Chronic Pelvic Pain in Men Is NOT Prostatitis!

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Jeannette M. Potts

15.1 Introduction

Male pelvic pain continues to be misunderstood as a urological condition and erroneously approached as an infection or disorder of the prostate gland.

Although growing numbers of studies demonstrate a changing focus away from the prostate, research and treatment remain in the realm of urologists, who perpetuate the prostatocentricism through their persistent reference to the prostatitis classification system and the categorization of male pelvic pain within the designation of Category 3 prostatitis: chronic (nonbacterial) prostatitis/chronic pelvic pain syndrome (Table 15.1) As recently as 2015, published research continues to use the National Institutes of Health-**Chronic Prostatitis** Symptom Index (NIH-CPSI) as the research tool for inclusion criteria and instrument for assessing progress. Even more confusing is the application of NIH-CPSI for studies testing the efficacy of therapies which neither address infection nor prostate disease, e.g., physical therapy, stress management, and biofeedback.

Imagine a similarly flawed NIH classification system for something like encephalitis, and Category 3 includes the broad category of HEADACHE! Imagine that every headache is evaluated and empirically treated as an infection. While this seems so outrageous, it is precisely what has been going on for decades in both primary care and urological practice.

The broad differential diagnosis of male pelvic pain requires a comprehensive approach. After excluding serious or acute pathological conditions of the colon, rectum, neurological system, or urinary tract, the physician should consider dynamic or functional conditions such as pelvic muscle dysfunction, myofascial trigger points, pudendal neuralgia, and functional somatic syndromes, also described as

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Table 15.1 NIH-NIDDK prostatitis classification system

Category 1	Acute bacterial prostatitis
Category 2	Chronic bacterial prostatitis
Category 3	A. Chronic [abacterial] prostatitis/chronic pelvic pain; with inflammation
	B. Chronic [abacterial] prostatitis/chronic pelvic pain; without inflammation (historically termed prostadynia)
Category 4	Asymptomatic inflammation Identified as leukocytospermia or histological evidence of inflammation

central sensitization syndromes. Patients may have one or more of these conditions, and often, I have found that patients do indeed have overlapping syndromes. Anxiety and stress play a predisposing and/or perpetuating role in pelvic pain as well.

Either because of biopsychosocial predispositions or because of secondary depression and hopelessness due to the burden of pain, patients find themselves no longer in the "driver's seat" and may assume a role of victimization. This response to a painful or chronic condition must be identified and addressed, as it greatly influences a patient's confidence in the diagnostic process and impacts compliance with therapy, most of which involves self-care.

15.2 CPPS Is NOT Prostatitis

As early as **1963**, an investigator observed that antibiotics afforded no better response than placebo among men with symptoms of prostatitis [1]. This has been corroborated by many investigators since then.

In a randomized, placebo-controlled trial, 6 weeks of levofloxacin therapy for chronic prostatitis yielded no advantage over placebo [2], and a subsequent trial found that neither ciprofloxacin, the alpha-blocker tamsulosin, nor their combination reduced symptoms of chronic prostatitis compared with placebo [3].

There has been no correlation between symptom severity and the results of localization cultures, when using the Meares–Stamey technique, otherwise known as the four-glass test [4]. (The four-glass test involves collection of sequential urine specimens before and after prostate massage and of prostatic fluid during prostate massage [5].)

Localization cultures can be even more misleading in the CPPS population as demonstrated in yet another, relatively large study in which normal controls were just as likely as men with chronic prostatitis/CPPS to have positive localization cultures (about 8 % in both groups) [6]. Even earlier, the Giessen Consensus Group recommended antibiotics were to be withheld until a second localization culture corroborated the same organism [7].

Localization testing to identify inflammation in either the expressed prostatic secretions (EPS) or in semen is similarly nonspecific. Patient symptom severity is not correlated to the presence or degree of inflammation detected in these specimens [4]. Indeed, abnormally high white blood cell counts have been identified among asymptomatic men. For example, many asymptomatic men seeking care for

infertility have leukocytospermia. While infection is one potential cause of leukocytospermia, it can also occur in the setting of neurological trauma or in the setting of varicoceles [8]. In another example, among asymptomatic men with elevated PSA, 42 % were found to have abnormally high white blood cell counts in their EPS, and subsequent prostate biopsies in this cohort showed a 50 % incidence of histologically proven inflammation [9].

In 2013, researchers concluded there was no microbiological contribution to UCPPS. They demonstrated no differences in bacterial cultures when comparing symptomatic patients with controls. Using state-of-the-art microbial detection methods, 257 patients with either presumed Category 3 prostatitis or interstitial cystitis/bladder pain syndrome and 261 asymptomatic controls were tested for uropathogens and compared. (Sixty percent of the subjects were males.) This provides the latest and best evidence regarding the absence of a microbiological contribution to urologic pelvic pain syndromes [10].

Chronic orchialgia, defined as either constant or intermittent scrotal or testicular pain, is a common component or frequently diagnosed manifestation of chronic pelvic pain in men. Unfortunately, it too is approached as an infectious disorder and too commonly treated "empirically" with long repeated courses of antibiotics. In a related study, 55 men diagnosed with chronic scrotal pain syndrome (CSPS) were thoroughly evaluated by means of history, physical examination, scrotal ultrasound, and methodical microbiological investigation. This consisted of urine localization study (four-glass test), semen cultures, and PCR tests for chlamydia trachomatis, ureaplasma urealyticum, mycoplasma hominis, and gonorrhea. Only 22 % of the men had positive cultures of clinical significance, leading the investigators to conclude that there is no evidence for the widely held belief that CSPS is the result of a chronic bacterial infection; therefore, "widespread use of antibiotics for this condition is unjustified" [11].

