

The Overlap and Distinction of Self-Reported Symptoms between Interstitial Cystitis/Bladder Pain Syndrome and Overactive Bladder: A Questionnaire Based Analysis

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Purpose: We compared symptoms between interstitial cystitis/bladder pain syndrome and overactive bladder based on patient self-reported symptoms on validated questionnaires.

Materials and Methods: We prospectively recruited 26 patients diagnosed with interstitial cystitis/bladder pain syndrome, 53 diagnosed with overactive bladder and 30 healthy controls to participate in a questionnaire based study that inquired about lower urinary tract symptoms. The questionnaires used were GUPI, ICSI, ICPI, ICIQ-OAB, ICIQ-UI, IUSS, numerical rating scales of the severity of bladder pain, pressure or discomfort, and numerical rating scale of the severity of urgency and frequency symptoms.

Results: On univariate analysis patients with interstitial cystitis/bladder pain syndrome reported significantly more severe pain symptoms than those with overactive bladder. Patients with overactive bladder reported significantly more severe urinary incontinence symptoms than those with interstitial cystitis/bladder pain syndrome. There was no difference in frequency and urgency severity between the groups. Surprisingly, 33% of patients with overactive bladder reported pain or discomfort when the bladder filled and 46% with interstitial cystitis/bladder pain syndrome reported urgency incontinence. On multivariate analysis ICIQ-UI total scores ($p = 0.01$) and bladder pain severity on the numerical rating scale ($p < 0.01$) distinguished the 2 conditions with 90.6% sensitivity and 96.1% specificity. Overactive bladder had higher ICIQ-UI and lower numerical rating scale pain scores.

Conclusions: There is considerable overlap of self-reported symptoms between interstitial cystitis/bladder pain syndrome and overactive bladder. This overlap raises the possibility that the 2 conditions represent a continuum of a bladder hypersensitivity syndrome.

Key Words: urinary bladder, overactive; cystitis, interstitial; lower urinary tract symptoms; diagnosis; questionnaires

INTERSTITIAL cystitis/bladder pain syndrome and OAB are clinical syndromes defined primarily by patient reported symptoms.^{1,2} It is generally believed that IC/BPS and OAB can

be distinguished based on patient reported symptoms. Urgency incontinence is considered unusual in IC/BPS while bladder pain is rare in OAB. In a concept report Abrams et al

Abbreviations and Acronyms

AUA = American Urological Association
GUPI = Genitourinary Pain Index
IC = interstitial cystitis
IC/BPS = IC/bladder pain syndrome
ICIQ-OAB = International Consultation on Incontinence-Overactive Bladder
ICIQ-UI = International Consultation on Incontinence-Urinary Incontinence Short Form
ICPI = Interstitial Cystitis Problem Index
ICSI = Interstitial Cystitis Symptom Index
IUSS = Indevus Urgency Severity Scale
NRS = numerical rating scale
OAB = overactive bladder

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For another article on a related topic see page 1864.

argued that there should be no confusion about distinguishing the 2 conditions.³ They associated urgency and urgency incontinence with OAB, and frequency/nocturia and bladder pain with IC/BPS. However, clinical observations suggest that there might be some overlap between the conditions.^{4,5} Some patients with IC/BPS present with frequency and urgency without pain^{6–8} while some with OAB do not have detrusor overactivity.⁹

Recently groups specifically compared the urgency symptoms of IC/BPS and OAB.^{10,11} Patients with OAB associated urgency with fear of incontinence while those with IC/BPS reported urgency due to pain, pressure or discomfort. However, there was significant overlap and the conclusion was that urgency could not be used to clearly distinguish OAB from IC/BPS.¹¹

With respect to the broader lower urinary tract symptoms the degree of overlap and distinction between IC/BPS and OAB remains to be formally defined. How common is bladder pain, pressure or discomfort in patients with OAB? How often do patients with IC/BPS have incontinence? Does the severity of frequency and urgency differ between the 2 conditions? Specifically we sought to determine whether the 2 conditions might be distinguished based on self-reported symptoms on validated questionnaires with high sensitivity and specificity. Without definitive diagnostic tests or biomarkers clinicians rely primarily on patient reported symptoms to make the clinical diagnosis and treatment decisions. Distinguishing between the 2 conditions is important since the management strategies differ.^{2,12}

MATERIALS AND METHODS

Population

Patients diagnosed with IC/BPS or OAB provided consent and were enrolled in study by a single clinician (HHL) between October 2012 and March 2014. Data were collected prospectively from validated questionnaires completed by the patients. Briefly study enrollment criteria for IC/BPS required an unpleasant sensation (pain, pressure or discomfort) perceived to be related to the bladder that was associated with lower urinary tract symptoms more than 6 weeks in duration in the absence of infection or another identifiable cause according to the 2011 AUA guideline.² For OAB enrollment criteria were complaints of urinary urgency with or without urge incontinence, usually with frequency and nocturia according to the 2002 ICS (International Continence Society) definition in the absence of infection or another identifiable cause.¹ Clinical assessment conformed to published AUA guidelines.^{2,12} Healthy volunteers who served as controls were recruited by local advertisement and through the research database. Controls had no prior diagnosis of OAB or IC/BPS, no significant lower urinary

tract symptoms (AUA symptom index less than 7), no significant bladder or pelvic pain and no evidence of infection. A total of 26 patients with IC/BPS, 53 with OAB and 30 healthy controls consented to participate in the study (table 1).

Assessment

All participants completed validated questionnaires, including GUPI,¹³ ICSI, ICPI,¹⁴ ICIQ-OAB,¹⁵ ICIQ-UI¹⁶ and IUSS to assess urgency symptom severity,¹⁷ and NRSs (range 0 to 10) to assess the severity of pain, pressure or discomfort in the bladder or pelvic region, the severity of urgency symptoms and the severity of frequency symptoms. All participants provided informed consent. The institutional review board approved this study.

Statistical Analysis

The Wilcoxon rank sum test was used to compare survey results from patients with IC/BPS and OAB, and controls with $p < 0.05$ considered significant. Missing data were ignored to obtain univariate results.

Of 5,609 possible answers on variables of interest 324 (5.8%) were omitted. Multivariate imputation was used on missing data for multivariate analysis. The number of imputations was set to 10. Multivariate logistic regression was done on the imputed data sets with diagnosis type (OAB or IC) as the response variable. Because of the large number of variables available and the high correlation between many variables, many models were examined using various combinations of independent variables. The final and most informative multivariate model chosen used exactly 1 variable representative of each of the 4 symptom categories of interest (pain, frequency, urgency and incontinence) as well as a covariate of interest (age). Variables that were statistically significant in the final model had no omitted answers. All statistical analysis was done with R, version 2.15.1 (<http://www.r-project.org/>) primarily using the MICE package for multivariate imputation and analysis.¹⁸

RESULTS

On univariate analysis the pain symptoms of OAB were significantly less than those of IC/BPS ($p < 0.001$) but worse than in healthy controls (table 1). IC/BPS incontinence symptoms were significantly less than those of OAB ($p \leq 0.006$) but worse than those of healthy controls. There was no difference in the severity of frequency and urgency symptoms between IC/BPS and OAB, and each was higher than in controls.

With respect to composite scores on validated questionnaires patients with IC/BPS had higher total scores on GUPI ($p = 0.005$), and lower total scores on ICIQ-UI ($p < 0.001$) and ICIQ-OAB ($p = 0.029$) than patients with OAB. There was no difference in ICSI, ICPI or IUSS total scores between IC/BPS and OAB cases.

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