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IS THREE REPEATED FILLING CYSTOMETRIES NECESSARY FOR PATIENTS WITH DETRUSOR OVERACTIVITY?

Hypothesis / aims of study

The Good Urodynamic Practice Guidelines (1) suggests at least two separate cystometric recordings should be made. The incidence of detrusor overactivity (DO) does vary with repeated cystometries but the evidence is limited (2). The subjective nature of bladder sensation limits our ability to grade patients with urgency. Using an 'urgemeter', we have measured bladder sensation as urge intensity and assessed whether sensation changes with repeated filling cystometry.

Study design, materials and methods

The urgemeter is a compressible handheld device connected to a pressure transducer on a standard urodynamic machine. The device is squeezed harder, without prompting, as the urge sensation increases resulting in a continuous tracing.

30 patients with LUTS were recruited. During filling cystometry at 50ml/min, patients experiencing sensation in the bladder squeezed the urgemeter. The device is squeezed harder with increasing urge sensation.

To assess changes in bladder sensation, first bladder sensation volume (S-first volume), maximum urge intensity score (S-max) with a scale 0 – 200 and total sensation volume were recorded using the urgemeter. The total sensation volume is defined as the volume of urge intensity during filling cystometry.

Results

30 patients (mean age 60 years) with LUTS were recruited. Detrusor overactivity with sensation of urgency was found in all 3 filling cystometries. All experienced sensation of bladder filling.

	1st Cystometry		2nd Cystometry		3rd Cystometry	
	DO	No DO	DO	No DO	DO	No DO
N (%)	17 (56.7%)	13 (43.3%)	20 (66.7%)	10 (33.3%)	15 (50.0%)	15 (50.0%)
Infused Vol. (ml)	286.4 (31.8)	335.8 (27.9)	290.4 (26.0)	306.0 (3.8)	247.7 (27.4)	314.0 (32.2)
S-first Vol. (ml)	112.1 (17.2)	142.0 (27.7)	124.4 (16.1)	130.1 (21.0)	104.3 (20.2)	93.2 (16.2)
Total Sensation Vol. (ml)	172.4 (23.6)	192.7 (23.3)	165.8 (16.4)	174.9 (23.7)	143.9 (17.3)	203.0 (27.5)
S-max Urge Intensity*	96.9 (11.5)	107.8 (9.5)	87.5 (8.5)	99.3 (11.9)	97.7 (9.7)	70.6 (6.5)

Values are expressed as mean (SD).

* Urge intensity scale 0 – 200.

Paired-sample t-test was used to compare patients with DO and those without DO for S-first volume, Total sensation volume and S-max urge intensity.

	1st Cystometry	2nd Cystometry	3rd Cystometry
S-first Volume	P = 0.33	P = 0.37	P = 0.69
Total Sensation Volume	P = 0.59	P = 0.25	P = 0.02
S-max Urge Intensity	P = 0.80	P = 0.94	P = 0.003

There was no significant difference found in S-first volume, total sensation volume and S-max urge intensity for the 1st and 2nd filling cystometries. By the 3rd cystometry, significant differences were found in S-max urge intensity and total sensation volume.

Interpretation of results

Detrusor overactivity does vary with sequential filling. Urge intensity and total sensation volume do change with repeated filling. Patients with DO were found to have a higher S-max urge intensity and a smaller total sensation volume compared with those without DO on the 3rd cystometry.

Concluding message

It is necessary to do 3 sequential fillings when assessing patients with LUTS especially in patients with detrusor overactivity as the maximum urge intensity and the sense of urgency do change.

(1) Good urodynamic practices: uroflowmetry, filling cystometry, and pressure-flow studies. Neurourol Urodyn 2002; 21: 261 – 274.

(2) Does the method of cystometry affect the incidence of involuntary detrusor contractions? A prospective randomized urodynamic study. Neurourol Urodyn 2001; 20: 141 – 145.

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