This author notes that investigations conducted by the NIH-NIDDK over the past 15 years have not included urine culture as entrance criteria for patients with presumed NIH Category 3 prostatitis. A single negative urinalysis sufficed as adequate screening prior to informed consent in pregabalin trial [12], alfuzosin trial [13], and physical therapy trial [14]. Study designs were formulated by a consensus of prostatitis experts, and no patients developed a urinary tract infection during these trials.

Besides antibiotics, other prostatocentric therapies are prescribed to men with CPPS. Investigators followed 100 patients with chronic prostatitis over 1 year, during which time they received sequential monotherapies that included antibiotics, alpha-blockers, and antiandrogen therapies [15]. One third of patients showed only modest symptom improvement, while only 19 % experienced significant improvement. (Placebo responses are often similar.)

15.2.1 What About LUTS?

In a study of men 50 years of age or younger with voiding dysfunction, urodynamic testing revealed bladder neck obstruction (54 %), pseudo-dyssynergia (contraction of the external sphincter during voiding) (DSD) (24 %), impaired bladder

contractility (17 %), and acontractile bladder (5 %) [16]. These are often the findings among men previously diagnosed with "prostatitis." In a subsequent study, men with urodynamic evidence of pseudo-DSD, 83 % were successfully treated with biofeedback alone [17]. The investigators also noted that >90 % of the patients were first born males, which may indicate a possible biopsychosocial predisposition for this condition.

These findings were more recently reproduced in a Chinese study. Of 113 CPP patients between ages of 18 and 48, nearly 20 % were found to have urodynamic evidence of [non-neurogenic] DSD or pseudo-DSD. This was characterized as low Q max, high detrusor pressure, and high urethral pressures [18]. These patients, too, responded well to biofeedback.

Some men have bladder neck hyperplasia, which requires alpha-blockade or transurethral incision of the bladder neck. This condition needs to be proven urodynamically. While surgical intervention is highly effective, patients must be cautioned about subsequent retrograde ejaculation and secondary fertility challenges.

15.3 Dysorgasmia and Post-ejaculatory Pain

While many continue to diagnose dysorgasmia (pain with orgasm) and pain following ejaculation as "prostatitis" [19], this symptom is more commonly a component of CPP particularly in the setting of pelvic floor muscle dysfunction or pudendal neuralgia.

Approximately 50 % of men with CPP also suffer from orgasmic or post-ejaculatory pain. A Turkish study published in 2011 found that 37 % of men with CPP had painful ejaculations as compared to zero in controls [20]. A review of the literature demonstrates a range cited between 40 and 70 % [21]. In our small series of 36 consecutive patients with CPP, 25 had dysorgasmia, post-ejaculatory pain, and/or other sexual dysfunction. Forty-five percent of the patients improved with physical therapy focusing on manual release of myofascial trigger points and pelvic floor relaxation [22]. Anderson et al. studied 133 men, among whom 92 % had sexual dysfunction (including 56 % who had ejaculatory pain). Greater than 77 % improved with specialized physical therapy [23].

In my experience, many men who suffer from this condition are similarly troubled by the decrease or absence in semen volume. Their anxiety is exacerbated by their wondering if there is a blockage or a backup of semen. Anecdotally speaking, many patients who recovered from CPP by employing the approach of pelvic floor physical therapy reported improved sexual functioning, disappearance of pain, and a return of normal ejaculatory volume and force.

By coincidence, I have also had several patients who practice martial arts or Eastern religions. These ASYMPTOMATIC men described the practice of preserving Chi [Energy], by preventing ejaculation during climax. What they describe, essentially, is a form of volitional retrograde ejaculation, whereby the pelvic floor muscles are tightly contracted during orgasm, causing semen to flow into the bladder rather than forward out through the urethra, instead of through the bladder neck, leading to

retrograde ejaculation. Further research revealed that learning this practice can be painful. Listening carefully to men with CPP and learning more about my other patients' practices allowed me to make the connection between these phenomena and to formulate my theory of **ejaculatory dyssynergia** (http://www.pelvicpainrehab.com/male-pelvic-pain/1994/shedding-light-on-male-pelvic-pain-and-sexual-dysfunction/). This would explain the pain and decrease in ejaculated volume during flares and the coincidence of pain relief with normal ejaculation, with enhanced pleasure, improved force, and increased volume of semen.

15.4 Pelvic Floor Muscle Dysfunction and Myofascial Trigger Points

When patients present with pain that can be associated with urinary symptoms, defecatory dysfunction, and sexual symptoms, it should be no surprise that for most patients, the pelvic floor support structures and musculature are promoting the symptomology. I ask students and patients alike to imagine this extraordinary hammock, carrying the urinary and anal sphincters within a beautifully choreographed weaving of muscles, and then to imagine when one or more of those fibers are tense, nonelastic, knotted, or broken. Without proper attention, more and more of those fibers overcompensate and eventually malfunction, hence the recruitment of larger and larger areas of pain or dysfunction. This is why we sometimes see patients with recent urinary symptoms and painful ejaculation who began their odyssey years ago in the department of colorectal surgery with a nonhealing anal fissure, for example.

We must learn from other specialties as various forms of physical therapy have been employed with success for the treatment of analogous pain syndromes diagnosed by gynecologists and colorectal surgeons. Several urologists have applied these principles in the assessment and treatment of men with symptoms of prostatitis or CPP (see Table 15.2).

