

Noninvasive Diagnostic Measure of Pure Stress Urinary Incontinence.

Hypothesis / aims of study

To assess the value of uroflowmetry as noninvasive diagnostic test for pure stress urinary incontinence.

Study design, materials and methods

A retrospective analysis of uroflowmetry and cystometry was performed at the urogynaecology department of a tertiary level hospital. The study included 593 female patients who had undergone the investigations for pelvic organ prolapse and/or lower urinary tract symptoms. The peak flow rate (PFR), voided volume (VV), PFR per VV, acceleration (Acc), void time (VT) and pattern of urine flow was measured during uroflowmetry. The patients' symptoms, parity and degree of prolapse were also considered. The data was analysed to test the association of these parameters with the cystometric diagnosis. The analysis was performed by Mann Whitney U test using SPSS software version 21 by IBM.

Results

The cases were divided into 2 groups according to the cystometric diagnosis. The cases with detrusor overactivity (DO) or complex cystometric diagnosis were included in group 1. Group 2 consisted of pure urodynamic SUI (USUI). Cases with inconclusive cystometry and voiding dysfunction were excluded from the analysis. The results of the study are as shown in table 1.

Table 1: Association of cystometric diagnosis with uroflowmetry parameters.

Group 1: Detrusor overactivity and complex cystometric diagnosis

Group 2: Pure urodynamic stress urinary incontinence

Uroflowmetry parameter	Statistical parameter	Group 1	Group 2	P value
Peak flow rate ml/s	Mean	28.85	34.62	0.002
	95% confidence interval	27.32 to 30.39	30.98 to 38.26	
Peak flow rate per voided volume ml/s/ml	Mean	0.093	0.107	0.007
	95% confidence interval	0.088 to 0.098	0.096 to 0.119	
Acceleration ml/s sq	Mean	4.79	6.64	0.015
	95% confidence interval	4.38 to 5.20	5.17 to 8.11	

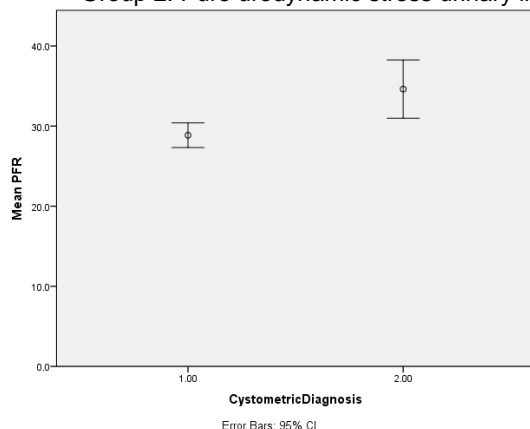
There was statistically significant association between cystometric diagnosis and PFR with $P=0.002$. There is no overlap between the 95% CI of both the groups (Fig 1A). The cystometric diagnosis is also significantly associated with PFR per VV ($P=0.007$) and acceleration ($P=0.015$) (Fig 1B and 1C). There is minimal overlap between the 95% confidence intervals of both the groups.

The cystometric diagnosis was not associated with VV or VT ($P>0.05$).

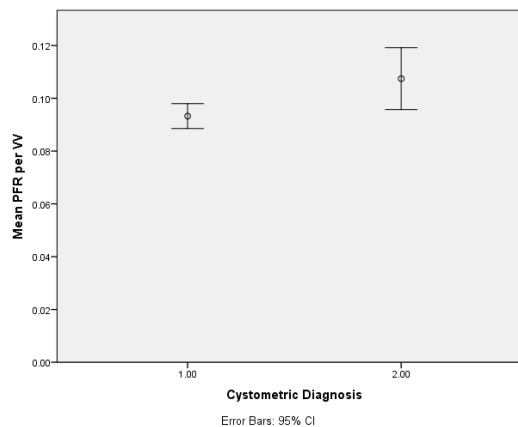
Figure 1: Association of cystometric diagnosis with peak flow rate (A), peak flow rate per voided volume (B) and acceleration (C).

Group 1: Detrusor overactivity and complex cystometric diagnosis

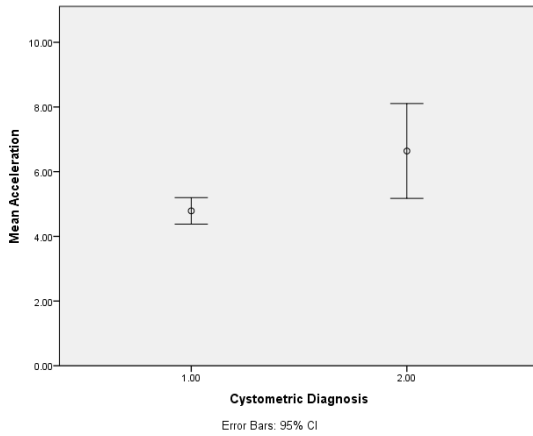
Group 2: Pure urodynamic stress urinary incontinence



A



B



C

Interpretation of results

There is divided opinion about value of pre-operative urodynamic studies (UDS). Preoperative invasive UDS did not affect the treatment selection and outcome of surgery at 12 months in a study done on women with stress predominant urinary incontinence [1]. These tests are uncomfortable for the patients, costly and increase the risk of urinary tract infection (UTI). It was estimated that tens of millions of dollars can be saved by not doing urodynamic testing preoperatively in patients with uncomplicated SUI. On the other hand, 89% of urogynaecologists in UK felt that invasive UDS are necessary before surgery for pure SUI. This was mainly to have a clear picture of the problem, to plan correct treatment and to be able to counsel patients appropriately [2].

Uroflowmetry is a noninvasive, inexpensive and quick investigation which can give us important information about bladder function. It is acceptable and free of any risks to the patient.

Concluding message

Uroflowmetry can be used as a noninvasive diagnostic measure for pure SUI. Further studies including patients with inconclusive cystometry and voiding dysfunction are necessary.

References

1. N Engl J Med. 2012 May 24;366(21):1987-97.
2. Neurourol Urodyn. 2012 Nov;31(8):1223-30.

Disclosures

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