Interstitial Cystitis/Bladder Pain Syndrome

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1. Introduction

Interstitial cystitis/bladder pain syndrome (IC/BPS) is a clinical syndrome diagnosed by patient-reported lower urinary tract symptoms after ruling out other identifiable causes of bladder pain. Patients generally present with "**an unpleasant sensation (pain, pressure, 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 infectio or other identifiable causes** ." (**AUA Guideline for the Diagnosis and Treatment of IC/BPS** and as defined b the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction).[1] IC/BPS may be distinguished from other causes of pelvic pain by the presence of lower urinary tract symptoms (frequency, nocturia, urgency) combined with "painful bladder filling" (the pain is worse when the bladder is full or distended "painful urgency" (the urgency to urinate is due mainly to pain/pressure/discomfort instead of fear of incontinence). [2] While a relationship of the pain to the voiding cycle, particularly bladder filling, is not pathognomonic for IC/BPS, the absence of this feature should prompt consideration of other causes of pelvic pa

2. Etiology and Pathophysiology

The etiology and pathophysiology of IC/BPS remain poorly understood. Many underlying contributors to IC/BPS have been postulated, including defective urothelial permeability, mast cell activation, inflammatory/infectious events, peripheral and central sensitization of the nervous system, and aberration of the HPA (hypothalamic pituitary adrenal) axis and stress response; however, none has been conclusively demonstrated to cause the clinical syndrome. A subset of IC/BPS patients have systemic presentation beyond the pelvis, manifesting with anxiety, depression, systemic pain, and other chronic pain syndromes (e.g., irritable bowel syndrome, fibromyal migraine headache).[3,4] These heterogeneous presentations support the hypothesis that IC/BPS as a clinical syndrome may comprise a convergent symptomatology for multiple etiologies of bladder pain that differ in their underlying pathophysiologies. While several different phenotyping strategies have been proposed to subclassify subjects into different categories, the only phenotype of IC/BPS that is well recognized and will impact the selec of treatments is defined by the presence of Hunner lesions (see below). [5]

3. Epidemiology

Historically, the prevalence of IC/BPS was believed to be between 50 to 500 per 100,000 (0.05%-0.5%) depend on the case definitions and methodologies utilized. More recently, the RAND Interstitial Cystitis Epidemiology (RICE) studies estimated the prevalence of IC/BPS symptoms in adult women to be much higher, ranging from 2.7% to 6.5%, which translated to 3.3 to 7.9 million adult US women. [6] Using a similar methodology, the prevale

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of IC/BPS in the adult male population was estimated to be between 1.9% and 4.2% (more than 2.1 million mer the US).[7] Prevalence estimates vary widely with variations in diagnostic criteria (e.g., the requirement for pain a the primary diagnostic feature vs. other features). There are significant overlaps between the symptomatology c IC/BPS and CP/CPPS (chronic prostatitis/chronic pelvic pain syndrome) in men, suggesting that IC/BPS may b under-diagnosed in men with chronic pelvic pain.[2,7] Additionally, there is symptomatic overlap between overactiv bladder and IC/BPS in some patients, making estimation of the true incidence challenging without any objective diagnostic tests or markers.[8,9]

Many IC/BPS patients may additionally be diagnosed with pelvic floor dysfunction, which manifests with pelvic pain, dyspareunia, and urinary hesitancy. Levator ani pain and hypertonic pelvic floor dysfunction are present in many as 85% of patients with IC/BPS and/or chronic pain syndromes.[10] Levator/pelvic floor myofascial pain, however, can exist independent of IC/BPS and frequently manifests with a similar presentation,[11] complicating c understanding of the epidemiology of IC/BPS.