In 2004, Clemens and colleagues employed biofeedback and pelvic floor reeducation/bladder training for men with chronic pelvic pain syndrome. Fourteen of the 19 men enrolled in the study underwent pretreatment urodynamics. The various urodynamic findings (detrusor instability, hypersensitivity to filling, pseudodyssynergia), however, did not predict treatment results [24]. Overall, there were statistically significant improvements in all symptom parameters measured by AUA symptom score, ten-point visual analog pain and urgency scores, and voiding logs. Interestingly, only half of the patients completed the full treatment course prescribed as six sessions.

Biofeedback was again the therapeutic modality in a series by Cornel and colleagues, in Holland [25]. Thirty-one of 33 men initially recruited completed the program, which included weekly and biweekly physical therapy up to six to eight treatment sessions. These patients responded quite favorably as demonstrated by the improvement in NIH-Chronic Prostatitis Symptom Index (pretreatment mean, 23.6; posttreatment mean, 11.4) and pelvic floor electromyogram measurements during

Table 15.2 Physical therapy and myofascial trigger point release definitions

Myofascial trigger point: taut bands or tender nodules that can be detected on examination which may cause painful contractions and/or referred pain when palpated or twitch responses. Areas in which trigger points are located exhibit weakness and limited range of motion
Myofascial trigger point release: a form of manual physical therapy, which addresses hyperirritable points on muscles or taut bands, which are responsible for pain or restricted movement. The release or treatment is done by compressing, strumming, or stripping muscle fibers manually or digitally
Biofeedback a technique used to control certain anxiety states or tension with the use of an external device, in this case surface EMG's which are used to train patients to relax their muscles
Skin rolling a simple technique to free subcutaneous fascia. The skin is gently picked up and pulled away from underlying structures. The skin is then released from the fingertips and adjacent skin is lifted. This is done repeatedly over afflicted body regions
Injection therapy a more immediate means of inactivating a trigger point. Helpful for patients who may not have access to further skilled manual therapy or for those with limited treatment times. Myotoxic substances should be avoided
Dry needling a form of "injection" therapy, without injectable substance. May be safer and less damaging to muscle fibers.
Effleurage: a massage technique which involves sliding or gliding over the body with continuous motion.
Theracane: a self-massage tool, which is the same size and shape of a walking cane, which can be used to more easily or comfortably reach trigger points in the back, flank, or buttocks.

rest which improved from mean 4.9 mV at initial visit to mean 1.7 mV (normal resting tone <2.0 mV).

Pelvic floor myofascial trigger point release of the pelvic floor was studied for the treatment of interstitial cystitis and [urinary] urgency-frequency syndrome. In this series by Weiss, 7 of the 52 patients were men. Of 42 patients with urgency-frequency syndrome, 83 % of patients experienced either complete resolution or moderate to marked relief of their symptoms. Of ten patients diagnosed with interstitial cystitis, 70 % reported moderate to marked improvement [26]. The author believes that pelvic floor physical therapy "arrests the neurogenic trigger leading to bladder changes, decreases central nervous system sensitivity and alleviates pain due to dysfunctional muscles."

More recently, Anderson and colleagues employed myofascial trigger point release and paradoxical (progressive relaxation in the setting of complete acceptance of the painful symptoms) relaxation for the treatment of 138 men diagnosed with CP/CPPS, refractory to "traditional" therapy [27]. Patients received a minimum of weekly treatments for 4 weeks, but some received biweekly treatments for 8 weeks thereafter. Approximately half of the patients treated had clinical improvements associated with a 25 % or greater decrease in all symptom scores, which included NIH-CPSI and PPSS. According to Global Response Assessment, 72 % of patients reported marked or moderate improvement. The authors proposed a new understanding of UCPPS, in which certain types of pelvic pain reflect a "self-feeding state of tension in the pelvic floor, perpetuated by cycles of tension, anxiety and pain."

In 2008, we completed an NIH-sponsored multicenter trial, testing the feasibility of "manual" PT for the treatment of UCPPS in men and women. This was a randomized single-blinded clinical trial evaluating myofascial physical therapy (MPT), targeted trigger point release and connective tissue manipulation (CTM) focusing on the muscles and connective tissues of the pelvic floor, hip girdle, and abdomen, **versus** global therapeutic massage (GTM), nonspecific somatic treatment with full-body Western massage. Patients received 10 weekly treatments and were evaluated within 2 weeks after the last treatment. Forty-seven patients were randomized, including 23 (49 %) men and 24 (51 %) women. Twenty-four (51 %) patients were randomized to GTM, 23 (49 %) to MPT; 44 (94 %) patients completed the study. The trial proved feasibility of manual treatments and excellent adherence to protocol. More importantly, the trial showed a statistically significant difference in the benefit of myofascial physical therapy over global therapeutic massage. The response rate of 57 % in the MPT group was significantly higher than the rate of 21 % in the GTM treatment group ($p = 0.03$). Even more striking was the significantly greater response of men to either modality when compared to women in this study [14]. Among men, 67 % responded favorably to MPT, while 44 % responded to GTM. Interestingly, only 7 % of women responded to GTM.

15.5 A Functional Somatic Syndrome or, More Accurately, Central Sensitivity Syndrome

In 2001, this author found a strong correlation between the diagnosis of nonbacterial prostatitis and functional somatic syndromes (FSS). A review of randomly selected cases demonstrated that 65 % of men seeking second opinion for CP/CPPS met the criteria for overlapping diagnoses considered to be FSS. These diagnoses included IBS (35 %), chronic headache (36 %), FM (5 %), nonspecific rheumatological symptoms (21 %), and psychological disturbances (48 %) [28].

These results are especially compelling when analyzed in the context of the general population, in which the lifetime prevalence of FSS is only 4 %.

