

## FACTORS THAT AFFECT THE TREATMENT OF REFRACTORY INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME USING INTRAVESICAL THERAPY WITH A HYALURONIC ACID SOLUTION: RESULTS FROM A PROSPECTIVE MULTICENTER STUDY ON 103 PATIENTS

### Hypothesis / aims of study

Interstitial cystitis (IC)/bladder pain syndrome (BPS) is the complaint of bladder pain, accompanied by other urinary symptoms such as urgency, frequency and nocturia. Intravesical therapy with a hyaluronic acid (HA) solution is an effective treatment for IC/BPS, however, with varying degrees of success. We aim to evaluate factors that may have associations with treatment outcomes.

### Study design, materials and methods

This was a prospective multicenter study. A total of 103 women with refractory IC/BPS were enrolled and underwent a standard protocol of intravesical HA therapy. Related symptoms, bother and sexual function were assessed using the Interstitial Cystitis Symptom and Problem Index (ICSI&ICPI), pain Visual Analog Scale (VAS), and a short-form sexual function questionnaire (PISQ-9). A Scaled Global Response Assessment (GRA) also provided patients' perception of overall changes in bladder pain and urinary symptoms, respectively. Data were analyzed with univariate methods or multivariate logistic regression analysis accordingly.

### Results

Demographic data was presented in Table 1. Mean age and duration of symptoms was 43.6±11.8 and 5.1±5.0 years, respectively. No severe adverse events from the instillation were noted. ICSI, ICPI, pain VAS and PISQ-9 were significantly ( $P<0.001$ ) improved after treatment (Table 2). In addition, 73.3% and only 47.2% of patients reported a moderate/marked ( $\geq +2$ ) improvement in pain and urinary symptoms on GRA, respectively (Figure 1). The discrepancy between the two outcome measures was statistically significant (McNemar test,  $P < 0.001$ ). Further multivariate logistic regression analysis showed baseline pain VAS score ( $P=0.026$ ) and functional bladder capacity ( $P=0.003$ ) were correlated positively with treatment response of bladder pain and urinary symptoms, respectively.

### Interpretation of results

Intravesical HA is an effective and safe treatment for refractory IC/BPS. However, the treatment seems to be more effective in reducing bladder pain compared to urinary symptoms. Those patients who reported lower pain scores and reduced functional bladder capacity before treatment may have sub-response to the treatment.

### Concluding message

Intravesical HA is more effective in reducing bladder pain compared to urinary symptoms associated with refractory IC/BPS in women. A lower pain score and reduced functional bladder capacity might predict a sub-response to the treatment.

**Table 1.** Demographic data (n=103).

Patient characteristics	Value	Range
<b>General data</b>		
Mean age (years)	44.3 ± 11.5	(22-69)
% with menopause	32.0	(33/103)
Mean symptomatic years	5.1 ± 5.0	(0.5-30)
Mean functional bladder capacity (ml)	228.6 ± 70.8	(80-400)
<b>*Urodynamic (filling &amp; voiding cystometry) results</b>		
Mean volume at first sensation to void (ml)	134.7 ± 53.0	(53-296)
Mean maximum cystometric capacity (ml)	258.6 ± 93.0	(87-615)
Mean bladder compliance at urgency (ml/cmH <sub>2</sub> O)	89.2 ± 107.7	(1-464)
Mean voided volume (ml)	259.2 ± 116.0	(73-663)
Mean maximum flow rate (ml/sec)	15.3 ± 6.2	(5-30)
Mean average flow rate (ml/sec)	6.6 ± 3.5	(2-19)
Mean voiding pressure (cmH <sub>2</sub> O)	30.2 ± 19.3	(2-108)
Mean residual urine amount (ml)	24.6 ± 26.6	(0-148)
% with bladder oversensitivity	49.4	(38/77)
% with detrusor overactivity	11.7	(9/77)
% with dysfunctional voiding	32.5	(25/77)
<b>Cystoscopic findings with hydrodistention</b>		
Mean anesthetic bladder capacity (ml)	506.3 ± 198.2	(200-1000)
% with advanced (grade II & III) glomerulations	93.2	(96/103)
% with Hunner's ulcers	13.6	(14/103)

\*: Urodynamic study was performed in 77 (74.8%) of the 103 patients.

