient summary:** Pain and inflammation of the body’s muscle and soft tissues (myofascial pain) frequently occurs in pelvic pain syndromes. Its presence must be evaluated to optimize management for each patient. If diagnosed, myofascial pain should be treated.

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1. **Introduction**

Myofascial pelvic pain syndrome refers to pelvic pain originating from myofascial trigger points (MTrPs), hyperirritable areas within a taut band, in this case specifically in the pelvic floor muscles (PFMs) or adjacent skeletal muscles (iliopsoas, abdominal wall, piriformis) [1,2]. It can be a pain syndrome on its own, for example, due to repeated or chronic muscular overload that eventually originates trigger points in the muscle or fascia [3]. However, myofascial pelvic pain is frequently associated with urological, gynecological, and colorectal pain syndromes [4–6]. The presence of MTrPs in the symptomatic region is the distinctive feature of the syndrome. MTrPs are small, tender, palpable, hyperirritable areas located on taut bands of skeletal muscle that can be active (permanently tender and causing a clinical complaint) or latent (painful only when palpated) [2]. Latent MTrPs can be “silent”, not noticed for a long time and unnoticeable during physical examination, only becoming active in either major acute events (spine trauma, accident) or minor events (bladder or vaginal infection, emotional stress) [7]. While there is controversy about the existence of trigger points, electrophysiological and microanalysis studies support the existence of discrete microenvironments in these areas that underlie the generation of pain [8–10].

Trigger points in the PFMs can cause pain referred to different areas, including the suprapubic region, posterior and inner thighs, buttocks, lower back, vagina, anorectum, urethra, pubic bone, vagina, and coccyx [11]. Application of pressure to MTrPs can cause pain referred to other areas and can thus reveal the origin of the pain. MTrPs are present in many chronic pain conditions that most typically present as regional pain syndromes [12].

Basic studies on the role of neurogenic inflammation have elucidated some important phenomena in terms of pathophysiology. Inflammation of the pelvic organs (prostate, bladder, uterus) and/or the PFMs results in increased expression of several immunoactive mediators [13,14]. These mediators act in the respective tissue, in adjacent organs via neuronal crosstalk, and, in the central nervous system (CNS) [13,14]. Through these neuronal interactions, PFM dysfunction affects the function of the pelvic viscera [15] and vice versa [16]. Either one can be the source of the primary signal to the spinal cord, with a cascade of reactions ascending to the CNS. Furthermore, there appears to be convergence of somatic and visceral afferent information onto central pathways [17]. Once central changes have become established, these pathways may become independent of the peripheral input that initiated them [18].

Ultimately, the muscle in question develops some permanent degree of contraction, leading to restrictions even when in its most relaxed state. Activation of MTrPs by daily movements and positions prevents full lengthening of muscles, restricting the range of movement. Trigger point activation with somatovisceral and viscerosomatic interaction is thus permanent and enhanced. This, along with other mechanisms, leads to establishment of nervous system sensitization (both central and peripheral) [2]. This relationship has been found not only in “chronic prostatitis” [19] but also in bladder pain syndrome (BPS) [20] and vulvar pain [21].

Awareness of and information on the role of myofascial pain in chronic pain syndromes is lacking among health care providers. Even in published scientific papers, only a fraction of authors perform PFM assessment when studying pelvic pain [22]. Consequently, this component is neglected and can lead to suboptimal treatment. This picture prompted us to undertake this review, despite the scarcity in quality and number of recently published studies.

2. **Evidence acquisition**

This paper is a narrative review of the assessment and management of the myofascial component in chronic pelvic pain (CPP). The information was collected from three different sources: (1) information in the European Association of Urology (EAU) guidelines on CPP; (2) information from a narrative review of the literature of the past 3 yr and (3) the opinions of the EAU panel of specialists on the present state of the art for myofascial pelvic pain management. These sources are fully described in subsequent paragraphs.