The inspiration for this chart review had come from a paper published in the Lancet in 1999. It had been given to me by a good friend and colleague, Dr. Leonard Calabrese, at the Cleveland Clinic. As was intended, this article expanded my curiosity and broadened my view of CP/CPPS.

In this article, by Wessley and colleagues, FSS are defined as a constellation of symptoms, which are persistent and distressing and which, after appropriate medical assessment, cannot be explained in terms of a conventionally defined medical disease [29]. These conditions are estimated to represent 35 % of patients seeking outpatient consultation in every medical and surgical clinic (see Table 15.3). Wessley and colleagues state that there are FSS diagnoses in every organ system and in every medical specialty. They believe this is the by-product of medical subspecialization and that we may in fact be dealing with a single global syndrome. The review did acknowledge interstitial cystitis as urology's brand of FSS, but did not mention prostatitis. Like myself, however, others have begun to notice the association between FSS and CP/CPPS.

Table 15.3 Functional somatic syndromes by medical specialty

Psychology	Affective disorders
Rheumatology	Fibromyalgia
Neurology	Migraine and tension headache, cognitive difficulties
Infectious disease	Chronic fatigue syndrome, night sweats, sick building syndrome, gulf war illness
Gastroenterology	Irritable bowel syndrome, spastic colon, globus syndrome, non-ulcer dyspepsia
Cardiovascular	Noncardiac chest pain, mitral valve prolapse, neurally mediated hypotension
Respiratory	Hyperventilation syndrome
Ear, nose, and throat	Vestibular complaints, vasomotor rhinitis, globus syndrome, temporomandibular dysfunction
Dermatological	Non-dermatomal paresthesias
Allergy	Multiple chemical sensitivity
Gynecology	Premenstrual syndrome, vulvodynia
Colorectal	Proctalgia fugax, levator ani syndrome
Urology	Interstitial cystitis/painful bladder syndrome, female urethral syndrome, chronic [abacterial] prostatitis, prostatodynia, chronic pelvic pain syndrome

Modifications and additions from various sources [30, 31]

Self-reported medical problems were compared between 463 CP/CPPS patients and 121 controls. Domains queried included gastroenterology, cardiovascular, neurological, lymphatic, infectious, and psychological. The CP/CPPS group reported dramatically higher incidence of comorbidities (P values < 0.008) [32]. The significantly higher reported comorbidities in the CP/CPPS group are consistent with the patients' real or perceived tendency to suffer with overlapping diseases.

The first systematic exploration of the connection between UCPPS and other disorders (in women) was reported by Alagiri in 1997 [33]. They found, "Allergies, irritable bowel syndrome, and sensitive skin were the most common diseases in the interstitial cystitis population." They appropriately concluded that "Interstitial cystitis has, as yet, an unexplained association with certain other chronic disease and pain syndromes."

Clauw and colleagues examined cohorts of patients with FM, IC, and healthy controls [30]. They found that IC patients shared many characteristics of FM patients. They were much more likely than controls to have systemic tender points and to report fatigue, musculoskeletal, gastrointestinal, and cardiopulmonary symptoms. In yet another investigation, a twin control study demonstrated the aggregation of overlapping syndromes among the 127 co-twin individuals diagnosed with CFS. When compared to their non-fatigued co-twin, there was a significantly higher prevalence of FM, IBS, chronic bacterial prostatitis, pelvic pain, and interstitial cystitis in the CFS twin [34].

Central sensitization or a central sensitivity syndrome (CSS) is one of the best explanations for the phenomenon of FSS, which have both visceral and somatic

manifestations. Sensitization is caused by chemical and anatomical changes leading to hyperexcitability in the dorsal horn cells from persistent afferent C fiber bombardment by painful stimuli. The presence of sensitization expands the pain field and creates a neuroanatomical basis for pain persistence and recurrence in the presence of minimal or no discernable pathology. This process will eventually cause a local upregulation and central "wind up" that creates a neuroanatomical basis for pain persistence in the presence of minimal disease or stimuli.

While recognition of FSS continues to lag, even more compelling mechanisms for CSS and its role in our daily clinical practices have become elucidated. In yet another milestone, Yunus advances the insights of Wessley to explain and justify the use of central sensitivity syndrome for conditions previously designated FSS [35]. (In terms of taxonomy and the implications of our medical terminology, Dr. Yunus is as passionate about the misuse of an FSS as this author is about the overuse of the term prostatitis!) Not only does he convincingly amalgamate strong evidence from various subspecialty studies but also unifies specific CPP conditions such as myofascial pain syndromes and psychological distress within the definition of CSS. This inspires improved ways to approach patient care and research. And like Wessley, he presents yet another compelling call to action, as all manifestations of CSS represent the majority of outpatient consultations, as listed in Table 15.3.

Yilmaz and colleagues were able to detect differences in autonomic nervous system functioning in men with CPPS. Comparing blood pressure and heart rate variability among CPP patients and controls during rest, supine positioning, or standing, revealed a significant decrease in the parasympathetic component of heart rate variability and an increase in the sympathetic component with postural change [36]. Interestingly, the sympathetic component in men with CPPS did not demonstrate the expected increase upon standing from the supine position. But this may have led to the compensatory increase in blood pressure seen in the CPPS patients. There was also higher mean BP in supine and standing positions in the CPPS group compared to controls, representing increased peripheral vascular sympathetic tone in the CPPS group. These findings suggest cardiovascular autonomic dysregulation in men with CPPS.

The concept of central sensitization is gaining recognition in the urological community; however, it is still detrimental to continue perpetuating a link between an infectious or inflammatory assault on the prostate as the trigger, when in fact, triggers for men with pelvic pain include many other urological as well as non-urological causes: passage of kidney stones, changes in sexual functioning, obsessive masturbation, vasectomy, cycling, running, anal fissure disease, hemorrhoidectomy, sports or other orthopedic trauma, etc.

