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FACULTY OF NURSING

Interstitial cystitis

BY:-

Arpit Kamal

Nursing Tutor

MSN Department

Rama College Of Nursing

Definition

- The AUA guideline defines IC/BPS as ‘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 infection or other identifiable causes.

- IC has classically been used to describe the clinical syndrome of urgency/frequency and pain in the bladder and/or pelvic

- The International Continence Society (ICS) defines BPS 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.”

- Urgency is not required to define BPS/IC, because it would tend to obfuscate the borders of overactive bladder and BPS/IC

Epidemiology

- Epidemiology studies of BPS/IC suffer from the lack of a universally accepted definition
- The first population-based study included patients with IC in Helsinki :
  18.1 per 100,000 women and 10.6 per 100,000 population
- 35–2400 per 100,000 in the United States
- 1.2 per 100,000 in Japan
- female to male preponderance of 5:1

Etiology

- BPS/IC has a Multifactorial etiology .
- leaky epithelium , mast cell activation, and neurogenic inflammation, or some combination of these and other factors leading to a self-perpetuating process resulting in chronic bladder pain and voiding dysfunction

Signs & symptoms

- Women
  - Dyspareunia
  - Female sexual dysfunction
- Men
  - Pain at the tip of the penis, the groin, or the testes
  - Ejaculation often
    - produces pain owing to severe spasm of the pelvic floor
  - Prostate, bladder, testes, and epididymis tenderness
- PAIN: suprapubic or pelvic
- Bladder pain that worsens with bladder filling and is alleviated with voiding
- Dysuria
- Urinary frequency & urgency
- Nocturia: mild to severe (1 to >12 times per night)
- Spasm of the rectum and levator ani muscles
- Anterior vaginal wall, suprapubic region, and pelvic floor muscle tenderness on pelvic examination

Diagnosis

- NIDDK criteria 1987 and modified NIDDK 1988 :

- The most successful attempt to define a clinical useful definition of IC

NIH criteria

National Institutes of Health

Diagnostic Criteria for Interstitial Cystitis :

Category A: At least one of the following cystoscopic findings:

1. Diffuse glomerulations (≥10 per quadrant) in at least 3 quadrants of the bladder
2. A classic Hunner's ulcer

Category B: At least one of the following symptoms:

