Differences in Urodynamic Parameters Between Women With Interstitial Cystitis and/or Bladder Pain Syndrome and Severe Overactive Bladder

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OBJECTIVE To identify differences in urodynamic parameters between female outpatients with interstitial cystitis (IC) and/or bladder pain syndrome (BPS) and severe overactive bladder (OAB).

MATERIALS AND METHODS This cross-sectional study included 24 and 28 consecutive IC/BPS and severe OAB female patients, respectively. IC/BPS was defined based on the American Urological Association guideline, and severe OAB was defined based on baseline symptoms recorded in a voiding diary. Before treatment, symptom assessment using questionnaires and a 3-day voiding diary, as well as laboratory tests, were performed at the initial visit. The patients' baseline characteristics and urodynamic parameters were compared between the IC/BPS and severe OAB groups.

RESULTS The IC/BPS group showed fewer episodes of urge incontinence and shorter duration of symptoms than the severe OAB group ($P = .019$, $P = .017$, respectively). Volumes at first sense, normal desire, strong desire, and maximal capacity during filling cystometry (MBC) were significantly higher in the severe OAB group than in the IC/BPS group ($P < .001$, $P < .001$, $P = .006$, $P < .001$, respectively). The IC/BPS and severe OAB groups showed significant differences in urodynamic parameters in terms of MBC and the volume discrepancy between MBC and maximal voided volume ($P < .001$, both). The receiver operating characteristic curve also showed an area under the curve of 0.760 and 0.783 for MBC and volume discrepancy, respectively (both $P < .001$).

CONCLUSION Data from our study suggest that combined with other clinical findings, urodynamic studies could provide useful information to differentiate between a diagnosis of IC/BPS or severe OAB. UROLOGY 94: 64–69, 2016. © 2016 Elsevier Inc.

Interstitial cystitis (IC) is a chronic clinical syndrome affecting the lower urinary tract that is associated with urinary frequency and urgency and/or pelvic pain in the absence of any other identifiable pathology. Bladder pain syndrome (BPS) is defined as "the complaint of suprapubic pain related to bladder filling, accompanied by other symptoms such as increased day- and night-time frequency, in the absence of proven urinary infection or other obvious pathology."[1-3] IC/BPS is a common entity with a reported prevalence of 0.83% to 2.71% in women.[4]

The diagnosis of IC can be challenging because of the lack of universally accepted criteria.[5,6] In 2007, the National Institute of Diabetes and Digestive and Kidney Disease (NIDDK) developed diagnostic criteria to include pelvic pain, pressure, and discomfort typically with a persistent urge to void or urinary frequency.[7,8] However, the NIDDK criteria are thought to be too restrictive for routine clinical use. In fact, more than 60% of patients judged by experienced clinicians to likely or definitely have IC would not have been diagnosed with IC according to these exhaustive NIDDK criteria.[9]

The need for urodynamic testing as part of the diagnostic evaluation of patients with IC/BPS is controversial.[2,6] The current consensus is that urodynamic testing is not required for a diagnosis of IC/BPS, but may help eliminate other bladder disorders such as detrusor instability, stress urinary incontinence, and bladder outlet obstruction.[10]

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Although cystoscopy with hydrodistention has been identified as the "gold standard" test for IC/BPS, it is no longer considered mandatory for the differential diagnosis between IC/BPS and other diseases.[10] For instance, cystoscopic findings characteristic of IC/BPS have been observed in women without irritative voiding symptoms who were undergoing tubal ligation, and no correlation has been found between the severity of cystoscopic findings and the degree of inflammation identified histologically.[11,12] Actually, the diffuse nature of pelvic pain often makes finding the real source of pain difficult.[13] It is important to differentiate IC/BPS alone from OAB because these conditions require different treatments.

Because IC/BPS is often diagnosed by exclusion, patients with IC/BPS are often diagnosed years after the onset of their symptoms.[14,15] In addition, there is little data in the literature on the differences between the urodynamic characteristics of IC/BPS and severe OAB. The aim of the present study was to investigate the differences in urodynamic parameters between female outpatients with IC/BPS and severe OAB.