Recognizing the broad spectrum of potential triggers helps to better elucidate potential pathophysiology and expand our treatment repertoire. For example, I had seen a man who had experienced scrotal pain for over 5 years. So terrific was his pain that he underwent an orchiectomy, which unfortunately afforded him no relief of symptoms. Upon further review of his history, I discovered that he had a skiing accident about 9 months prior to the onset of scrotal pain. Although his broken ankle had healed well, his gait was never completely corrected, causing

asymmetrical stress to his knees, hips, and pelvis. He had developed trigger points with referred pain to the ipsilateral scrotum. His pain was resolved after physical therapy and aggressive home exercise, stretching, and orthotics.

For decades, CPP has been evaluated and managed as an end-organ diagnosis or urological condition, with little benefit to patients. We believe CPP should be approached more comprehensively as a more common and plausible FSS or central sensitivity syndrome [37].

The causes for and the perpetuation of CPP are multifactorial. Cognitive/behavioral and environmental variables can be significant predictors of patient adjustment in chronic pain. Men ($n=253$) from a North American multi-institutional NIH-funded Chronic Prostatitis Cohort Study in six US (and one Canadian) centers participated in a survey examining pain and disability. Measures included demographics, urinary symptoms, depression, pain, disability, catastrophizing, control over pain, pain-contingent rest, social support, and solicitous responses from a significant other. Regressions showed that urinary symptoms, depression, and helplessness catastrophizing predicted overall pain. Cognitive/behavioral variables of catastrophizing and pain-contingent rest, respectively, predicted greater pain and disability. Catastrophic helplessness was a prominent pain predictor [31]. The patients' coping and adaptive skills may influence the predisposition or perpetuation of symptoms in CP/CPPS patients, as well as perceived quality of life.

These observations, for example, could provide insights for cognitive therapy and patient self-care regimens.

Other investigators examined whether perceived stress was associated (longitudinally) with pain intensity and pain-related disability. A cohort of 224 men with CP/CPPS were followed for 1 year. Perceived stress and pain intensity measures were done at 1, 3, 6, and 12 months after diagnosis. Greater perceived stress during the 6 months after the health-care visit was associated with greater pain intensity ($p=.03$) and disability ($p=.003$) at 12 months, even after controlling for age, symptom duration, and pain and disability during the first 6 months [38].

Chronic stress may have a role in initiating or exacerbating pain syndromes including CP/CPPS. To that end, Anderson and colleagues demonstrated potential disturbances in psychosocial profiles and hypothalamic-pituitary-adrenal (HPA) function among patients with CP/CPPS. Forty-five men with CP/CPPS and 20 age-matched controls completed the Type A Personality Test, Perceived Stress Scale, Beck Anxiety Inventory, and the Brief Symptom Inventory for distress and physical symptoms. Saliva samples were collected at specific times over a 2-day period in order to measure free cortisol, reflecting secretory activity of the hypothalamic-pituitary-adrenal axis. Perceived stress and anxiety were significantly higher among men with CP/CPPS than controls, as were all other psychosocial variables. Men with chronic pelvic pain syndrome had significantly increased awakening cortisol responses, mean slope of 0.85 vs. 0.59 for controls ($p<0.05$) [39].

As also reviewed and summarized by Yunus [35], CSS are highly correlated to HPA axis dysfunction and hyperexcitability of the central neurons. We would expect, therefore, neuroendocrine dysfunction in this cohort of patients, which explains both the precipitating and perpetuating influences of stress and the bidirectional cascade of this vicious cycle.

Table 15.4 Differential diagnosis of male chronic pelvic pain

Infection: Sexually transmitted diseases, chronic bacterial prostatitis, fungal infection
Gastrointestinal: Appendicitis, diverticulitis, constipation, anal fissures, hemorrhoids
Abdominal wall defects: Inguinal or ventral wall hernias, myofascial trigger points
Musculoskeletal: Neoplasm (primary or metastatic), degenerative joint disease of the hips, sacroiliitis, leg length disparity, athletic or orthopedic issues, pelvic floor dysfunction, myofascial pelvic pain syndrome
Neurologic: Low thoracic or lumbar herniated nucleus pulposus, lumbar stenosis, Parkinson disease, diabetic cystopathy, demyelinating disease, pudendal neuralgia
Central sensitivity syndromes: See functional somatic syndrome in Table 15.2
Urologic: Renal calculi, varicocele, epididymitis, testicular neoplasm, interstitial cystitis

15.5.1 Evaluation and Management

The differential diagnosis should be reviewed in advance to better query the patient during his interview and guide the physical examination (see Table 15.4).

The UPOINT classification system has been proposed as a first step toward a more ideal approach to men with pelvic pain. It does, however, have several deficiencies. The nomogram represents U for urinary, P for psychological, O for organ (prostate), I for infection, N for neurological, and T for tenderness [of muscles]. The authors of this construct point out the benefits of treating patients according to the subclassifications to better tailor therapy [40].

