



## Review Article

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# The Diagnosis of Chronic Pelvic Pain: How Can We Detect Urological Pain?

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Chronic pelvic pain (CPP) refers to pain perceived in the pelvic region for over 6 months. It is described more specifically according to the organs involved. The diagnosis and classification of CPP are not easy because of the vague diagnostic criteria, variety of presenting symptoms, absence of diagnostic tools, and coexisting symptoms due to accompanying other diseases. This concise review aims to help urologists diagnose CPP by focusing on identifying urological pain.

**Keywords:** Chronic pelvic pain

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## INTRODUCTION


Chronic pelvic pain (CPP) refers to pain perceived in the pelvic region for at least 6 months, although precise definitions across guidelines [1]. The European Association of Urology defines CPP as “nonmalignant pain perceived in structures related to the pelvis.” Pain must be continuous or recurrent over at least 6 months [2]. It is classified according to the organs involved as urological, gynecological, gastrointestinal, neurological, and musculoskeletal [2,3]. When urologists encounter patients with CPP, they should be able to discriminate urologic pelvic pain from other types. However, the diagnosis and classification of CPP are not easy because of the lack of clear diagnostic criteria, wide variation in presenting symptoms, absence of diagnostic study tools, symptoms overlapping with other diseases, and the presence of a substantial differential diagnosis [4]. This brief review is designed to help urologists diagnose CPP by focusing on identifying urological pelvic pain patients.

## DIAGNOSIS OF CHRONIC PELVIC PAIN

CPP is diagnosed based on the patient’s symptoms, physical examination findings, diagnostic tests, and special studies of each organ. The location of the pain is determined by a clinical history and physical examination. Special studies of each organ determine the etiology of the pain within the involved organ. If a patient is diagnosed with a well-known treatable disease or a disease with a similar presentation, appropriate treatment is required [2,4-6] (Table 1). If not, the pain should be treated according to the guidelines for chronic pelvic pain syndrome (CPPS) [1-3].

Recommended diagnostic tests vary across guidelines, but all include urine analysis, culture, and cytology. Pelvic imaging studies such as computed tomography (CT) or magnetic resonance imaging (MRI) are recommended by East Asian guidelines [7,8] and the Canadian Urological Association (CUA) [5]. In our opinion, pelvic imaging studies may be helpful when a patient has hematuria, pain is poorly localized, or the patient

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**Table 1.** Diseases with similar presenting symptoms and specific, treatable diseases

Urinary tract diseases	Gynecologic diseases	Others
Bladder tumor	Endometriosis	Inflammatory bowel disease
Carcinoma in situ of the bladder	Adenomyosis	Irritable bowel syndrome
Prostate cancer	Gynecological infection	Nerve entrapment
Urinary tract infection	Gynecological malignancy	Coccydynia
Prostatitis	Pelvic congestion syndrome	Hip joint pathology
Radiation cystitis	Pelvic adhesion	Lumbar disc herniation
Noninfectious cystitis	Intrauterine device	Spinal stenosis
Urinary tract stone	Vulvodynia	Pelvic floor disorders
Urinary tract obstruction		Myofascial pain syndrome
Urethral diverticulum		
Pelvic organ prolapse		
Urinary retention		

experiences visceral pain because of its vague characteristics, as described below.

## CHARACTERISTICS OF PAIN

The characteristics of pain are the “key” to finding the involved organ. The location of pain that the patient experiences is the most important clue, but many patients cannot identify the location exactly. In addition, some patients present with symptoms other than pain, such as discomfort and pressure [4,9]. The characteristics of pain are helpful in identifying the etiology in these situations. The first step is to determine whether the pain is somatic or visceral, although many patients experience mixed pain [10].

Somatic pain is well-defined, sharp in nature, and localized to the area of pathology, but can be diffuse in its chronic stage due to peripheral and central sensitization [10]. Visceral pain is typically diffuse, poorly localized, and vague in nature, presenting as aching, cramping, or squeezing, and fluctuates in intensity, accompanied by exaggerated motor and autonomic reflexes [11]. These characteristics of visceral pain are due to the different nature of the receptors and the central organization of visceral nociceptive mechanisms. Many viscera are innervated by receptors whose activation does not evoke conscious perception. Not all visceral pathologies evoke pain, and some are not linked to visceral injuries [12]. The other characteristic of visceral pain is that it is referred to other, often remote, locations. The proposed mechanism is the convergence of nociceptive af-

ferents on second-order neurons in the spinal cord. The referred pain is usually dull, aching, gnawing, and expanding. Referred pain is perceived in the somatic region at the same spinal cord level, with no neuropathic sign [13,14]. Visceral referral also occurs due to viscerovisceral convergence [3].