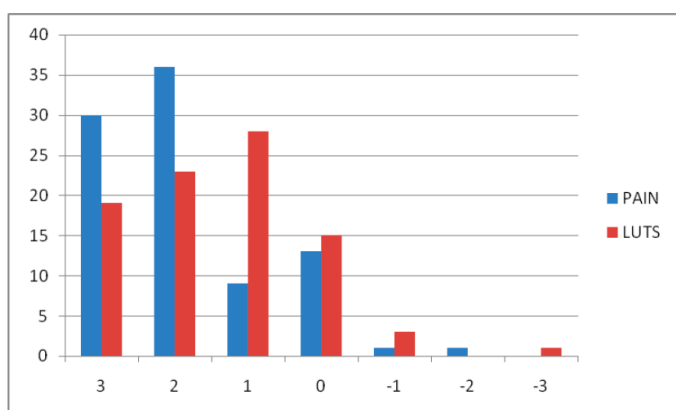
**Table 2.** Changes of symptoms, bother, and sexual function (n=103).

	Baseline	1 month	6 months	*P-value
Pain VAS	6.3 ± 2.7	4.3 ± 2.5	3.3 ± 2.2	<0.001
ICSI	14.2 ± 3.8	10.3 ± 3.9	7.8 ± 4.0	<0.001
<i>Urgency</i>	3.5 ± 1.4	2.6 ± 1.3	1.9 ± 1.3	<0.001
<i>Frequency</i>	4.3 ± 1.1	3.1 ± 1.2	2.3 ± 1.3	<0.001
<i>Nocturia</i>	3.5 ± 1.3	2.7 ± 1.2	2.2 ± 1.3	<0.001
<i>Bladder Pain</i>	2.9 ± 1.7	1.9 ± 1.4	1.3 ± 1.2	<0.001
ICPI	13.0 ± 3.3	9.9 ± 3.3	8.4 ± 4.3	<0.001
<i>Frequency</i>	3.2 ± 0.9	2.7 ± 1.0	2.2 ± 1.2	<0.001
<i>Nocturia</i>	3.4 ± 0.9	2.7 ± 1.0	2.3 ± 1.4	<0.001
<i>Urgency</i>	3.1 ± 1.0	2.4 ± 1.1	2.0 ± 1.3	<0.001
<i>Bladder pain</i>	3.1 ± 1.2	2.3 ± 1.2	1.6 ± 1.2	<0.001
PISQ-9	18.9 ± 6.4	20.4 ± 5.8	21.5 ± 5.6	<0.001
Behavioral/emotive Factors	6.9 ± 4.0	7.0 ± 3.7	7.3 ± 4.0	0.260
Physical Factors	4.8 ± 2.2	5.5 ± 1.9	5.9 ± 1.9	<0.001
Partner-related Factors	7.6 ± 2.6	8.2 ± 2.4	8.5 ± 2.3	<0.001

VAS: visual analog score (range 0-10); ICSI: interstitial cystitis symptom index (range 0-20);

ICPI: interstitial cystitis problem index (range 0-16); PISQ: pelvic organ prolapse/urinary incontinence sexual function questionnaire (PISQ-9 range 0-36); \*: Friedman Test.

**Figure 1.** Distribution of responses of pain and urinary symptoms to intravesical therapy with a HA solution on the 7-point GRA (n=103).



### References

1. Neurourol Urodyn 2002;21:167–178.
2. Eur Urol 2008;53:60–67.
3. Nat Rev Urol. 2012;9:707-20.

### Disclosures

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