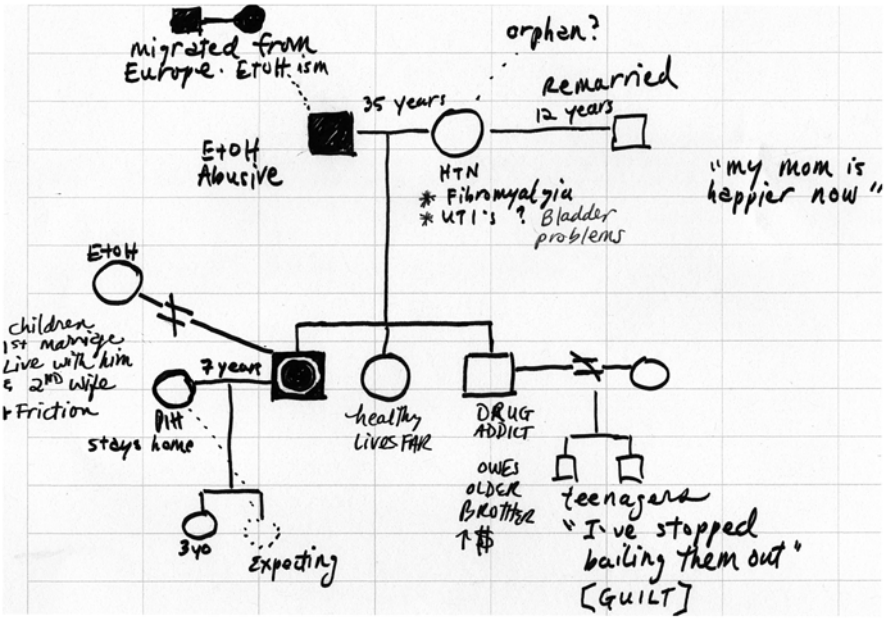
While the authors should be applauded for widening the scope of our approach to these patients, they still cannot seem to extricate themselves from "O" (the prostate organ) nor the "I" for infection. By definition, Category 3 prostatitis is nonbacterial and, as mentioned before, not proven to be caused by any malady of the prostate gland. Additionally, the N for neurological is poorly defined, as it is meant to somehow encompass the role of functional somatic syndromes and perhaps other neuralgias or nerve entrapment syndromes such as pudendal neuralgia. And finally, T for tenderness does not do justice to the very broad and specialized field of physical medicine and the detection of myofascial trigger points, which are clearly different from "tender" points. The UPOINT system does not address or explain the treatment or release of the trigger points. There is no acknowledgment of "T" or the elusion of myofascial pain syndromes as a single domain, which can be causing symptoms in the other domains. Moreover, rather than treating each component of the patients' symptomatology via the nomogram, it may be of greater benefit to treat myofascial trigger points in order to relieve urinary symptoms (U), perceive pain in the bladder or prostate (O), and relieve pelvic muscle tension, which can exacerbate nerve entrapment (N). Likewise, exercises and stretching to enhance the treatment and durability of manual trigger point release can be empowering and therefore improve patients' psychological well-being (P) as well.

After excluding acute conditions, such as prostatitis (fever, abnormal urinalysis, positive urine cultures) or other urological conditions such as kidney stone or general surgical issues such as hernias, colorectal pathology (fissures, hemorrhoids,

abscess, neoplasm), or spinal column diseases, I approach the patient from a broader vantage point.

The history should include queries about occupational risk factors, repetitive motions, prolonged sitting, and recreational activities and sports. There should also be query into sexual activities, family and work relationships, and stressful life events. I usually compose a genogram for each patient, which not only provides family medical history but also illustrates important family dynamics which are often implicated as unhealthy patterns which predispose or impact patient's ability to achieve self-care and resolution of his condition (see Fig. 15.1).

The history should also explore the potential for underlying FSS or CSS, which is quite common in this patient population.



■ = patient
□ = living family member
■ = deceased family member
— = marriage
≠ = divorce or separation

Appreciate the more comprehensive picture of this man with CPP as compared to that seen in a standard Past Medical and Family History. Note his need to take care of others parallels his Mom's enabling behavior and the predispositions to central sensitivity syndromes (as highlighted by *).

Fig. 15.1 A sample genogram

Table 15.5 Some common referred patterns of musculoskeletal sources of pain and symptoms

Psoas	Bladder or suprapubic pain; urgency
Rectus abdominis	Penile pain
External oblique	Suprapubic, bladder pressure, sometimes scrotal ache
Quadratus lumborum	Scrotal/inguinal pain
Obturator internus	Scrotum, perineum, urinary pressure
Puborectalis	Tip of penis
Bulbospongiosus	Perineum and penis
Adductors	Groin, perineum, or base of penis

Based on the observations of others and my own experience [44, 45]

The examiner should be aware of characteristic referral patterns caused by myofascial trigger points, though variability exists between patients. These patterns can be confirmed during physical examination. Patients are often helpful by offering feedback during the exam, with respect to location of trigger points and character of referred pain [41]. In addition to complete physical and genitourinary examination, careful palpation of abdominal wall, pelvic floor, and thigh muscles may reveal taut bands characteristic of trigger points with associated twitch response and/or pain [42]. Many of the referred patterns illustrated by Travell and Simon were later corroborated by Anderson and colleagues [43] (see Table 15.5).

I believe this part of the evaluation is best performed with the patient in a supine lithotomy position, allowing for thorough examination of the external and internal muscles of the pelvic floor [46]. I carefully examine the coccyx for range of motion and pain as well as corresponding tension or knots in the levator ani muscle groups. The obturator internus is palpated and provocative testing can be applied by having the patient externally rotate against the resistance of the examiner's other hand. Alcock's canal should be gently explored to test for Tinel sign, indicating pudendal nerve hypersensitivity. Further testing may reveal nerve irritability with referred pain patterns in the distribution of the pudendal nerve branches. Obviously, the prostate is also examined for nodules and texture changes. But I reserve the exam of the prostate until the very end of the internal pelvic exam, so as to better educate the patient about his anatomy and the genuine sources of his discomfort.

