Painful bladder syndrome

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Abstract

Painful bladder syndrome is a chronic debilitating condition which is both difficult to diagnose and to treat. Its aetiology and pathogenesis is very poorly understood. It is thought that mast cells and inflammation have a key role in its pathogenesis.

A diagnosis is generally made after all other potential causes of pain and lower urinary tract symptoms are excluded. Treatment options are very limited but are generally targeted to providing symptomatic relief.

Keywords bladder pain; cystoscopy; frequency; glomerulations; Hunner's ulcer; inflammation

Introduction

Painful bladder syndrome (PBS) or interstitial cystitis (IC), is a chronic condition which causes a significant debilitating effect on quality of life. It was first described by Skene as "an inflammation that has destroyed the mucous membrane partly or wholly and extended to the muscular parietes", in 1887.

Since then, multiple different attempts at defining the condition have been made. The general consensus now is that it is a clinical diagnosis characterized by vague bladder pain and nonspecific urinary symptoms. The International Continence Society (ICS) defines PBS as "the complaint of suprapubic pain related to bladder filling, accompanied by other symptoms such as increased daytime and night-time frequency, in the absence of proven urinary infection or other obvious pathology". The ICS reserved the diagnosis of IC for patients with "typical cystoscopic and histological features." The classic cystoscopic changes generally are glomerulations, haemorrhages and occasionally a Hunner's ulcer. Typical histological changes include an abundance of mast cells The European Society for the Study of PBS/IC (ESSIC) renamed PBS as the Bladder Pain Syndrome (BPS). BPS is defined as "chronic (>6 months) pelvic pain, pressure or discomfort perceived to be related to the urinary bladder accompanied by at least one other urinary symptom such as persistent urge to void or frequency". Confusable diseases such as the overactive bladder syndrome and other conditions like endometriosis should be excluded. Further classification could be performed depending on cystoscopic findings following hydrodistension and morphological changes on bladder biopsy.

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Prevalence

Large population based studies are thought to be the most accurate way of identifying the prevalence of the disease. However, accurate epidemiological studies have been hampered by a variety of factors, namely the lack of an accepted definition, the absence of a validated diagnostic marker and the overlapping symptoms between the overactive bladder syndrome and bladder pain. Prevalence rates are therefore highly variable. The older studies quote a prevalence rate of 18.1/100,000 women whereas more recently a rate of 197/100,000 women has been quoted. It typically affects premenopausal women.

Most of the epidemiologic studies performed are based on symptom questionnaires. The nature of the disease spans a large spectrum of symptoms. Hence, because different questionnaires address different symptoms prevalence rates vary depending on the questionnaire used. This was highlighted when the two main symptom based questionnaires used to assess women with BPS, the O'Leary Sant (OLS) questionnaire and the Pelvic Pain and Urgency/Frequency (PUF) were compared in the same population. The prevalence rate using the former was 0.57%. This was in marked contrast to the 12.6% prevalence rate obtained using the PUF questionnaire, hence highlighting the need for a more standardized questionnaire to be used for epidemiologic studies. In a recent large telephone survey in the United States, a prevalence rate of 3–7% was identified. (Only soft markers or associated diseases like fibromyalgia).

Aetiology and pathogesesis

The aetiology and pathogenesis of PBS is very poorly understood. Over the years a number of theories have been put forward. Inflammation and mast cell activation are thought to have a role. Both are thought to be implicated and are generally found in histological samples of most ulcerative and some nonulcerative BPS.

Other theories include the possible implication of infection as an initial trigger, although documented evidence of a urinary tract infection at the onset of symptoms has only been found in a limited number of patients. Furthermore no particular organism or class of organisms has ever been demonstrated.

Autoantibodies, namely antinuclear antibodies, have been found in some patients with BPS. This, together with similar clinical and histological features found in some patients with autoimmune disorders, has prompted the possibility of an underlying autoimmune theory in the pathogenesis of some patients with BPS.

More recently there is some evidence to suggest that PBS may be part of a generalized somatic disorder, thus explaining the possible co-existence with other chronic conditions such as fibromyalgia and irritable bowel syndrome. They share features like symptoms of fatigue and pain and also show an association with "stress" and psychosocial factors. Both fibromyalgia and BPS/IC patients display substantial clinical overlap and studies have shown the latter display diffusely increased peripheral

nociception as seen in patients with fibromyalgia. It may therefore be speculated that the same types of central mechanisms that contribute to the pathogenesis of fibromyalgia may be operative in the pathogenesis of BPS/IC.

The general consensus is that the pathogenesis involves damage occurring to the bladder epithelium by a primary insult. This may be in the form of bacterial cystitis, bladder trauma, an autoimmune disorder, toxins etc. The triggering factor will then set off the cascade of events seen in Figure 1 below. This figure also highlights the importance of mast cells and their interaction with other inflammatory cells and the nervous system. All of these factors are implicated in the pathogenesis.

