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THE INVOLVEMENT OF BLADDER NECK/PELVIC FLOOR ON BLADDER SENSATION AND DETRUSOR OVERACTIVITY DURING BLADDER FILLING IN PATIENTS WITH OAB

Hypothesis / aims of study.
Overactive bladder syndrome (OAB) is defined by the International Continence Society (ICS) as a syndrome with urgency, with or without urge incontinence, usually with frequency and nocturia, in the absence of proven infection or obvious pathology [1]. OAB is a highly prevalent condition with its incidence increasing with age and is known to have a negative impact on the quality of life [2]. The objective of the present study was to investigate the influence of posture change on different bladder sensations and the occurrence of detrusor overactivity (DO) during filling cystometry in OAB patients.

Study design, materials and methods
Documented by a voiding diary, enrolled patients had symptoms suggestive of OAB, which were characterized by the presence of urgency and frequency >10x/24h, with or without urinary incontinence. Two filling cystometries were performed with body warm sterile saline at an infusion rate of 20ml/min, where one filling cystometry was performed in sitting position and one filling cystometry in a slight Trendelenburg position (-5° head down). During cystometry in the Trendelenburg position, the patients rested the shoulders against support wings. The order of filling position was determined randomly. Bladder sensations during filling cystometry were recorded, conforming to official ICS guidelines. The patients were asked to report their bladder sensations and the volumes associated with following sensations were recorded: first desire to void (FDV), normal desire to void (NDV), strong desire to void (SDV) and the point where the patient considered the bladder was completely full, the maximum cystometric capacity (MCC), after which the patient was allowed to void. If voiding was incomplete, residual urine was evacuated by intermittent catheterization. The presence of DO was documented together with the associated volume and pressure of the first overactive detrusor contraction.

Results
A total of 16 patients (13 females and 3 males) with OAB were enrolled in this study. The mean age of the patients was 52 ±16 years. No significant difference (Mann-Whitney U test, P=1) was found in the reported pattern of filling sensation by the patients between the sitting and slight Trendelenburg (-5°) position (Table 1). The volumes at which SDV and full bladder (MCC) were reported were significantly smaller in the sitting position compared to the Trendelenburg position (Table 2). The sitting position tends to be more prone to induce DO (11 out of 16 patients) in comparison to the Trendelenburg position (7 out of 16 patients). Furthermore, the occurrence of DO in the Trendelenburg position was always accompanied with the presence of DO in the sitting position. In this case, the first DO appeared at a smaller volume in the sitting position (Wilcoxon test, P=0,027). The bladder pressure at the first DO appeared to be slightly higher in the sitting position in comparison with the Trendelenburg position, although no statistical significance was found (n=7) (Wilcoxon test, P=0,09).

Interpretation of results
A vertical posture such as in a sitting position has an impact on how the bladder reacts on bladder filling. In the upright sitting position, DO is more provoked, with significantly lower bladder volumes and with slightly higher bladder pressures. However, the pattern of sensation is not different, but the volumes at which SDV and MCC are reported are significantly smaller in the sitting position than in Trendelenburg.

Concluding message
The following study stresses the involvement of bladder neck/proximal urethra and the integrity of the pelvic floor in OAB symptoms, in particular the bladder volumes/pressures at which urgency or urinary incontinence occurs.

Sensory pattern	Sitting position	Trendelenburg (-5°) position
FDV/NDV/SDV	8 (50%)	6 (37,5%)
NDV/SDV	2 (12,5%)	4 (25%)
SDV	6 (37,5%)	6 (37,5%)

Table 1: Reported pattern of filling sensations of all enrolled patients (n=16) between the sitting and slight Trendelenburg (-5°) position.

	Sitting position	Trendelenburg (-5°) position	P Value*
FDV (n=6)	240 ± 156	208 ± 121	0,75
NDV (n=8)	296 ± 157	349 ± 130	0,36
SDV (n=16)	276 ± 146	345 ± 155	0,011
MCC (n=16)	283 ± 143	359 ± 159	0,011

Table 2: Bladder volumes (ml) at reported sensations in the sitting position and Trendelenburg (-5°) position. Data are expressed as mean ± SD. * Mann-Whitney U test, P<0,05 was considered statistically significant

References

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