4. Diagnosis and Evaluation

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Table 1. Differential Diagnosis
Urinary tract infection
Overactive bladder
Urethral diverticulum
Bladder outlet obstruction
Bladder or distal ureteral stone
CP/CPPS (chronic prostatitis/chronic pelvic pain syndrome)
Bladder tumor
Other forms of cystitis
Endometriosis
Vulvodynia
Pelvic inflammatory disease
Herpes
Diverticulitis

Evaluation should include a medical and surgical history, physical examination, and basic office assessment. The goals of assessment are to determine symptoms and signs characteristic of IC/BPS, obtain information on baseline pain levels, understand aggravating or alleviating factors, and to rule out other identifiab causes of pain and bladder dysfunction in the differential diagnosis. Diagnosis of IC/BPS may be challenging du to the vast array of differential diagnoses which must be considered by the clinician as listed in **Table 1**. **Bladd or pelvic pain (including sensation of pressure and discomfort) associated with lower urinary tract symptoms (e.g., frequency, urgency, nocturia) are the hallmark symptoms of IC/BPS**. Many IC/BPS patier complain that their pain is worsened with bladder filling or distention.[2] Others describe voiding frequently to avoi or to relieve pain, instead of to avoid incontinence.[2,8] The pain symptom helps to distinguish IC/BPS from overactive bladder which presents with urgency urinary incontinence in addition to urinary urgency, frequency, a nocturia.[8]

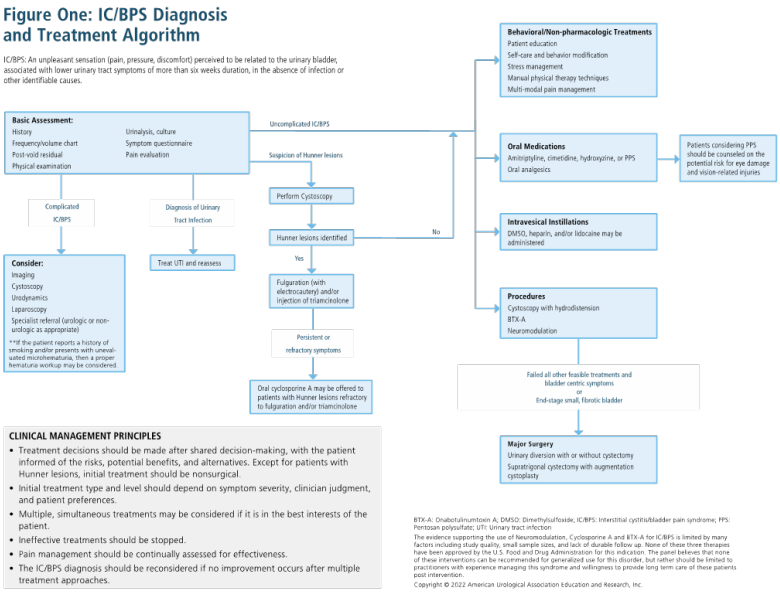

Figure 1: Diagnostic and Treatment Algorithm of IC/BPS from the 2022 AUA Guideline

Basic evaluation should include a thorough history, a focused physical examination, a frequency/volume chart, measurement of post-void residual volume, urinalysis and urine culture, symptom questionnaires, and assessm of pain levels. Patients with **unevaluated microhematuria** or substantial risk factors, such as a smoking history should be evaluated for bladder malignancy regardless of any suspicion of IC/BPS.[12] **A diagnostic algorithm o IC/BPS is presented in the 2022 AUA Guideline (Figure 1)**.[1]

Although IC/BPS is more common in women, this clinical diagnosis is not exclusive to women. The diagnosis of IC/BPS should be strongly considered in men with pain, pressure, or discomfort perceived to be related to the urinary bladder and associated with urinary frequency, nocturia or urgency. More than 50% of CP/CPPS patient reported that their pain is worsened with bladder filling, thus possibly representing IC/BPS.[2] There are significan symptom overlaps between IC/BPS and CP/CPPS, and IC/BPS is likely under-diagnosed in men with chronic pelvic and urogenital pain.[2,7] It is important to exclude other common identifiable causes in men such as bladder outlet obstruction from benign prostatic hyperplasia, urethral stricture disease, bladder stone, bladder tumor, or prostate cancer.