1. Pain associated with the bladder
2. Urinary urgency

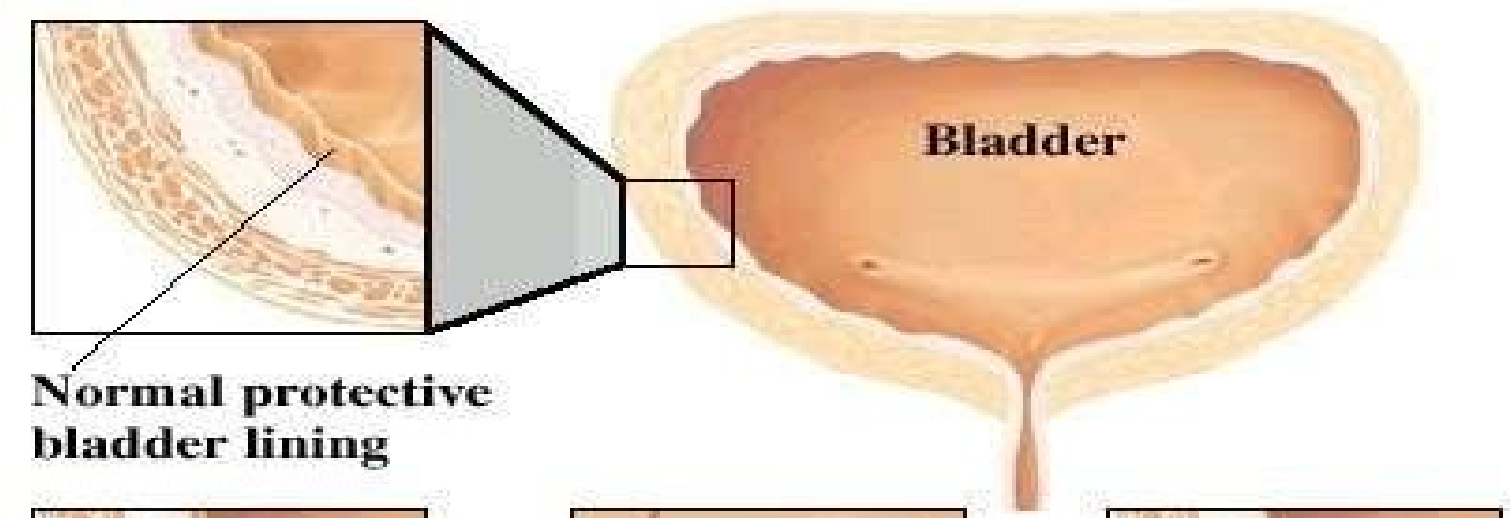
NIH criteria

National Institutes of Health

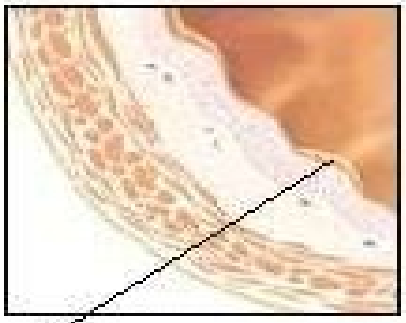
In addition, a patient must not have any of the following conditions, symptoms, or history:

- **Age <18 years**
- **Urination frequency while awake < 8 times per day**
- Nocturia < twice per night
- **Maximal bladder capacity >350 cc while patient is awake**
- Absence of an intense urge to void with bladder filled to 100 cc of gas or 150 cc of water, with medium filling rate during cystoscopy
- **Symptoms persistent < 9 months**
- **Symptoms relieved by microbial agents, anticholinergics, or antispasmodics**
- Urinary tract or prostate infection in the past three months
- Involuntary bladder contractions
- Active genital herpes or vaginitis
- Urethral diverticulum
- Uterine, cervical, vaginal, or urethral cancer within the past five years
- History of cyclophosphamide, chemical, tuberculous, or radiation cystitis
- History of bladder tumors

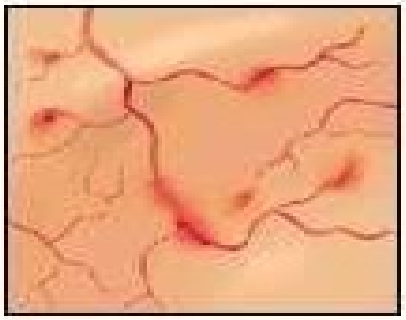
Cystoscopy



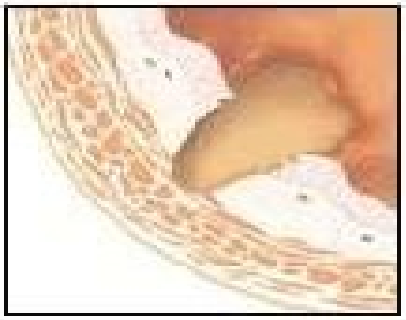
Normal protective bladder lining



Thinning of the protective bladder lining



Pinpoint bleeding (glomerulations) on the bladder wall



Hunner's ulcer in the bladder wall

Cystoscopy

1. The classic picture is elusive ulcers with apperance of patches of red mucosa first described by Hunner 1914 (Hunner's ulcer)

Cystoscopy

2. Glomurulations (punctuate petechial hemmorage)

Both can be found in patients without IC and not all patients with IC have them (not reliable criteria)

Potassium test

- An intravesical potassium chloride challenge (KCl test) has been proposed for diagnosis using a 0.4M potassium chloride solution
- Pain and provocation of symptoms by potassium constitute a positive test. The test is very nonspecific, failing to diagnosis at least 25% of BPS/IC
- Prospective and retrospective studies looking at the KCl test for diagnosis in patients presenting with symptoms of PBS/IC have **found no benefit** of the potassium test in comparison with standard techniques of diagnosis.

