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THE BLADDER CONTRACTILITY INDEX IN WOMEN WITH LOWER URINARY TRACT SYMPTOMS.

Hypothesis / aims of study

The voiding pressure flow plot (PFP) illustrates the relationship between the contracting detrusor, the force to empty the bladder and the modulation of the force by the outflow tract. Women with idiopathic detrusor overactivity have more powerful bladder contractions during voiding (measured as the maximum bladder external voiding power) than controls and this is associated with the highest urge severity (1). Therefore, if this were the case, we would expect that bladder voiding function as assessed by the PFP would differ in relation to urodynamic diagnosis.

Bladder voiding function (BVF) has been assessed using the bladder contractility index (BCI) (2) derived from the PFP, though most of the data is derived from male patients.

The aim of our study was to assess BVF in women using BCI and to determine changes in relation to different urodynamic groups.

Study design, materials and methods

We recruited women presenting to the urogynaecology clinic with lower urinary tract symptoms. All attended with a comfortably full bladder and performed a free flow study. A 12 F filling catheter was inserted and the residual urine was measured. 4 F urethral and rectal pressure transducers were then inserted and dual – channel saline cystometry was performed with 0.9% saline at 100ml/minute to a capacity of 500ml or when the women developed a strong desire to void. At the end of the filling phase the filling line was removed and provocative stress test manoeuvres were undertaken to demonstrate stress incontinence. Provocative tests such as running water and washing hands were performed to demonstrate provoked detrusor overactivity. A pressure flow study was then performed. Criteria for exclusion were poor trace quality, displacement of lines, inability to void with pressure lines in situ and severe prolapse.

The BCI is given by the formula $BCI = PdetQ_{max} + 5Q_{max}$ (2).

Data was analysed using Statistical Package for Social Sciences (SPSS) version 12.0 for Windows. The BCI of the different diagnostic groups were compared using analysis of variance (ANOVA) and post-hoc analyses by the Bonferroni correction for multiple comparisons was used to determine the groups between which differences existed.

Results

Four hundred and ten women were recruited. There was no significant difference in patient age between the groups. The mean BCI was 190 (range: 56-431). Table 1 below shows the values for BCI in the different urodynamic groups.

Table 1: Means, standards deviations, confidence intervals and significance level (ANOVA) for the BCI in different diagnostic groups

Diagnosis	N	Mean	Standard deviation	95% Confidence intervals		Significance between groups
				Lower	Upper	
USI	154	208	84	195	222	
DOA	121	173	76	160	185	***p = 0.001****
MI	123	191	77	176	205	
SU	12	153	81	103	202	

USI: urodynamic stress incontinence; DOA: detrusor overactivity; MI: mixed incontinence; SU: sensory urgency; N: number of patients.

* p<0.05 is considered statistically significant. Bonferroni analyses showed a significant difference between groups with USI and DOA (p = 0.001).

Interpretation of results
The BCI is significantly lower in the women with DOA versus USI.

Concluding message
This is the first study done in women that assesses BVF using BCI. It has shown this parameter to be different in women with USI and DOA, suggesting a lower contractility of the detrusor muscle in women with DOA compared to USI.

References

1. Neurourol Urodyn 2003; 22:223-226.
2. BJU Int 1999; 84:14-15.