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CAN ULTRASOUND ESTIMATED BLADDER WEIGHT PREDICT THE SEVERITY OF GLOMERULATION, AND BLADDER CAPACITY IN WOMEN WITH INTERSTITIAL CYSTITIS / BLADDER PAIN SYNDROME (IC/BPS)

Hypothesis / aims of study

Recently, the clinical diagnosis of Interstitial Cystitis / Bladder Pain Syndrome (IC/BPS) is based on the Society for Urodynamics and Female Urology (SUFU) and ESSIC definition as an unpleasant sensation perceived to be related to the urinary bladder, associated with lower urinary tract symptoms of more than 6 weeks or 6 months duration, in the absence of infection or other identifiable causes. Cystoscopic hydrodistension with different severity of glomerulations which was observed after hydrodistension had become primary cystoscopic features in IC/BPS. However, the anesthetized cystoscopic hydrodistension may have the complication of bladder perforation. Recent studies demonstrated that a non-invasive ultrasound method of estimating bladder weight (UEBW) has been proposed as diagnostic for outflow tract obstruction and detrusor overactivity in men and women. The aim of our study is to investigated that the connection between IC/BPS groups and non-IC/BPS groups and the relativity of IC/PBS patients and their bladder muscle thickness, bladder weight and the severity of glomerulation to evaluate a simple, reliable, safe and economical approach by using noninvasive, highly accurate and highly consistent three-dimensional(3D) ultrasound imaging.

Study design, materials and methods

Thirty female patients who were compatible with the NIDDK criteria were included. We practiced the standardized consecutive filling cystometry and we recorded volume at first desire to void (FDV), normal desire to void (NDV), strong desire to void (SDV) and maximum cystometric capacity (MCC). All patients have undergone hydrodistention and cystoscopic maximal bladder capacity (MBC) at the intravesical pressure of 85 cm H2O was measured. Thirty healthy volunteers were recruited from hospital staff as control group. Bladder Scan BVM 6500 device (Diagnostic ultrasound, Bothell, WA) was used to measure bladder wall thickness, bladder volume, and calculated bladder weight in two groups of patients. We compare the clinical results in each two groups by using t-test to delineate the difference between two groups and Pearson test to describe the relationship between bladder thickness, weight and the volume.

Results

Patient demographics show no difference in the average age between two groups. There were trends that decrease of bladder wall thickness and ultrasound estimated bladder weight was observed in IC/BPS patients with no statistically significant difference (Table1). The bladder wall thickness with severe glomerulation and with mild glomerulation is 2.21mm and 2.06mm with no significant difference. The increase of ultrasound estimated bladder weight is shown in the patients of bladder wall thickness with severe glomerulation (Table2). Correlation between bladder wall thickness and anesthetic cystoscopic maximal bladder capacity (MBC) revealed no significant correlation (Figure1).

Interpretation of results

The bladder wall thickness and ultrasound estimated bladder weight of IC/BPS patients are higher than controls; however, no statistic difference could be found. Therefore, these two could not be used as the clinical measure tools. No obvious differences are found among IC/BPS patients' bladder thickness, weight, the severity of glomerulation and bladder capacity.

Concluding message

Because no significant difference between ultrasound estimated bladder weight, glomerulation, and bladder capacity in our study, although with a weak trend, therefore the three-dimensional(3D) ultrasound imaging is not suitable as the non-invasive method in predicting severity of glomerulation and bladder capacity in female with IC/BPS patients.

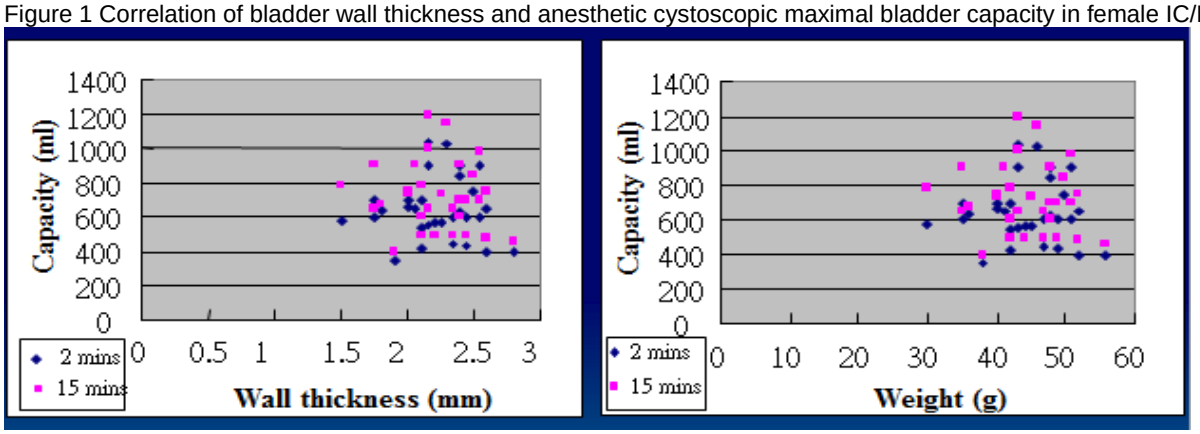
Table 1 Age, Bladder wall thickness, and Weight in female IC & non-IC

	IC (N=30)	Non IC(N=30)	
	Mean ± SD	Mean ± SD	p-value
Age (yrs)	42.27 ±10.12	43.90 ±10.86	0.549
Bladder wall Thickness (mm)	2.17 ±0.39	2.02 ±0.39	0.141
Bladder Weight (g)	44.43 ±5.98	40.56 ±9.83	0.071

Table 2. Bladder wall thickness and weight in mild and severe glomerulation in female patients with IC/BPS

Glomerulation / IC bladder	Severe	Mild	
Thickness (mm)	Mean ± SD	Mean ± SD	p-value
	2.21±0.37	2.06±0.43	0.353
Weight (g)	44.77±5.05	43.50±8.37	0.615

Figure 1 Correlation of bladder wall thickness and anesthetic cystoscopic maximal bladder capacity in female IC/BPS patients



Disclosures

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