The EAU guidelines on CPP [23] are updated yearly and are written by a panel of experts in the fields of urology, gynecology, physiotherapy, anesthesiology, gastroenterology, and psychology, with an input from patients suffering from painful pelvic conditions.

For the narrative review of the literature, the following query terms were used: myofascial pain and pelvic; myofascial pain and trigger points and pelvic; myofascial hypertonicity and pelvic; and myofascial pain and physiotherapy or physical therapy. Papers published from January 2017 to June 2021 were selected. Despite being a narrative review, the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) statement was followed for final selection of papers [24]. Although a high level of evidence was desired for papers selected for the review, given that the theme was pain, systematic reviews and randomized controlled trials (RCTs) of good quality and evidence were rare, so the reviewers were open to evaluating all types of papers. Papers on nonpelvic and nonmyofascial pain, preclinical trials, and nonmedical and nonphysiotherapy techniques were excluded. Papers already included in the guidelines were also excluded from...
the search since they were already cited. A total of 375 papers were included for abstract screening. After an updated search, 12 papers were included as they were considered to add to existing information in the EAU guidelines, with new evidence of diagnostic approaches or treatment options. These included six systematic reviews and meta-analyses, two prospective studies, two retrospective studies, and two narrative reviews with appropriate methodology. As expected, the papers were of poor quality. These were fully evaluated by two reviewers (P.A.-M. and P.D.-O.); a third reviewer (R.P.) was consulted when there were doubts about paper quality.

The third part comprised input from guideline panel members, some with specialized experience in the field of the myofascial component of pelvic pain. The experts' input consisted of reflections or opinions on the management or treatment discussed in this review. The expert opinion represents a level of evidence of relevance in those cases for which there are few high-quality RCTs.

One additional paper, a prospective study from 2015 with evidence of the benefits of physical therapy in female sexual dysfunction associated with pelvic pain, from the bibliography of a paper selected from the search was also included. This specific topic of female sexual dysfunction associated with pain was lacking. Two authors once again reviewed the final selection (P.A.-M. and P.D.-O.) and a third (R.P.) decided when doubts existed.

3. Evidence synthesis

3.1. Prevalence

A relationship between muscular dysfunction (especially hypertonic dysfunction) and pelvic pain has been found in several studies [25]. Historically, the first research on the relation between CPP and neurological aspects of the PFM was published in 1991 [26]. CNS breakdown in the regulation of pelvic floor function was suggested as a mechanism for the development of CPP. Anorectal pain was only relieved when patients learned to relax their PFMs during a PFM training program [27,28].

The vast majority (92.2%) of men visiting a tertiary center for pelvic pain had dysfunction of the PFMs (mainly levator ani), regardless of any evidence of inflammation (prostatitis or cystitis) [26]. Studies in the field of chronic prostatitis indicated that patients had muscle spasms and increased muscle tone. In a case-control study, pain during digital palpation of the PFMs occurred significantly more often among patients with CPP syndrome type III [29]. Muscle relaxation can diminish spasms and pain [30]. A report from the Chronic Prostatitis Cohort Study showed that 51% of patients with prostatitis versus 7% of controls had any tenderness, either in muscle or another location. In addition, tenderness in PFMs was found only in the CPP group [19]. In previous studies, in a series of patients presenting with pelvic pain, 88% had poor to absent pelvic floor function [26]. Peters et al [20] reported a prevalence of myofascial pain and hypertonic pelvic floor in female patients with BPS/interstitial cystitis (IC) of approximately 85%. Once again, it was suggested that initial insult (e.g., chemical, infection) to the bladder wall could lead to PFM hypertonus, increasing bladder alterations. This hypertonus persists even after bladder treatment, resulting in a chronic state of pelvic pain [31].