Genetics may also play a role in the aetiology. A study using a combined mail-in and telephone survey concluded that adult female first degree relatives have a prevalence rate of BPS 17 times that of the normal population suggesting a possible genetic susceptibility to the condition. A potential genetic role was also shown in a twin study that demonstrated a higher concordance of BPS amongst monozygotic compared to dizygotic twins.

Clinical presentation

The clinical presentation of these patients may be very variable. Symptoms are generally vague and may develop over a number of years. They generally start off having mild episodic symptoms lasting for several days, which tend to become more severe and consistent with time. The episodic and nonspecific nature of the disease is generally responsible for a delay in making a diagnosis.

Patients generally present with pain and lower urinary tract symptoms (these are the two essential diagnostic criteria). Pain is commonly suprapubic, although it may also be experienced in the lower abdominal region, vulva or vagina, urethra or even rectum. It may be described as a burning pain, as a lower abdominal pressure sensation or urethral pain experienced when passing urine. Urinary symptoms typically include frequency and less commonly urgency. Nocturia is less common in these patients.

A variety of factors may exacerbate symptoms, including certain acidic foods like tomatoes and alcohol, spicy foods, caffeine and chocolate. Some patients claim that their symptoms are exacerbated by sexual intercourse. This may cause a significant negative impact on their relationships. In some women symptoms are significantly worse in their pre menstrual week.

A higher prevalence of systemic and autoimmune disorders like rheumatoid arthritis and Sjogren's syndrome is found in patients with BPS. Symptoms of these conditions may therefore co-exist with the more typical symptoms of bladder pain and lower urinary tract symptoms which these patients usually present with.

Possible mechanisms involved in pathogenesis of PBS (Moutzouris D *et al* and Hanno *et al*)

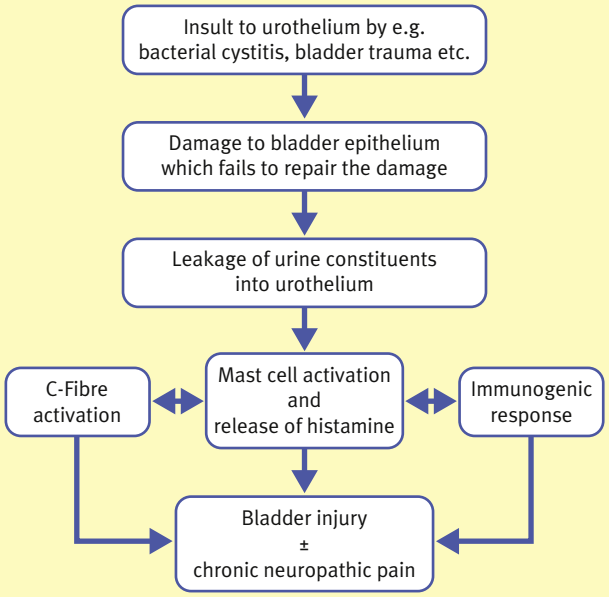

Figure 1

Management

History and physical examination

Investigation of these patients aims to exclude any other pathology prior to making a diagnosis of BPS. Their initial management should include a thorough history and physical examination. History should focus on eliciting the individual symptoms and any of their specific characteristics. A diagnosis of BPS is generally made when there is "a combination of an unpleasant sensation (pain, pressure or discomfort) perceived to be related to the urinary bladder, associated with lower urinary tract symptoms of more than 6 weeks duration, in the absence of infection or any other identifiable cause". (Hanno et al.)

During history taking, emphasis should be made on the site of the pain and its character. The relationship of the pain to bladder filling and emptying should be noted. Any associated lower urinary tract symptoms, any bladder or urological previous diseases and any past history of pelvic surgery, pelvic irradiation or autoimmune diseases should all be enquired about. Any exacerbating or relieving factors or any specific pattern of the symptoms should also be identified.

A thorough physical examination should also be carried out, including a general assessment and examination of the lower abdomen. This helps identify scars from previous surgery, any obvious organ enlargement as well as any areas of tenderness. Hernial orifices should also be examined.

In addition, a pelvic examination should be performed in order to be able to map pain over the vulval area. A bimanual examination aims to identify any enlarged organs as well as eliciting any tender points over the urethra, bladder, levator muscles or adnexae. This helps in diagnosing BPS and also to exclude any other diseases that may be part of the differential diagnosis.

Investigations

A number of investigations are available in order to make an accurate diagnosis, exclude any confusable diseases and define the severity of the illness. There is however no single investigation or test that will identify PBS.