

THE IMPACT OF URGE SEVERITY ON VOIDING CONTRACTIONS IN WOMEN WITH IDIOPATHIC DETRUSOR OVERACTIVITY

Aims of Study

To check for a relation, if any, between voiding urgency and bladder contractility in women with idiopathic detrusor overactivity.

Methods

73 consecutive middle-aged women referred during the period January 1995 – December 1000 for 'irritative' LUTS (lower urinary tract symptoms) were assessed by water cystometry (CMG, at a filling rate of 30-50 ml/s), pressure/flow study and pelvic floor surface electrode electromyography (EMG). At the time of our assessment, none had overt pathological conditions, or took drugs, possibly affecting bladder function. Of them, 20 with a history of recurrent urinary tract infections (UTIs), but with no UTIs, LUTS or urosynaptic abnormalities at our assessment, were taken as controls (Group 1). The remaining 53 patients had idiopathic detrusor overactivity as classified by Fall et al. (1). In particular, Groups 2A (n=16) and 2B (n=18) had phasic detrusor instability (PDI) (1), which involved a normal perception of bladder fullness, with moderate or, respectively, severe urgency always accompanying the onset of involuntary detrusor contractions at CMG. Group 3 (n=19) had uninhibited overactive bladders (UOBs), with a defective perception of bladder fullness, no urgency accompanying the onset of involuntary detrusor contractions at CMG, and a strong desire to void being felt only after voiding had already started. Moderate or severe urgency were defined by the ability to delay an urgent void at CMG for at least 2 minutes (1) or, respectively, for less than 2 minutes – provided that such values reproduced the delay time of urgent void as shown by history taking. Detrusor contractility was defined by WFmax (maximum external voiding power per unit of bladder wall surface area) and vdet.max (maximum shortening velocity) (2). Significant differences were checked by non-parametric statistics (Dunn's multiple comparison procedure following a Kruskal-Wallis test) though means and standard deviations of the data studied are reported in the Table below.

Results

Patients' ages did not differ significantly in the 4 groups. Along with severe urgency, Group 2B showed the greatest number of day and night voids, and urge incontinence episodes, during the preceding month. WFmax and vdet.max were higher ($p<0.001$) in the females with overactive bladders than in the controls, did not differ significantly in Groups 2A and 3, and had the highest values ($p<0.001$) in Group 2B. Pelvic floor EMG showed an increased firing in Groups 2A and 2B during voiding.

	Group 1	Group 2A	Group 2B	Group 3	p value
Age (years)	48+/-14	53+/-13	50+/-15	49+/-18	n.s.
WFmax (uW/mm ²)	7.1+/-1.5	9.5+/-2.1	18.1+/-4.2	9.3+/-2.1	<0.001
vdet.max (mm/s)	6.8+/-1.4	10.1+/-2.5	14.7+/-4.0	9.3+/-3.0	<0.001

Conclusions

Detrusor overactivity facilitated voiding contractions (likely owing to an increased electrical cell coupling (3) within the bladder muscle). Such a facilitation would be amplified by severe voiding urgency (likely owing to an enhanced firing – and so to enhanced positive feedback (2) – of sensory afferents (4) from the bladder wall). A possible bladder inhibition secondary to pelvic floor contractions in response to urgency might be (hyper)compensated by these (over)facilitatory effects.

References

- (1) Neurourol. Urodyn., 14: 635-646, 1995.
- (2) Amer. J. Physiol., 251: R225-R230, 1986.
- (3) J. Urol., 150: 1668-1680, 1993.
- (4) Neurourol. Urodyn., 17:463-471, 1998.