MATERIALS AND METHODS

A cross-sectional and retrospective study was performed to investigate the urodynamic data obtained from patients between June 2010 and June 2012. There were 24 and 28 female patients with IC/BPS and severe OAB identified, respectively. The diagnosis of IC/BPS was made according to the definition of the American Urological Association guideline.[16] Patients were identified as having severe OAB based on the presence of at least 1 of the following criteria: >3 incontinence episodes/24 hours, >8 urgency episodes/24 hours, or >13 micturition episodes/24 hours.[17-19] All patients were categorized in the IC/BPS group or severe OAB group based on their clinical features, cystoscopic findings, and urodynamic investigations.

According to the protocol of our center, history taking and physical examination were performed, and a 3-day voiding diary was used. Questionnaires were given to the patients upon enrollment into the practice. All 52 patients had laboratory studies carried out including urinalysis, urine cytology, urine culture, test for detecting tuberculosis, and cystoscopic inspection to exclude urinary tract infections, bladder tumor, and genitourinary tuberculosis.[20] Then, urodynamic study was performed on an outpatient basis before any treatment. Information collected included age, symptom duration, medical history, history of gynecological or urologic surgery, body mass index, menopause status, parity, age, and history of stress urinary incontinence.

All patients agreed to stop taking medications that can affect voiding function (ie, alpha adrenergic blocking agents, anticholinergic agents, tricyclic antidepressants, pentosan polysulfate sodium agents) for 2 weeks before the urodynamic test. All patients underwent uroflowmetry with postvoid residual urine before testing, and all patients' bladders were completely emptied via catheterization before the filling cystometry. Urodynamic testing was performed according to the International Continence Society (ICS) standardization by 1 female examiner in an identically aseptic manner.[1] A 1-day dose of a quinolone was given as prophylaxis after the procedure.

Testing was performed as described by the ICS, asking questions sequentially to elicit first sensation, then first urge to void, strong urge to void, and finally, maximum capacity.[1] In the 28 patients with severe OAB and urge incontinence, the maximum bladder capacity (MBC) was measured at the point of infused volume when the leakage began during the filling cystometry.

Continuous variables are expressed as mean ± standard deviation, and a one-way analysis of variance was used for the analysis. The Mann-Whitney *U* test and receiver operating characteristic (ROC) analysis were used to analyze the data. All of the analyses were performed using SPSS software (Version 20.0; SPSS Inc., Chicago, IL). *P* values <.05 were considered statistically significant. The study protocol was reviewed and approved by the institutional review board of Korea University Hospital.

RESULTS

The demographic and clinical characteristics of the patients are shown in Table 1. The mean age of the 24 patients with IC/BPS was 54.0 ± 12.3 years (range 29 to 79), and that of the 28 patients with severe OAB was 57.1 ± 12.1 years (range 22 to 86). The IC/BPS group had a shorter period of symptom duration than the severe OAB group ($P = .017$). In the analysis of the voiding diaries, the

Table 1. Patient characteristics

	IC/BPS (n = 24)	Severe OAB (n = 28)	*P* Value
Age (years)	54.0 ± 12.3	57.1 ± 12.1	.379
Symptom duration (months)	18.8 ± 27.4	44.5 ± 49.6	.017*†
Menopause (%)	12 (50.0)	17 (60.7)	.664†
Vaginal delivery	2.1 ± 0.9	2.4 ± 1.6	.283†
Pelvic surgery	0.3 ± 0.5	0.4 ± 0.5	.486†
Body mass index (%)	22.5 ± 3.3	24.1 ± 3.4	.131
SUI	6 (25)	14 (50)	.067†
Voiding diary			
Frequency (/day)	13.0 ± 5.4	11.1 ± 3.5	.131
MVV (mL)	148.5 ± 63.8	153.2 ± 39.3	.753
MiVV (mL)	47.1 ± 32.7	57.1 ± 29.2	.257
Urgency (%)	14 (58.3)	20 (71.4)	.322
Urge incontinence (%)	2 (8.3)	10 (35.7)	.019*

IC/BPS, interstitial cystitis/bladder pain syndrome; MiVV, minimal voided volume; MVV, maximal voided volume; OAB, overactive bladder; SUI, stress urinary incontinence.
* $P < .05$.
† Mann-Whitney *U* test.

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