3.2. Diagnosis

3.2.1. Medical history

The medical history can indicate pelvic floor dysfunction in cases in which one or more pelvic organs show dysfunction, for instance, a combination of micturition and defecation problems that can both originate from inadequate relaxation during elimination phases. It is therefore important to address not only the function of all pelvic organs but also the relationship between their function and the pattern of pain. This includes lower urinary tract (LUT) function, anorectal function, sexual function, and gynecological and psychosocial aspects, together with pain evaluation [32]. It is also important to enquire about any surgeries or instrumentation affecting the pelvic organs in the past (laparoscopy, hysterectomy, cystoscopy, urethral manipulations). Although these procedures are life-saving (and life-changing), they are not free of complications and can cause additional trauma to the pelvis.

3.2.2. Physical evaluation

PFM function testing can be performed by the “end-organ” physician—urologist, gynecologist, gastroenterologist, surgeon—but in patients with myofascial pain, a consultation with a physiotherapist specializing in the pelvic floor is advised, that is, a physiotherapist educated to perform a complete examination of the pelvic floor and adjacent muscles. A vaginal or anorectal examination is needed to assess the function of the PFMs according to the International Continence Society (ICS) report [33]. This assessment has been independently tested and shows satisfactory face validity and, despite its low intraobserver reliability, is deemed suitable for use in clinical practice [34]. Anorectal palpation is adequate for testing pelvic floor function in men [35]. In a cohort study of 72 men with CPP, the relationship between the locations of the trigger point and the referred pain was examined. Some 90% of the patients showed tenderness in the puborectalis muscle and 55% in the abdominal wall muscles. Of the patients in whom trigger points were found in the puborectalis, 93% reported pain in the penis and 57% in the suprapubic region. Patients with trigger points in the abdominal muscles reported pain in the penis (74%), perineum (65%), and rectum (46%) [36]. In addition, a broad musculoskeletal (tender point) evaluation, including muscles outside the pelvis such as the gluteal groups, the abdominal wall, thighs, and the spinal muscles, can be helpful in upgrading symptoms to signs. This contributes to identifying the myofascial pain aspects of pelvic pain and to the process of phenotyping patients with pelvic pain [37,38].

3.2.3. Clinical management

The pelvic floor specialist physiotherapist is part of the pain management team, together with (among others) the end-organ specialists, the pain doctor, and the psychologist. The diagnostic and therapeutic options for physiotherapists may not be the same in every country. Physiotherapists can specifically treat dysfunction of the PFMs and, more generally, myofascial pain if it is part of the pelvic pain syndrome. They also have the knowledge and skills to improve pelvic
organ function, thereby breaking the cycle of pain-dysfunction-pain. In most studies evaluating the effect of physiotherapy on pelvic pain, pelvic floor treatment is the commonest strategy [39]. MTrP treatment can involve several physiotherapy modalities, such as vibration, stretching, friction, massage, releasing techniques, electrical stimulation, and needling (dry or wet). The scientific evidence for these treatment modalities is weak, possibly owing to the lack of sufficient high-quality studies [40].

To date, there is no evidence that manual techniques are more effective than no treatment [41]. Most needling studies have compared dry and wet needling: different systematic reviews have concluded that although there is some effect of manual therapy and needling on pain, it is neither supported nor refuted that this effect is better than placebo [40,42].

The role of injections with a mixture of bupivacaine, lidocaine, and triamcinolone into specific levator ani trigger points in women with CPP was investigated after identification of each trigger point via intravaginal palpation [43]. Some 72% of women experienced improvement with the first trigger point injection, and 33% were completely pain-free in the third month [43].

In a prospective clinical pilot trial, 21 female patients with BPS with hypertonic PFMs were treated with transvaginal manual therapy of the pelvic floor musculature (Thiele massage) [44]. This intervention led to significant improvements for several outcome measures, including pain and O'Leary-Sant Interstitial Cystitis Symptom and Problem Index scores, both in the short and long term. Although not an RCT, this study suggested that transvaginal massage may improve pelvic pain complaints, but placebo- or sham-controlled studies are required to provide reliable evidence on the efficacy of this therapy.

In a 2003 study, 57% of women with an overactive PFM reported dyspareunia that was secondary to stretching of shortened PFMs, stimulation of painful regions and/or local adhesions, fibrosis, or organ dysfunction [45]. According to this study, muscle relaxation diminished PFM overactivity, spasm, and pain.