Urodynamics

- In the IC database 14% of patients had overactive detrusor
- There are no data to support or refuse the use of urodynamics in IC

Biomarkers of IC

- GB-51 , APF , HB-EGF have been suggested
- APF (**A**nti**P**roliferative **F**actor) is emerging as the best candidate for a biomarker for IC but further studies and trials need to be conducted

Differential diagnosis

- Cystitis (bacterial , viral , TB , chemical)
- Vaginitis
- Tumors of the bladder (benign , malignant)
- Urethral divirticulum
- Bld calculi
- Prostatitis
- Muskoskeletal pain
- Neurogenic (prolapsed disk)

Treatment

- Conservative treatments first
- Avoid surgery if possible
  - Exception is fulguration of Hunner's lesions, must be done first
- Multiple simultaneous treatments often best
  - Pain management should be priority

Conservative therapy

- Behavioral modification : control fluid intake , timed voiding , pelvic muscle training

Conservative therapy

- Physical therapy : biofeedback and soft tissue massage , myofascial release .

  69% success

Conservative therapy

- Dietary manipulation : avoid acidic foods, coffee, tea, soda, spicy foods, artificial sweetener, and alcohol

Oral therapy

1. Sodim pentosan polysulfate (Elmiron)
   : correct the GAG defect 100 mg X 3/ day the only FDA approved

Oral therapy

1. Amytriptiline main pharmacologic actions:

- It may help to stabilize the mast cells in the bladder and
  i. also increase Bladder capacity through its effect on the
  ii. beta- adrenergic receptors in the bladder body. Finally,
  iii. the sedative effects can help the patient sleep.

- started on a dose of **10 mg before bed**. The dose
- is gradually increased by 10 mg each week **to a maximum**
- **dose of 50 mg** at bedtime at the start of the fifth week. If tolerated, this dose is maintained.

Intravesical therapy

1. **Dimethyl sulfoxide (DMSO) is only FDA–approved**
   "RIMSO -50" is anti-inflammatory , analgesic, collagen dissolution, muscle relaxant, and mast cell histamine release .

2. Hyalorunic acid : protective layer , new study shows no significant effect

3. **Heparin : 2 studies good success**

4. Chondroitin sulfate : 33% response rate

5. **Lidocaine : safe and effective**

6. Capsaicin : neurotoxin

7. BCG : 60% improvement

7. **Oxybutinin** , PPs , Doxorubicin , Btx-A : still needs study

Cystoscopy

- Used to diagnose and treatment of IC **Biopsy controversial**
- Over 50 % of patient may experience some symptom relief , this is often transitory and rarely lasts longer than 6 months .
- Inflate bladder with saline to 80cmH_2O or 800-1000mL, maintain pressure for a few minutes then drain bladder
- Fulgration of Hunner's ulcers

Surgery

1 . NEUROMODULATION :

- sacral nerve stimulation (SNS) involves implanting permanent electrode(S) to stimulate S3-S4 roots .
- Approved for detrusor overactivity 1997 and for urinary urgency and frequency in 1999.
- Early studies suggest that about half of patients with PBS may derive benefit from neuromodulation

2. Bowel surgery :

- Bladder augmentation-cystoplasty
- Cystoplasty with suptriagonal resection
- Cystoplasty with suptriagonal cystectomy

3. Total cystectomy and urethrectomy :

- the ultimate final and most invasive option
- only considered for advanced cases
- the results are close with any segment of intestine used
- some new study suggested the recurrence of IC on the neo bladder (exposure of the bowl to the IC toxic urine)

THANK YOU