Clinical Case

Alternative treatment with 2% intravesical lidocaine in overactive bladder due to interstitial cystitis

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Keywords

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Abstract

Interstitial cystitis or painful bladder syndrome (IC/PBS) particularly affects women (10:1 ratio) above the age of 18 years, Caucasians, and patients with diabetes. Overactive bladder (OAB) is very frequent in interstitial cystitis and continues to be a problem in urology today.

A 56-year-old woman had a urology consultation for pelvic pain, symptoms of urinary incontinence and urgency, as well as psychosomatic symptoms. Repeated treatments provided no improvement.

The patient underwent outpatient intravesical therapy. During one month she received instillations of 50 cm³ of lidocaine at 2% through a urethral catheter for a period of 20 minutes during which she lay on the bed 5 minutes in the supine decubitus position, 5 minutes in the prone decubitus position, 5 minutes in the right lateral position, and 5 minutes in the left lateral position. The urinary frequency improved at 2-4 weeks.

There was a clinical response in 80% of our patient’s symptoms, with a decrease in urinary frequency, urgency, and incontinence, as well as favorable urodynamic results.

We therefore conclude that this therapy is a simple and excellent alternative in patients with IC-associated OAB that is difficult to manage through other therapies.
La paciente fue sometida a terapia intravesical de manera ambulatoria. Diariamente durante un mes, se realizó una instilación de 50 cm³ de lidocaína al 2% a través de un catéterismo uretral durante 20 minutos, en los que la paciente permanecía en la camilla 5 minutos en decúbito supino, 5 minutos en decúbito prono, 5 minutos en posición lateral derecha y 5 minutos en posición lateral izquierda. La frecuencia urinaria mejoró al cabo de 2-4 semanas. En esta paciente se obtuvo un resultado de respuesta clínica en un 80% de los síntomas referidos, disminución de la frecuencia urinaria, de la urgencia miccional y de la incontinencia, con resultados urodinámicos favorables. Por tanto, esta terapia se presenta como una excelente y sencilla alternativa en los pacientes con VHA asociada a CI de difícil manejo con otras terapias.

### Introduction

Overactive bladder (OAB) in interstitial cystitis is very frequent and continues to be a problem in present-day urology. Interstitial cystitis or painful bladder syndrome (IC/PBS) affects women in particular (10:1 ratio) above 18 years of age, Caucasians, and patients with diabetes. The pathophysiology of this disease is one of the most confusing and is one of the most difficult to treat. It is a major cause of chronic pelvic pain and constitutes a recurrent, and often incapacitating, condition from the perspective of pain and the repercussions (of both daytime and nocturnal urinary frequency) on the daily activities of the affected patients. The possible causes of IC/PBS still being studied include: 1) difficult-to-cultivate infectious agents; 2) persistent deoxyribonucleic acid (DNA) in bladder tissue after having had infection; 3) damage to the bladder mucosa allowing for the “escape” of urinary proteins and toxins inside the bladder walls; 4) inflammatory states; 5) states of bladder wall ischemia; and 6) autoimmune diseases. The determining etiologic factor in IC/PBS appears to be a defect in the bladder epithelium with loss of the natural “blood-urine” barrier, resulting in a permeable cell membrane; the small molecules of toxins, proteins, or potassium then persistently fall into the cellular interstice, exciting the nerve endings and producing their depolarization, thus producing urinary frequency and urgency, as well as pain. The urothelial cell population that is damaged by autoimmune or infectious mechanisms continues to be a factor that stimulates the mastocytes to secrete cytokines. The inflammatory origin and the role of the mastocytes have yet to be clarified, and despite its extremely high incidence in the developed countries and its notable secondary effects, no research is being carried out that studies the epidemiology of this disease.