Optional tests to be utilized at the clinician's discretion include cystoscopy, urodynamics, and imaging. Cystosc

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and urodynamics are typically unnecessary in the diagnosis of uncomplicated IC/BPS, but can be appropriate following basic assessment when the diagnosis remains in doubt or when additional testing is necessary to rule other pathologies. This may include patients who present with hematuria, incontinence, overactive bladder symptoms, sterile pyuria, or a history of pelvic surgery or conditions (e.g., history of midurethral sling surgery or pelvic organ prolapse surgery using mesh, history of urethral stricture, or suspicion of bladder stone).

Cystoscopy is useful to identify a distinct subset of IC/BPS patients who have Hunner lesions inside the bladder, particularly in men and women over the age of 50 since the prevalence of Hunner lesions in this ag subgroup is higher.[5,13,14,15] Identification of Hunner lesions will impact the selection of treatments, as most patien with these lesions will respond to treatment. A Hunner lesion is often described as a circumscript, reddened mucosal area with small vessels radiating towards a central scar. The lesion can rupture with increasing bladde distention, with petechial oozing of blood from the lesion and the mucosal margins in a waterfall manner. Hunne lesions are not exclusive to women: they may be seen in both men and women. The lesion can be seen on offic cystoscopy without hydrodistention of the bladder, and may be visually indistinguishable from carcinoma in situ the bladder. Biopsy of the Hunner lesion typically reveals acute and chronic inflammation. A visual atlas was published to assist general urologists (non-IC/BPS specialists) in identifying Hunner lesions during office cystoscopy. [16]

IC/BPS with Hunner lesions represents a different phenotype from IC/BPS without Hunner lesions. A recent systematic review demonstrated significant differences in patient age, urinary symptoms, urinary marker profiles and treatment responses between patients with and without Hunner lesions.[5] Detection of Hunner lesions in patients with IC/BPS increases substantially after the age of 50 in both men and women, with a prevalence of le than 1 in 20 (4%) in patients under 50, approximately 20% in patients age 50-70, and >50% in patients over 70. Cystoscopy remains the only reliable way to diagnose Hunner lesions visually.

The 2022 AUA Guideline recommends that if Hunner lesions are present, fulguration and/or injection of triamcinolone should be performed.[1] (See Treatment section below) Since patients with Hunner lesions respo differently than those without the lesions (e.g., dramatic improvement after triamcinolone injection or fulguration that can last 6 to 12 months), [5] diagnostic cystoscopy is warranted in IC/BPS patients over the age of 50 to iden Hunner lesions. [16] This can be done in the office without hydrodistention.[16] Given the higher yield of cystoscopy i these older patients, cystoscopy should be considered early after diagnosis in patients over 50, as recognition o Hunner lesions will impact the selection of treatments (see AUA Guideline).[1]

Identification of glomerulations (submucosal hemorrhage manifesting as submucosal red spots) on cystoscopy neither sensitive nor specific for the diagnosis of IC/BPS. Glomerulations may be seen in patients who have a defunctionalized bladder, a history of radiation therapy, or chemotherapeutic or toxic drug exposure. Glomerulations may also be present in asymptomatic patients undergoing cystoscopy for other conditions.[17,18] **Absence of glomerulations or Hunner lesions does not rule out IC/BPS if clinical findings are otherwise consistent with IC/BPS**.

No consensus exists on urodynamic diagnostic criteria for IC/BPS. Urodynamic evaluation may provide additior information regarding urinary tract dysfunction when the diagnosis of IC/BPS is unclear (e.g., patients presentin with urinary incontinence or high post-void residual volume). Given the common coincidence of hypertonic pelvi floor dysfunction with IC/BPS, urodynamic testing can often result in iatrogenic pelvic floor spasm, which can confound interpretation. Thus, urodynamic testing should only be performed in selected patients when the diagnosis is unclear or in a complicated case.