I reposition the patient to assess posture, pelvic obliquity, and leg length symmetry along with strength, flexibility, and range of motion.

Urinalysis is performed to exclude bacteriuria, funguria, pyuria, or hematuria. Localization cultures should be considered in patients who have had previously documented positive bacterial urine cultures or past episodes associated with fever. Localization cultures should be performed to guide future evaluation and treatment and more importantly avoid or discontinue unnecessary antibiotics. Prescribing antibiotics empirically is very rarely appropriate and inexcusable without first performing localization cultures. History will also guide the appropriateness of STI testing. In addition to testing for chlamydia and gonorrhea, microscopic exam of the

VB1 may reveal trichomoniasis, and one may consider testing for ureaplasma urealyticum and Mycoplasma hominis [44]. I have found this useful in men with history of chlamydia infection in the past, who have recurrence of their symptoms without evidence of chlamydia after PCR testing.

As observed by Wessley and later by Yunus, regardless of the type of CSS diagnosed, patients respond favorably to similar factors. These include empathy, engagement of caregiver, explanation of the physiological nature of symptoms, limitation of investigations, emphasis on management rather than cure, antidepressants, cognitive behavioral therapy, and exercise. These qualities and interventions should be similarly considered for the man suffering from CPP.

Patient empowerment is paramount to management of symptoms of CPP. For men who are diagnosed with pelvic floor muscle dysfunction and/or myofascial trigger points, empowerment begins with muscle and postural reeducation to prevent further tissue compromise and to increase patient awareness and enhance balance and muscle tone [45].

Physical therapy for men with CPP involves connective tissue manipulation (CTM) and trigger point release to all body wall tissues of abdomen, back, buttocks, and thighs that are found to contain myofascial trigger points or other connective tissue abnormalities. In the prone position, CMT can be applied posteriorly, from inferior thoracic level 10 to the popliteal creases. These techniques are applied until the therapist notices a favorable texture change within the affected tissue.

In the supine position, CTM can be applied to anterior tissues. This allows the inclusion of the thighs, laterally, anteriorly, and medially from the knee up to and including the thigh crease. CTM can be performed on the abdominal wall from the suprapubic rim to the anterior costal cartilages, with a concentration of manual interventions to focus on the periumbilical tissues. This usually involves a skin rolling technique, which should be taught to patients as part of their self-care regimen. Manual trigger point release techniques are utilized to treat any noted trigger points or scars in the anterior or posterior lower quadrants. Options for the treatment of trigger points include manual release, manual stretching with and without cold spray, myofascial release, muscle play, dry needling, or injection therapy. Therapy for dysfunctional muscles includes stripping, strumming, skin rolling, and effleurage [47]. Sometimes, myofascial trigger point release requires adjuvant therapies, which include dry needling or injection therapies. Self-care of the external trigger points can be performed using a tennis ball against the wall or against the floor. A theracane can also be employed by the patient to reach his own trigger points comfortably and apply pressure according to his own leverage and tolerance. Tennis balls are also helpful, targeting external trigger points by leaning against them either on the wall or on the floor for increased pressure.

Transrectal treatment of the soft tissues of the pelvic floor with CTM can be done with the patient in supine lithotomy, lateral sims, or prone positions depending on the patient's trigger point locations, comfort of the patient, and ergonomics of the therapist. Regions evaluated and treated include periurethral tissues, white line, muscle origins, and insertions. Myofascial manipulation to each muscle group is performed with the focus on restrictive bands and trigger points. Self-care for

internal trigger points has been both challenging and controversial. In 2011, investigators did prove feasibility and safety of an internal wand which comes equipped with a pressure gauge, allowing patients to measure the amount of pressure applied and to gradually titrate gentle force against the trigger points [48]. Of course, this requires special individualized instruction, as yet not available to the public.

Providing a form of biofeedback to patients by observing their progress in recruiting muscles and relaxing the pelvic floor helps patients to learn valuable pelvic floor "drop" techniques [47] which has been shown to help diminish pain as well as extinguish urinary urgency.

Severe discomfort may prohibit or limit transrectal therapy, but can be employed as treatments progress. However, I have also found that some patients improve without internal therapy, as the external therapies along with patient exercise and stretching at home can lead to what I call a beneficial cascading effect on the pelvic floor muscles.

Encouraging patients to resume some form of physical activity cannot be overemphasized. (Some patients are so frightened by the pain that they require medical permission to engage in any form of exercise.) Walking, for example, can lead to a positive feedback, whereby the stride increases, gait normalizes, and the patient in essence is providing his own pelvic floor muscle strengthening and lengthening.

Home exercise programs are tailored according to the patient's condition, his lifestyle, and abilities. These are prescribed to promote further muscle lengthening and pelvic floor reeducation as well as enhance durability of PT.

In the book, *A Headache in the Pelvis*, Anderson and Wise provide patients with much needed validation. Their valuable insights educate patients about the pathophysiology of most pelvic pain syndromes along with specific anatomical information which empowers patients to seek a non-urological approach to their diagnosis and to accept subsequent responsibility for the regimen involving physical therapy, self-care, and specialized relaxation techniques mentioned earlier in the chapter.

Ending Male Pelvic Pain, by Isa Herrera, includes many photographs to help guide patients through various exercises and stretches targeting muscle groups usually implicated in CPP [49]. The author provides a urological and pelvic floor overview along with detailed instructions for exercise and self-care. Some exercises and poses are adopted from traditional yoga practices. In addition to *A Headache in the Pelvis*, I also recommend this book, which helps relieve the loneliness and catastrophizing experienced by so many men with CPP. Both books are very accessible and inspiring.