The efficacy and safety of pelvic floor myofascial physical therapy were compared with global therapeutic massage in women with BPS/IC in a multicenter RCT. The global response assessment rate was 59% after global therapeutic massage and 26% after connective tissue manipulation. Pain and urgency and frequency ratings and symptoms decreased in both groups over follow-up and did not differ significantly between the groups. This suggests that myofascial physical therapy may be beneficial in women with BPS in the short term [46,47].

A 2012 systematic review by Loving et al [48] identified six RCTs comparing physiotherapy (monotherapy) with physiotherapy plus other medical and/or psychological therapy in women with pelvic pain. The therapeutic techniques differed among the studies (intravaginal electric stimulation, somatocognitive therapy, counseling, chiropractic, and others). Of these, only three were classified as level 1b evidence (individual RCTs with narrow confidence intervals) with a low risk of bias. This review concluded that recommendations for physiotherapy are still uncertain given the heterogeneity of studies, hampering the task of evaluating the real value of physical therapy in a monotherapy regimen [48].

In one of the RCTs, the authors found that Mensendieck somatocognitive therapy led to pain reduction of 64%, maintained at 1-yr follow-up, although other domains of the CPP syndrome, such as global quality of life (QoL) and LUT and bowel functions, were not assessed. This therapeutic approach consisted of myofascial relaxation and tension, improving posture and movement, in combination with cognitive behavioral therapy [49].

A recent prospective study by Lahaie et al [50] found that physical therapy should be integrated into the multidisciplinary management of female patients with sexual dysfunctions, such as vaginismus and dyspareunia.

In a review by Berghmans [51] comprising several systematic reviews, pelvic physiotherapy assessment and treatment for female patients with CPP and sexual dysfunction seemed to be effective, although further high-quality studies assessing different pelvic physiotherapy protocols, especially in the long term, are needed. Physical therapy should be offered in the context of a multidisciplinary team. Botulinum toxin-A (BTX-A) has been tested in women with pelvic floor myofascial pain, as in other pain conditions [52], with the rationale of inhibiting presynaptic acetylcholine release in the neuromuscular junction, thus relaxing muscles, deactivating sodium channels, and preventing the release of pain- and inflammation-inducing neurotransmitters by primary sensory neurons [53,54]. Its use has been evaluated in multiple trials [55,56], with a recent systematic review analyzing data from nine studies, although only two of these were RCTs [56]. In general, application of BTX-A to PFMs seems to reduce pain scores in patients with pain refractory to previous treatments, although the dosage differed among studies. Subanalyses suggested that a greater effect was achieved when 100 or more toxin units were used [56]; this effect was confirmed in the RCTs. Secondary outcomes related to pelvic dysfunction other than pain, such as dysmenorrhea, dyspareunia, bladder and bowel symptoms, and QoL, also seemed to improve [56].

4. Conclusions
Existing studies indicate a high prevalence of a myofascial pain component in pelvic pain syndromes, and diagnostic process guidelines are now available. Nevertheless, the myofascial component has to date been broadly underevaluated and undertreated in CPP syndromes. Various reasons might apply, including lack of experience among clinicians in evaluating and classifying abnormalities and a lack of confidence in the benefits of the treatments available. Existing studies, albeit mostly of poor quality, suggest a benefit of myofascial pain treatment in CPP. For this, an individualized treatment plan is the best approach.

We have referred repeatedly to weaknesses in studies, and while the topic needs more detailed treatment than is possible here, some important features to consider for future trials are adequate study designs for randomized, double-blind, placebo- or sham-controlled studies. Standardized criteria for diagnosis and outcome evaluation are important. In addition, adequate power calculations are warranted, translating into correct numbers in patient and control groups.

We conclude that it is imperative to systematically evaluate and treat myofascial pain in patients with CPP,
although robust studies are needed to quantify the benefits and possible harms so that patients can be sufficiently well informed about options for truly personalized medical care.

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