Potassium sensitivity tests should not be used as a diagnostic tool since the outcome does not change either th management or the treatment approach. False positives have been reported in patients with other disorders on

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differential diagnosis list, such as bacterial cystitis or radiation cystitis. In addition, the testing is painful for the patient and risks triggering a severe symptom flare.

Intravesical instillation of local anesthetics such as lidocaine may help to localize the source of pain to the bladc Improvement of pelvic pain after intravesical lidocaine suggests that the bladder contributes to the pelvic pain.

5. Treatment

Patients with IC/BPS often benefit from management with multimodal treatment strategies. Positive response rates for an individual treatment are difficult to ascertain since the symptoms of IC/BPS may be variable with up 50% of patients having spontaneous remission. While the AUA guideline previously recommended a hierarchica approach for management of IC/BPS, the updated guideline, released in 2022, no longer divides treatment into these tiers.[1] The AUA Guideline now divides treatment into different approaches to treatment: behavioral/non-pharmacologic, oral medications, bladder instillations, other procedures, and major surgery. **The non-algorithmic management recommendations stress the need for shared decision making and an individualized approach to treatment for each patient based on their unique characteristics.** Also, the guidelines describe clinical management principles which should be considered by all clinicians prior to starting treatments, in particular maximizing non-surgical management before considering more invasive procedures. M IC/BPS treatments benefit only a subset of patients who are not readily identifiable prior to initiation of the thera Therefore, the initial treatment decisions should be made after shared decision-making, selecting an approach dependent on the severity of the patient's symptoms, the judgment of the physician, and the patient's preferenc after being fully informed of the risks, potential benefits, and alternatives. Throughout a patient's course of thera their pain should be managed with the goal of minimizing their discomfort and side effects in order to maximize function. Treatments that are ineffective after a reasonable trial should be discontinued. In patients who fail to respond to treatments in a reasonable time frame, alternative diagnoses should be reconsidered.

Behavioral/non-pharmacologic treatments include patient education, self-care practices and behavioral therapy stress management and coping strategies, and physical therapy. All patients should be educated about normal bladder function and IC/BPS including what is known and not known about the condition. To set appropriate expectations for treatment, patients should be advised that **IC/BPS is a chronic disorder likely requiring continued treatment**. Dynamic management strategies may be needed to respond to the typical course of symptom exacerbations and remissions. Patients should be counseled that there is generally no single effective treatment, that multiple therapeutic options may be required, and that they may need combination therapy. Resources for patient education regarding IC/BPS are provided by the Urology Care Foundation of the AUA. M IC/BPS patients are highly engaged in their therapy; high quality, consistent information is critical to empower th patient and collaborate with the treating practitioner.

Modifying certain behaviors can also improve symptoms in some IC/BPS patients. **Patients need to be aware that specific behaviors may worsen symptoms, although these triggers may be different for different individuals.** Certain foods or fluids can contribute to symptoms; avoiding common bladder irritants or determini which foods and fluids contribute to symptoms may help manage the condition. Certain types of exercises, sexu intercourse, tight-fitting clothing, and constipation can also exacerbate symptoms in some patients. Self-care practices, such as yoga or acupuncture, meditation, non-pharmacologic analgesia (heat or cold over tender are and some over-the-counter products (e.g., phenazopyridine) may be helpful and have minimal risks.[19] In a study women with IC/BPS using guided imagery, more than 45% of the treatment group responded to imagery therap In addition, pain scores and episodes of urgency significantly decreased in the treatment group.

Stress management also plays a central role in improving baseline functionality and managing stress-induced

symptom exacerbations. Clinicians and patients should be aware that psychological stress is a common trigger flaring symptoms; effective coping strategies are a key part of management. Patients should be encouraged to seek assistance in managing family, work, or past traumatic stressors from qualified counselors.