## UROLOGICAL PAIN

Urological pain includes pain involving the bladder, prostate, urethra, penis, testicles, and epididymis [2,3]. Pain in the urethra, penis, testes, and epididymis is easy to diagnose because the pain is well-localized within the organ, which is usually tender on palpation. Clinical history and physical examination are sufficient, but ultrasonography and endoscopy may provide more information and are recommended in many guidelines [2,3,9].

Patients with bladder pain often complain of suprapubic pain, but also pain in other pelvic locations, including the urethra, vulva, vagina, and rectum, and extragenital locations such as the lower abdomen and back [15-17]. Thus, urologists cannot easily identify bladder pain based on the pain's location. In definition, patients with chronic bladder pain, such as interstitial cystitis/bladder pain syndrome (IC/BPS), should have lower urinary tract symptoms (LUTS), such as frequency and urgency, or pain related to bladder filling [9,16]. However, LUTS are not a specific symptom. LUTS are highly prevalent, especially in elderly patients with LUTS and benign prostatic hyperplasia (BPH) and overactive bladder (OAB) [18]. Thus, physicians

should suspect the possibility of nonurological pelvic pain with a comorbidity of LUTS/BPH or OAB. However, the urgency experienced by IC/BPS patients is somewhat different from that experienced by OAB patients; the urgency of IC/BPS patients may be more constant and relieved on voiding [19]. However, the urgency of OAB is a “compelling desire to urinate that is difficult to postpone,” according to the International Continence Society definition [20]. Therefore, IC/BPS patients void to relieve pain, but OAB patients void to avoid incontinence [9]. Tenderness of the urinary bladder on physical examination is another clue for identifying bladder pain patients [21]. Thus, bladder pain can be diagnosed based on the nature of pelvic pain, tenderness of the bladder, and the presence of urinary frequency and urgency.

If the pain is suspected to be bladder pain, cystoscopy is helpful in distinguishing it from diseases with similar presentations, such as bladder tumors. Cystoscopy is also helpful for classifying IC/BPS with the presence/absence of Hunner lesions. With the patient in the lithotomy position for cystoscopy, a pelvic examination can be performed simultaneously to identify the trigger point and site for injection therapy. A potassium sensitivity test is not recommended [9]. Several biomarkers have been investigated with promising results for antiproliferative factors [22]. An anesthetic challenge test (intravesical instillation of lidocaine mixed with sodium bicarbonate) is recommended by the CUA and may have diagnostic benefits [5].

Patients with chronic prostatitis and CPPS (CP/CPPS) complain of pain in various locations, including the perineum, suprapubic region, testicles, or tip of the penis. Pain is typically felt during or at the end of voiding and/or ejaculation [23]. Prostatic pain is usually accompanied by urinary frequency and a sense of incomplete bladder emptying. The prostate is usually tender on rectal examination. Many guidelines recommend ultrasonography and endoscopy [2,3]. In men, the clinical characteristics of CP/CPPS and IC/BPS are very similar, and some patients experience both. In such cases, treatment options for both syndromes can be used simultaneously [24,25].

## GYNECOLOGICAL PAIN

Gynecological or female genital pain includes pain of the vulva, vaginal vestibule, clitoris, uterus, ovary, fallopian tube, and adnexal tissue. Pain of external female genital organs can be diagnosed based on pain location and tenderness. Dyspareunia is common. Pain of intra-abdominal gynecological organs is usu-

ally accompanied by dysmenorrhea, abnormal menstrual bleeding, and dyspareunia, and is cyclic in nature. Motion tenderness of the uterine cervix may also be observed [17,18].

Endometriosis, pelvic inflammatory disease, and adhesions are common etiologies [2,6,11,26], although it is debatable whether adhesions are an etiology of pelvic pain. Pelvic ultrasonography, CT, MRI, or laparoscopy are recommended [3]. Neuropelvelogy deals with the evaluation and management of gynecologic pelvic pain [10]. Vulvodynia patients may complain of pain during urination when urine contacts the vulva, but the location of tenderness on physical examination may differentiate it from urological pain [21].

## GASTROENTERIC PAIN

Gastroenteric pelvic pain is typically accompanied by gastrointestinal symptoms, such as painful defecation, constipation/diarrhea, and bloating [27]. The anus or rectum is tender on a rectal examination, if involved. Colonoscopy, ultrasonography, CT, or MRI is recommended [3].