### Case presentation

A 56-year-old woman had a urology consultation for pelvic pain and symptoms of urinary incontinence and urgency, along with psychosomatic symptoms. She underwent repeated treatments with anticholinergic drugs and was even treated with type A botulin toxin in Mexico, but with no symptom improvement. The patient stated that despite having been diagnosed with interstitial cystitis through a bladder biopsy, the physicians ended up sending her to the Department of Psychiatry for consultation.
dysfunction (neurogenic bladder) due to different causes, bladder cancer (cancer in situ, transitional cell cancer), ureteral calculi in the distal third, endometriosis, upper and lower urinary tract infections, recurrent cystitis in women, bacterial or inflammatory female urethral syndrome, inflammatory vaginopathies, and hormonal disorders such as diabetes insipidus and diabetes mellitus.5

Diagnosis: given the persistent urinary symptoms and the negative urine cultures over a period of several months, we were able to establish the IC diagnosis. In order to categorize the diagnosis as category A or B, there must be at least one endoscopic finding and/or symptom:5

Category A:
- A1: diffuse glomerulations (10 or more per quadrant in at least 3 quadrants of the bladder).
- A2: Hunner ulcers (observed in 90% of the patients with IC/PBS)

Category B:
- B1: pain associated with the bladder.
- B2: urinary urgency, the O’Leary-Sant IC/PBS questionnaires.

The most frequent characteristics in patients with IC/PBS are: nocturnal frequency at least 2 times a night, 8 micturitions per day or more, moderate urinary urgency, and optionally, bladder or pelvic pain with cystoscopic findings of inflammation of the bladder wall under anesthesia (the most important diagnostic study), and Hunner ulcers or glomerulations; all in the absence of diseases causing these symptoms.3,5

It is essential to complete a bladder diary for one week in order to specify the type of symptomatology the patient has and therefore know if we are dealing with OaB due to iC.

More than 90% of the patients have pain upon palpation of the base of the bladder (the anterior vaginal wall) during the gynecologic examination. It is important to rule out the presence of significant bacteriuria, which if present, would explain IC-like symptoms; it is also important to carry out an excellent microbiologic analysis in women (Carmona) that explain iC-like symptoms; it is also important to carry out an excellent microbiologic analysis in women (Carmona) that includes the organisms that usually are not detected in the “common” urine cultures (Chlamydia trachomatis, Ureaplasma urealyticum, Mobiluncus curtisi, Gardnerella vaginalis, Candida albicans, herpes species, human papillomavirus, Trichomonas vaginalis, among others).4

Treatment: the patient underwent outpatient intravesical therapy. Every day for one month she had an instillation of 50 cm³ of lidocaine at 2% through a urethral catheter for a period of 20 minutes during which she lay on the bed for 5 minutes in the decubitus supine position, 5 minutes in the decubitus prone position, 5 minutes in the right lateral position, and 5 minutes in the left lateral position. Urinary frequency improved at 2-4 weeks. After this improvement the patient was given oral treatment with solifenacin 5 mg/12 hours, as coadjuvant treatment that was continued permanently.

Discussion

The action mechanism of intravesical therapy with lidocaine is to cover the bladder epithelium for the purpose of maintaining its integrity and impeding epithelial leakage into the vesical space, in this way preventing the triggering of the clinical cascade of IC/PBS and OAB symptoms. Repeated lidocaine administration induces the desensitization and inactivation of the sensory neurons through different mechanisms:

- Systemic and topical application: this produces a reversible antinociceptive and anti-inflammatory effect after an initial and desired analgesic effect. It produces antinociception through specific activity in the afferent nerve endings in the spinal cord.4
- Local or topical application: this blocks the C conduction fibers and inactivates the release of neuropeptides through the peripheral nerve endings, producing local antinociception and reducing neurogenic inflammation. It has the potential advantage of minimizing the systemic effects. The action is highly specific since it primarily affects the small-diameter afferent nociceptive fibers, preserves the sensation of touch and pressure without changes, and most likely, reduces the perception of heat.7

Spinal neurotransmission is subsequently blocked due to the prolonged inactivation of the ionic channels of the sensory nerve endings. The motor fibers are not affected, the effects are reversible, but it is not known at what point desensitization is begun.8

There was a clinical response in 80% of our patient’s symptoms, reduced urinary frequency, micturition urgency, and incontinence, as well as favorable urodynamic results. The average response per dose was immediate, there were no adverse effects from the therapy, a much better additional response was obtained with the posterior solifenacin treatment, and due to the fact that the patient’s psychosomatic symptoms and quality of life improved, she did not need to have a psychiatric consultation.

For these reasons, this therapy is a simple and excellent alternative in patients with IC-associated OAB that is difficult to manage through other therapies, provided that the patient also receives maintenance treatment of 5 mg of solifenacin every 12 hours.

Conflict of interest

The authors declare that there is no conflict of interest.

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References