

SENSATION RATIOS DURING CYSTOMETRY: AN EXTRA TOOL IN GRADING URGENCY IN PATIENTS WITH OVERACTIVE BLADDER SYNDROME.

Hypothesis / aims of study

The normal pattern of sensation during cystometric bladder filling consists of 3 distinct sensations: first sensation of filling (FSF), first desire to void (FDV) and strong desire to void (SDV) (1). The volume at which these sensations occur, vary between subjects but occur at a relatively constant ratio to SDV: FSF and FDV are respectively reported at 40% and 60% of SDV in healthy volunteers (2). Although absence of one or more of the filling sensations strongly suggests pathology, sensation ratios have not been studied in patients. However, the sensation ratio documents that part of the bladder capacity an individual can rely on to postpone micturition and integrate voiding in daily life activities. In other words, the sensation ratio gives information on the delay time or volume, and the amount of delay volume or time is a measure for the degree of urgency. The aim of this study was to describe the cystometrical pattern of filling sensation and sensation ratios in patients with the overactive bladder syndrome (OABS), and to compare them with normal healthy volunteers.

Study design, materials and methods

Fifty one patients with OABS that perceived all three normal sensations of bladder filling during cystometry were studied. OABS was defined as urgency with or without urge incontinence, usually with frequency and nocturia (3). During a conventional cystometric bladder filling at 30 ml/min, FSF, FDV and SDV were marked on the cystometric curve. Furthermore patients were asked to report on any other sensation they perceived. For analysis, patients were grouped depending on the reporting of urgency on cystometry. The data were compared with those of 15 healthy middle aged volunteers, which underwent the same study protocol.

Results

Thirty four (67%) patients reported urgency on cystometry while 17 (33%) did not. None of the healthy volunteers reported urgency during cystometry. The mean ages (years), volumes at different sensations (ml) and sensation ratios (FSF/SDV and FDV/SDV in %) with their standard deviations are presented in the table.

	Urgency (n = 34)	No urgency (n = 17)	P-value	All patients (n = 51)	Volunteers (n = 15)	P-value
Age	56 ± 15	52 ± 21	0.74	56 ± 15	49 ± 6	0.69
FSF	171 ± 78	197 ± 66	0.04	177 ± 75	194 ± 96	0.47
FDV	215 ± 87	282 ± 123	0.02	231 ± 102	303 ± 93	0.02
SDV	279 ± 108	348 ± 123	0.01	297 ± 114	504 ± 96	0.0001
FSF/SDV	62 ± 17	57 ± 14	0.68	60 ± 16	39 ± 21	0.003
FDV/SDV	77 ± 12	80 ± 14	0.79	78 ± 12	60 ± 17	0.001

Age was not different between the different groups. Volumes at FSF, FDV and SDV were significantly lower in the group with urgency during cystometry compared to the volumes in the group without urgency. For all patients with OABS, volumes at FDV and SDV were significantly lower compared to normal middle aged volunteers. In the healthy volunteers, the sensation ratios were identical as those reported in other groups of volunteers (2). The sensation ratios were not different for patients with or without urgency on cystometry. However they were significantly higher in patients with OABS than in the healthy volunteers. FSF occurred at 60% and FDV at 80% of SDV in OABS, compared to 40% and 60% in healthy volunteers.

Interpretation of results

In patients with OABS that perceive all normal sensations of bladder filling during cystometry, urgency is reported by 67%. Therefore urgency, which is the key symptom of OABS, might be considered an extra, pathological sensation, superimposed on the normal sensations of bladder filling. However urgency is not reported during cystometry by all. In OABS, the normal sensations of bladder filling occur at lower volumes than in healthy volunteers of the same age. However the sensation ratios during cystometry are significantly higher. In other words, patients with OABS perceive the normal warning signs (i.e. normal filling sensations) at a higher percentage of bladder capacity, leaving less bladder volume available for delaying micturition and integrating voiding during daily life activities. Since these data are deducted from an artificial bladder filling, studies on the filling sensation during daily life are needed to evaluate whether the increased sensation ratios represent a shorter warning time during daily life.

Concluding message

In cystometric evaluation of OABS patients, normal filling sensations, when used as a ratio, could be useful in grading urgency.

(1) On the physiology of micturition. Brain 65: 149-190, 1933.

(2) Cystometrical sensory data from a normal population. Eur Urol 42: 34-38, 2002.

(3) The standardization of terminology of lower urinary tract function. Neurorol Urodyn 21: 167-178, 2002.