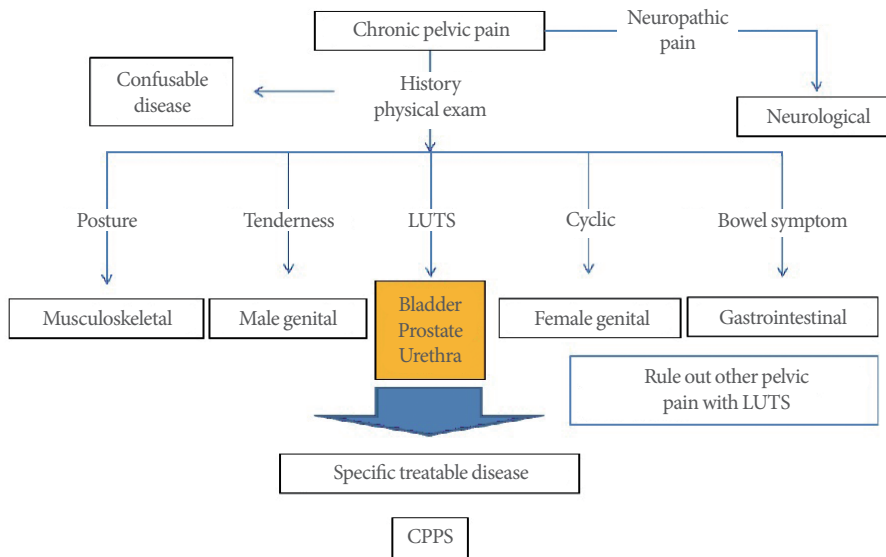
## NEUROLOGICAL PAIN

Neuropathic pain is pain due to neuropathy [3]. The nature of neuropathic pain is characterized by burning, throbbing, stabbing, tingling, stinging, shooting, or an electric shock-like sensation. Allodynia, such as paresthesia and dysesthesia, accompanies this condition. Tissue atrophy and skin changes are also possible [6]. A neurological examination [21], electromyography, a nerve conduction velocity study, diagnostic nerve block, ultrasonography, or MRI can be helpful [3].

Nerve entrapment syndrome, as an etiology of pain, may be overlooked. Nerves can be entrapped by scars from surgery, trauma, or childbirth. Pain is felt over the skin supplied by each nerve. Pudendal neuralgia is caused by entrapment of the pudendal nerve in Alcock's tunnel, and patients experience pain while sitting, which is relieved by standing or when in a supine position [6].

## MUSCULOSKELETAL PAIN

Muscular pain is accompanied by altered muscle tone, muscle spasms, tension, and stiffness. Pain of the bone, joint, or ligament is related to movement or position. For example, patients with coccydynia experience pain when standing up from sit-



**Fig. 1.** Localization of chronic pelvic pain. LUTS, lower urinary tract symptoms; CPPS, chronic pelvic pain syndrome.

ting. Coccydynia is caused by coccygeal hypermobility [6].

A physical examination of the musculoskeletal system includes pelvic floor muscle palpation, forced flexion, abduction, and the external rotation test. Surface electromyography, dynamometry, real-time ultrasonography, elastometry, trigger point injection or needling, x-rays, or MRI is recommended [3,6].

**SUMMARY**

There are many guidelines for CPP and IC/BPS, with different definitions and diagnostic criteria, although all guidelines agree that it is a diagnosis of exclusion. The diagnosis can be made by history-taking, physical examination, and special studies of each organ. Pain should be characterized as visceral, somatic, or neuropathic. Aggravating factors, organ function, and prior surgical history are valuable for the diagnosis.

Urological pelvic pain can be diagnosed based on the location and nature of the pain and tenderness on physical examination. Bladder pain should be accompanied by LUTS and pain related to voiding. However, LUTS may be a symptom of another disease or syndrome, such as OAB or BPH. Thus, the possibility of other etiologies of pelvic pain should be excluded in order to diagnose bladder pain. Urologists can diagnose urological pelvic pain, if it is located in the urological organs, patients have urologic organ-specific symptoms, and the possibility of the pain originating in other organs is excluded (Fig. 1).

**AUTHOR CONTRIBUTION STATEMENT**

- Conceptualization: *YTK*
- Writing-original draft: *JJ, YTK*
- Writing-review & editing: *JJ*

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**REFERENCES**

1. Malde S, Palmisani S, Al-Kaisy A, Sahai A. Guideline of guidelines: bladder pain syndrome. *BJU Int* 2018;122:729-43.
2. Fall M, Baranowski AP, Elneil S, Engeler D, Hughes J, Messelink EJ, et al. EAU guidelines on chronic pelvic pain. *Eur Urol* 2010;57:35-48.
3. Doggweiler R, Whitmore KE, Meijlink JM, Drake MJ, Frawley H, Nordling J, et al. A standard for terminology in chronic pelvic pain syndromes: a report from the chronic pelvic pain working group of the international continence society. *Neurourol Urodyn* 2017;36: 984-1008.
4. van de Merwe JP, Nordling J, Bouchelouche P, Bouchelouche K, Cervigni M, Daha LK, et al. Diagnostic criteria, classification, and nomenclature for painful bladder syndrome/interstitial cystitis: an ESSIC proposal. *Eur Urol* 2008;53:60-7.