Manual therapy for pelvic floor trigger points and myofascial release for IC/BPS delivered by an appropriate specialist has been demonstrated to result in marked or moderate improvement in symptoms after treatment in 70% of patients.[21] Pelvic floor therapy decreased the neurogenic triggers, decreased central nervous system sensitivity, and alleviated pain. A recent randomized trial supported use of **pelvic floor myofascial physical therapy (MPT)** versus global therapeutic massage (GTM) in **female IC/BPS patients who have pelvic floor tenderness on pelvic examination**.[22] Following ten 60 minute sessions over 10 weeks, 59% of women in the MPT group reported symptom improvement compared with 26% of women in the GTM group. **Critically, clinicians must be aware that pelvic floor physical therapy directed at pelvic floor muscle strengthening such as Kegel exercises, does not improve IC/BPS symptoms and may worsen the condition**.

Pain should also be managed at every step as clinically indicated. A recent AUA Update has reviewed non-opic adjunct strategies that can be used to manage IC/BPS pain.[23] Pharmaceutical pain treatment could include non-steroidal anti-inflammatories, acetaminophen, urinary analgesics, and other centrally-acting agents used in other chronic pain conditions (e.g., gabapentin, pregabalin). Given the global opioid crisis, opioid use in IC/BPS controversial, particularly considering the significant harms recognized with long-term use. While no studies hav specifically addressed the chronic use of opioids in IC/BPS, studies in other non-cancer chronic pain conditions have revealed significant adverse effects related to long-term use, including neurologic, gastrointestinal, and endocrine disruptions.[24,25] Opioids may be overdosed, misused, and interact with other sedatives (e.g., alcohol, prescription anti-anxiety or anti-insomnia medications). In addition, longer-term opioids can negatively impact quality of life, mood, and social engagement, leading to greater disability. Ideally, patients should be reassured addressing their pain is central in shared treatment goals. Collaboration with a pain management specialist sho also be continued or implemented if the patient is significantly disabled or limited by their pain or utilizes narcoti on a chronic basis. Clinicians should be familiar with the AUA Position Statement and the CDC Guideline on chronic opioid use.

Oral medications with potential utility in IC/BPS include tricyclic antidepressants (amitriptyline, nortriptyline), antihistamines (hydroxyzine, cimetidine), pentosan polysulfate (Elmiron™) and cyclosporin A. Of note, systemic (oral) long-term glucocorticoids are not recommended, given high rates of serious adverse events, such as new-onset diabetes, pneumonia, and hypertension.

Amitriptyline, a tricyclic antidepressant, in small doses (10 mg TID or 25 mg at night, up to a maximum of 75 mg night) has been demonstrated to alleviate symptoms in some patients. Amitriptyline functions in blocking H1 receptors and stabilizing mast cells. Tricyclic antidepressants also have central and peripheral anticholinergic properties, block serotonin and norepinephrine re-uptake, and are sedating. Sedation is often helpful in the pati with severe nocturia who is sleep deprived, but it is also one of the main side effects noted to lead to discontinuation of the drug. [26,27] Nortriptyline has more favorable side effect profiles than amitriptyline and may used instead.

Of the antihistamines, Cimetidine[28] can improve both pain and urinary symptoms and has few adverse events. Hydroxyzine[29] has also demonstrated some efficacy in comparison to placebo in a subset of patients; patients v have systemic allergies may be more likely to respond positively to this treatment.[30] Although sedation and weakness can be common side effects, these are reversible and generally not serious.

Pentosan polysulfate (Elmiron™) is a heparin-like molecule used to augment the potentially defective glycosaminoglycan layer of the bladder urothelium. Pentosan polysulfate is the only FDA-approved oral medica