A variety of stress management and psychological counseling options should be made available to men with CPP. These psychologically based alternatives should be explained as a synergistic part of medical modalities and physical interventions. Over 20 years of practice, I have noted that some of my patients are comfortable with church-based counseling and support, while others have found solace in meditation and yoga. Still others have remedied their anxiety through a series of relaxation tapes, guided imagery, or the paradoxical relaxation techniques as described in *A Headache in the Pelvis*, by Wise and Anderson [27].

In the early twentieth century, Edmund Jacobson, "the father of relaxation therapy," developed progressive relaxation techniques. Based on his work and other more contemporary psychologists, Dr. Wise developed *Paradoxical Relaxation*. While employing some of the Jacobson's progressive relaxation methods, Dr. Wise incorporates forgiveness and acceptance into his practice. Simply summarized, the paradox in this version of relaxation is the acceptance and embracing of one's pelvic pain rather than fighting or resenting it. In his book entitled *Paradoxical Relaxation*, the development, rationale, and instruction for this form of self-care is beautifully detailed [50]. The author emphasizes the need to practice these techniques regularly so as to be prepared for the inevitable flare-ups, which occur during recovery. He uses the metaphor of trying to build a well while trying to put out a house fire. A well, of course, must be in place in order to be prepared for such events.

Some institutions provide psychological support to men through programs such as "Executive Coaching," which may afford patients a more comfortable avenue toward psychotherapy. Some relaxation techniques might also be incorporated with physiotherapy using biofeedback, creative visualization, deep breathing, and hand warming techniques.

It is not feasible for clinicians to conduct all of these types of treatments; however, clinicians must be familiar with and conversant about the options and resources available to each patient. Patients should be convinced and therefore confident about their management strategies. Because there is no "quick fix" for CPP, I believe the patient's investment must be derived, in part, from his physician's level of engagement.

15.6 A Brief Word about Prostatitis (Affecting only 5 % of Symptomatic Men)

Acute prostatitis (NIH Category 1) is the easiest of the prostatitis syndromes to recognize. Patients present with moderate to severe lower urinary tract symptoms (LUTS) characteristic of bladder infection, associated with fever, chills, malaise, perineal, rectal, lower back pain, and, sometimes, generalized arthralgias/myalgias. On physical exam, patients may have urinary retention, and the prostate gland is typically exquisitely tender. Urinalysis and cultures are usually positive; the most common organism cultured in this setting is *Escherichia coli* (80 %). Other pathogens include *Pseudomonas aeruginosa*, *Serratia*, *Klebsiella*, *Proteus*, and enterococci; however there are shifts in the bacterial spectrum due to regional uses or overuses of antibiotics and the emergence of more resistant strains.

Fluoroquinolones remain the mainstay of therapy. Initial therapy should be administered intravenously. Antibiotic alternatives for acute bacterial prostatitis are ampicillin/gentamicin combination, doxycycline, and trimethoprim-sulfamethoxazole. Treatment duration should total 4–6 weeks and can be completed using oral regimens after acute symptoms subside to prevent chronic bacterial prostatitis and/or prostatic abscess. In men with urinary retention, urethral catheterization may increase the likelihood of

prostatic abscess formation; therefore, one should strongly consider suprapubic catheter placement.

Chronic bacterial prostatitis (NIH Category 2) is more commonly found in older men as a relapsing disease with occasional exacerbations. Patients typically have a history of recurring urinary tract infections, but asymptomatic bacteriuria may also be the presenting sign. In this form of prostatitis, the prostate serves as a reservoir for bacteria. Bacterial localization cultures using the Meares–Stamey 4-glass technique, described earlier in this chapter, are necessary to confirm the diagnosis and identify the culpable organism. A modification of this technique is the pre-post massage test [51], which may be more feasible in a busy clinic setting. Recurrent infection caused by the same organism is considered one of the hallmarks of this disease.

Despite therapy, cure rates for chronic bacterial prostates are less than optimal. Prescribing antibiotics that can achieve adequate concentrations in prostatic fluid is essential; fluoroquinolones have been shown to be most efficacious. Other antibiotic alternatives include carbenicillin, doxycycline, and cephalexin. Treatment duration may vary from a minimum of 4 weeks up to 4 months. Weidner and colleagues [52] demonstrated the eradication of pathogens from expressed prostatic secretions (EPS) in 92 % of patients 3 months after a 4-week course of ciprofloxacin. After 12–24 months, 70–80 % of patients remained "cured." The presence of prostatic calculi did not influence treatment outcome in this study. In patients with frequent or serious recurrences, suppressive antibiotic regimens should be prescribed using low doses of TMP-sulfa, nitrofurantoin, or tetracycline on a daily basis. I usually consider suppressive therapy sooner in patients who have no prodrome of infection and present with fulminant uroseptic events. I also consider suppressive therapy earlier among patients who are chronically anticoagulated, in order to avoid frequent fluctuations in therapeutic warfarin levels. Transurethral resection of the prostate may afford cure in some patients; however, this remains highly controversial and usually reserved only for those patients with strong BPH indication for surgery.

15.7 Conclusion

Men suffering from chronic pelvic pain deserve a more compassionate and comprehensive approach, incorporating the lessons learned from other subspecialties. We must also consistently apply the concepts of central sensitization as they apply directly to pain perception, neuroendocrine dysfunction and stress, and myofascial and pelvic floor muscle dysfunction which can affect defecation, voiding, and sexual activity. Management often requires a component of self-care, which can be very challenging for patients with chronic and debilitating conditions such as this. Antibiotics must be avoided in men who are afebrile and have normal urine sediment! Patient empowerment derived from a positive physician-patient relationship is essential to therapy.

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