5. Cox A, Golda N, Nadeau G, Nickel JC, Carr L, Corcos J, et al. CUA guideline: diagnosis and treatment of interstitial cystitis/bladder pain syndrome. *Can Urol Assoc J* 2016;10:E136-55.
6. Nelson P, Apte G, Justiz R 3rd, Brismée JM, Dedrick G, Sizer PS Jr. Chronic female pelvic pain--part 2: differential diagnosis and management. *Pain Pract* 2012;12:111-41.
7. Homma Y, Ueda T, Tomoe H, Lin ATL, Kuo HC, Lee MH, et al. Clinical guidelines for interstitial cystitis and hypersensitive bladder syndrome. *Int J Urol* 2009;16:597-615.
8. Homma Y, Ueda T, Tomoe H, Lin ATL, Kuo HC, Lee MH, et al. Clinical guidelines for interstitial cystitis and hypersensitive bladder updated in 2015. *Int J Urol* 2016;23:542-9.
9. Hanno PM, Erickson D, Moldwin R, Faraday MM. Diagnosis and treatment of interstitial cystitis/bladder pain syndrome: AUA guideline amendment. *J Urol* 2015;193:1545-53.
10. Possover M, Andersson KE, Forman A. Neuropelvelogy: an emerging discipline for the management of chronic pelvic pain. *Int Neurourol J* 2017;21:243-6.
11. Apte G, Nelson P, Brismée JM, Dedrick G, Justiz R 3rd, Sizer PS Jr. Chronic female pelvic pain--part 1: clinical pathoanatomy and examination of the pelvic region. *Pain Pract* 2012;12:88-110.
12. Cervero F. Visceral versus somatic pain: similarities and differences. *Dig Dis* 2009;27 Suppl 1:3-10.
13. Bogduk N. On the definitions and physiology of back pain, referred pain, and radicular pain. *Pain* 2009;147:17-9.
14. Nader A, Candido KD. Pelvic pain. *Pain Pract* 2001;1:187-96.
15. Warren JW, Brown J, Tracy JK, Langenberg P, Wessellmann U, Greenberg P. Evidence-based criteria for pain of interstitial cystitis/painful bladder syndrome in women. *Urology* 2008;71:444-8.
16. Tincello DG, Walker ACH. Interstitial cystitis in the UK: results of a questionnaire survey of members of the Interstitial Cystitis Support Group. *Eur J Obstet Gynecol Reprod Biol* 2005;118:91-5.
17. FitzGerald MP, Koch D, Senka J. Visceral and cutaneous sensory testing in patients with painful bladder syndrome. *Neurourol Urodyn* 2005;24:627-32.
18. Choi H, Bae JH. Overview of the epidemiology of lower urinary tract dysfunction in South Korea. *Int Neurourol J* 2016;20:91-100.
19. Diggs C, Meyer WA, Langenberg P, Greenberg P, Horne L, Warren JW. Assessing urgency in interstitial cystitis/painful bladder syndrome. *Urology* 2007;69:210-4.
20. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, et al. The standardisation of terminology of lower urinary tract function: report from the of the International Standardisation Subcommittee Continence Society. *Neurourol Urodyn* 2002;21:167-78.
21. Weiss JM. Pelvic floor myofascial trigger points: manual therapy for interstitial cystitis and the urgency-frequency syndrome. *J Urol* 2001;166:2226-31.
22. Kuo HC. Potential urine and serum biomarkers for patients with bladder pain syndrome/interstitial cystitis. *Int J Urol* 2014;21:34-41.
23. Litwin MS, McNaughton-Collins M, Fowler FJ, Nickel JC, Calhoun EA, Pontari MA, et al. The National Institutes of Health chronic prostatitis symptom index: development and validation of a new outcome measure. Chronic Prostatitis Collaborative Research Network. *J Urol* 1999;162:369-75.
24. Forrest JB, Schmidt S. Interstitial cystitis, chronic nonbacterial prostatitis and chronic pelvic pain syndrome in men: a common and frequently identical clinical entity. *J Urol* 2004;172:2561-2.
25. Miller JL, Rothman I, Bavendam TG, Berger RE. Prostatodynia and interstitial cystitis: one and the same? *Urology* 1995;45:587-90.
26. Fauconnier A, Borghese B, Huchon C, Thomassin-Naggara I, Philip CA, Gauthier T, et al. Epidemiology and diagnosis strategy: CNGOF-HAS endometriosis guidelines. *Gynecol Obstet Fertil Senol* 2018;46:223-30.
27. Drossman DA. The functional gastrointestinal disorders and the Rome III process. *Gastroenterology* 2006;130:1377-90.