for the treatment of IC/BPS. It is dosed at 100 mg TID and needs to be continued for 3 to 6 months to realize clinical effect. Of note, this medication may cause elevations in liver enzymes and reversible hair loss. While prolonged treatment has been shown to result in modest improvement in symptoms compared to placebo, [1] new evidence suggests that chronic pentosan polysulfate use may be associated with the development of **pigmenta maculopathy**.[31,32,33,34,35,36,37] The risk increases with cumulative dose of pentosan polysulfate exposure; and onc maculopathy developed it may be irreversible. Caution should be taken with prescribing this medication and the potential risks and benefits discussed with the patient before initiating or continuing treatment. Detailed guidanc from the FDA now recommends: (1) A detailed ophthalmological history should be obtained in all patients prior starting pentosan polysulfate; (2) For patients with pre-existing ophthalmological conditions, a comprehensive baseline retinal examination is recommended prior to starting the medication; (3) A baseline retinal examination suggested for all patients within 6 months of initiating pentosan polysulfate and periodically while continuing the medication; (4) If pigmentary changes in the retina develop, the risks and benefits of continuing the medication should be re-evaluated.

Small scale trials of oral cyclosporine A, an immunosuppressant drug that interferes with the activity and growth T cells, have suggested clinical improvements in IC/BPS symptoms. [38] Cyclosporine A is not FDA approved for IC/BPS, but has been utilized off-label when other treatments have not provided adequate relief.[1] Patients with Hunner lesions or active bladder inflammation appear to respond better to cyclosporine A than those without Hunner lesions [5,39] so Cyclosporine A may be considered earlier in the treatment algorithm in patients who do nc respond to triamcinolone or fulguration.[39] Given a lack of long-term outcomes and the potential for adverse ever patients using cyclosporine A should be closely monitored, in particular for declines in renal function and elevat blood pressure.

The AUA Guideline additionally counsels that patients should *not* be offered long term antibiotics. Given non-significant findings from published reports and significant hazards associated with long-term antibiotics, antibiotics are contraindicated in patients with a negative culture, particularly if they have previously been administered antibiotics without symptomatic improvements.

For *intravesical Instillations*, a variety of agents have been promoted for management of IC/BPS, typically administered weekly for 6 weeks. Dimethyl sulfamethoxazole (DMSO), heparin, lidocaine, and bupivacaine as w as other forms of local anesthetic may also be instilled alone or in combination. Of note, intravesical instillations Bacillus Calmette Guerin (BCG) or intravesical resiniferatoxin are not recommended for intravesical treatments. typical bladder instillation cocktail may contain 40,000 U heparin, 8 ml 1% lidocaine (80 mg) and 3 ml 8.4% sod bicarbonate suspended in a volume of 15 ml of fluid. Alternatively, 20 ml of 0.5% of bupivacaine may be used ir place of 8 ml of 2% lidocaine. Bupivacaine is more lipophilic and potentially longer lasting for intravesical utilizat than lidocaine. Higher doses of anesthetic appear to be more effective and provide greater durability which may secondary to immediate down regulation of the sensory nerves. In the patient who fails to respond to lidocaine, reasonable to try bupivacaine before moving on to an alternative treatment. [40] Although not mentioned in the guidelines, intravesical pentosan polysulfate has additionally been utilized in lieu of heparin for bladder instillations.[41] While it is not thought that intravesical pentosan polysulfate carries the same risks as systemic administration, this has not been directly tested. The addition of a steroid such as triamcinolone acetonide to a common lidocaine/heparin instillation has been suggested to reduce bladder inflammation, but a recent randomized trial did not show any improvements in outcomes with its addition.[42] Systemic pain management is frequently required in combination with intravesical anesthetic cocktail for this patient population.

Procedural options for IC/BPS management typically start with cystoscopy under anesthesia, potentially combir with **short-duration, low-pressure hydrodistention**. High-pressure or long duration hydrodistention is not recommended. If a Hunner lesion is discovered, biopsy may be indicated at the clinician's discretion to rule out

carcinoma in situ. **Hunner lesions should be fulgurated and/or injected with triamcinolone in accordance with the AUA Guideline**. It is reasonable to perform a cystoscopy earlier in the course of treatment if the patier has a history of hematuria or other indications for cystoscopy. Office cystoscopy is warranted in IC/BPS patients over the age of 50 to identify Hunner lesions since the prevalence of Hunner lesions increase with age (see Diagnosis section above).

Some patients will continue with unabated, severe pain and/or frequency of urination despite attempts at behavioral or medical therapy. While unambiguous data supporting these options is sparse in the literature, oth procedural options for these patients include chemical neuromodulation with intradetrusor injections of onabotulinum toxin A (BTX-A) or neuromodulation with sacral nerve stimulation. Neuromodulation therapy has also been shown to decrease the need for narcotics in subjects with IC/BPS.[43] Sacral nerve stimulation is an important therapy for patients with urgency and frequency and may also help with pain and dysfunction in the pelvic muscles.[44,45] Sacral neuromodulation is not specifically approved for IC/BPS but is indicated for patients w refractory urinary urgency and frequency.

PTNS, which is not considered in the AUA Guideline, consists of stimulation of the tibial nerve and has been demonstrated to decrease urgency, frequency, and non-IC pelvic pain in up to 60% of patients treated for 30 minutes once a week for 12 weeks.[46] Maintenance therapy is then provided approximately every 4 weeks follow the weekly therapy. However, there are currently no data supporting the use of PTNS specifically for IC/BPS.

Multiple recent studies have described utilization of BTX-A, either alone or combined with hydrodistention, for management of both lower urinary tract symptoms and pain associated with IC/BPS.[47,48,49] In addition to inhibiting acetylcholine release and decreasing urgency/frequency, BTX-A promotes analgesia when injected into the detrusor muscle. Use of 100 U dose is appropriate as a therapy for IC/BPS when performed by experienced practitioners and in patients willing to accept the potential for self-catheterization and understanding of the need retreatment.[1] Self-catheterization can be particularly difficult in this patient population due to the pain associated with catheterization, low bladder capacity, and pain associated with bladder distention. This needs to be discuss carefully with the IC/BPS patient before proceeding. BTX-A is not currently specifically approved for IC/BPS and considered off-label.

Major surgery for IC/BPS (urinary diversion with or without cystectomy) is irreversible, life-altering and frequentl associated with long-term complications that can lead to poor outcomes. Surgical therapy for IC/BPS is an optic of last resort when all other conservative therapies have failed, but should only be considered in a carefully selected population. Patients with non-ulcerative IC/BPS and normal bladder capacities are suspected to have a centralized pain disorder that frequently occurs with associated comorbidities such as fibromyalgia and irritable bowel disease. These patients are less likely to respond to diversion surgery and may report persistent percepti of bladder pain even after cystectomy. Prior to irreversible surgery (cystectomy and urinary diversion), one shou attempt diligently to localize the source of the pain to the bladder. For patients with an end-stage, low-capacity bladder with refractory urinary frequency, however, urinary diversion may be indicated.

Surgical intervention should be aimed at increasing functional capacity of the bladder or diverting the urinary stream. Patient selection is key to success with invasive surgery. Patients with end-stage, ulcerative IC/BPS an low bladder capacities (< 300 cc) may respond more favorably to cystectomy and urinary diversion. As such patients compose the minority of patients diagnosed with IC/BPS, these procedures should be an uncommon approach to manage this disorder.

Additional research is being conducted with OnabotulinumtoxinA, central pain processing, physical therapy interventions, biopsychosocial programs, complementary therapies,[23] and non-opioid adjunct therapies. Understanding the relationship of associated co-morbidities and the presence of a generalized hypersensitivity

disorder, as well as quality of life issues, including sexual function, continue to be important research agendas f IC/BPS.

6. Patient Resources

- **www.urologyhealth.org/urologic-conditions/interstitial-cystitis**
- **www.urologyhealth.org/educational-materials/interstitial-cystitis/bladder-pain-syndrome-patient-gu**

7. AUA Update Series

- **Interstitial Cystitis/Bladder Pain Syndrome: Angel, JB and Erickson, DR. Vol. 33, Lesson 8, 2014.**[50]

Presentations

Interstitial Cystitis Presentation 1

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