

## THE ASSOCIATION OF DETRUSOR OVERACTIVITY WITH OVERACTIVE BLADDER SYNDROME

### Hypothesis / aims of study

The aim of this study was to investigate the relationship of symptom severity, clinical findings, quality of life and ambulatory urodynamic findings in overactive bladder (OAB) patients.

### Study design, materials and methods

Records of women attending the urogynecology unit of a University Hospital with complaints of lower urinary tract and/or vaginal bulge symptoms who had a regular follow up between 2010 and 2013 were retrospectively reviewed (n=529). In order to identify women with OAB syndrome according to the definition of ICS as objective as possible, women who completely fulfilled both the Overactive Bladder Awareness Tool (OAB-V8) and the 3 day voiding diaries were selected (n=215). Women with a score >7 on the OAB-V8 and frequency >7/day were included (n=110). Women with urinary tract infection, neurological disease, uncontrolled diabetes/metabolic disease, patients with missing data and who refused the urodynamic examination were excluded. The final study population (n=49) was grouped according to the presence or absence of detrusor overactivity (DO) (Group 1; OAB with DO, n=32 and group 2; OAB without DO, n=17). Data for baseline characteristics, clinical examination and voiding diary findings, validated questionnaires for lower urinary tract symptoms, quality of life and sexual dysfunction (UDI-6, IIQ-7, OAB-V8, PISQ-12) and ambulatory urodynamic study findings (Duration, maximum cystometric capacity, post void residual volume (PVR), urge incontinence, urodynamic stress incontinence, urgency, obstructive voiding pattern) were compared. Pelvic organ prolapse (POP) staging was performed using the POP quantification system. Ambulatory urodynamic evaluation was performed using the LUNA ambulatory monitoring recorder (MMS<sup>TM</sup>). Measurement was started after the patients' spontaneous micturition and the duration of monitoring was limited to each patient's own micturition cycle, which was finalised when the patient felt unable to delay voiding. Statistical analysis was performed using the software SPSS (version 15, Chicago, IL, USA). The Student's t test, Mann-Whitney U test and chi-square tests were used as appropriate. P values < 0.05 were considered significant.

### Results

Detrusor overactivity was present in 65.3% of women with OAB syndrome (Group 1). Age, BMI and rate of postmenopausal status were significantly higher in group 1 (p=0.05, p=0.05 and p=0.000, respectively). The clinical and voiding diary findings were all similar (Table 1). The total and irritative subscale scores of the UDI-6, scores of the OAB-V8 and social subscale score of the IIQ-7 were significantly higher in group 1 (p=0.01, p=0.04, p=0.00 and p=0.01, respectively) (Table 2). Number of women indicating at least one episode of urge incontinence derived from the LUNA ambulatory monitoring recordings were significantly higher in group 1 (p=0.000). The similar finding was also observed for urgency (Table 3).

### Interpretation of results

The association of OAB symptom complex and DO is controversial. Although the OAB syndrome has been redefined by the ICS in order to standardize the terminology of OAB as a symptom complex (1), the lack of an accepted standardized tool to select OAB patients is one of the most critical reasons for the discrepancy between the studies performed so far. In this context, we chose the OAB-V8 Awareness Tool, as it was designed and validated as a screening questionnaire. We included frequency data, extracted from the urinary diaries to further increase the objectivity of inclusion criteria. Our practice of using ambulatory urodynamic monitoring in the clinical setting during one micturition cycle also provided a more accurate detection for DO. We found not only a higher percentage of DO in OAB patients (2,3), but also determined a significant association between symptom severity in these patients with DO.

### Concluding message

The presence of DO represents a more severe form of the OAB symptom complex. Establishing a validated and standardized tool to identify OAB patients with further studies may increase the prediction of a probable DO and decrease the need for urodynamic examinations in the clinical setting.

Table 1.

Baseline, clinical and voiding diary findings	Group 1 OAB with DO (n=32)	Group 2 OAB without DO (n=17)	p
Age, years (median,min-max)	52 (33-75)	47 (32-70)	0,05
BMI, kg/m <sup>2</sup> (median,min-max)	30,6 (23-42)	26,7 (22-38)	0,05
Postmenopausal status, n (%)	24 (75)	4 (23,5)	0,00
Parity, n (median,min-max)	2 (1-7)	3 (1-9)	0,67
Diabetes, n (%)	7 (21.9)	3 (17,6)	0,72
Hypertension, n (%)	15 (46,9)	6 (35,3)	0,44
COLD, n (%)	3 (9,4)	2 (11,8)	0,79
Previous pelvic surgery, n (%)	6 (18,8)	1 (5,9)	0,15
Cough stress test, n (%)	18 (58,1)	8 (50,0)	0,60
PVR, mL (median,min-max)	30(10-280)	30(5-250)	0,98

<b>POPQ ≥ stage II, n (%)</b>	26 (83,9)	14 (87,5)	0,74
<b>Fluid intake, mL (mean ± SD)</b>	2207±929	2373±1202	0,59
<b>Frequency/day (mean ± SD)</b>	10,7±3,4	11,6±3,9	0,40

BMI: Body mass index, COLD: Chronic obstructive lung disease, PVR: Post-void residual volume, POPQ: Pelvic organ prolapse quantification

**Table 2.**

<b>Questionnaires</b>		<b>OAB with DO (n=32)</b>	<b>OAB without DO (n=17)</b>	<b>p</b>
<b>UDI 6</b>	<b>Total</b>	69,4 (11,1-100)	50(22,2-88,8)	0,01
	<b>Irritative</b>	91,6 (33,3-100)	66,6 (16,6-100)	0,04
	<b>Stress</b>	66,6(0-100)	50(0-100)	0,49
	<b>Obstructive</b>	58,3 (0-100)	33,3 (0-100)	0,05
<b>IIQ 7</b>	<b>Total</b>	66,6 (0-100)	42,8 (0-100)	0,17
	<b>Physical</b>	66,6 (0-100)	49,9 (0-100)	0,29
	<b>Travel</b>	66,6 (0-100)	50 (0-100)	0,35
	<b>Social</b>	66,6 (0-100)	33,3(0-100)	0,01
	<b>Emotional</b>	66,6 (0-100)	33,3 (0-100)	0,14
<b>OAB-V8</b>		28 (9-40)	19(8-37)	0,00
<b>PISQ-12 total</b>		19(7-69)	22(12-55)	0,37

Data are presented as median, minimum-maximum

**Table 3.**

<b>Ambulatory Urodynamic Findings</b>	<b>Group 1 OAB with DO (n=32)</b>	<b>Group 2 OAB without DO (n=17)</b>	<b>p</b>
<b>Duration, min (mean ± SD)</b>	102±28,7	88,8±30,3	0,13
<b>Maximum cystometric capacity, mL (mean ± SD)</b>	336,9±204	325±206	0,85
<b>PVR, mL (median,min-max)</b>	50 (10-150)	40 (10-500)	0,86
<b>Urge Incontinence, n* (%)</b>	25 (78,15)	0 (0)	0,00
<b>Urodynamic Stress Incontinence, n*(%)</b>	20 (62,5)	10 (58,8)	0,80
<b>Urgency, n** (%)</b>	26 (81,4)	4 (23,5)	0,00
<b>Obstructed voiding pattern, n (%)</b>	8 (25)	4 (30,8)	0,68

\* Number of women with at least one incontinence episode

\*\*Number of women marking at least one urgency episode with the ambulatory monitoring recorder

#### References

1. Haylen BT, et al. (2010) An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Int Urogynecol J* 21: 5 – 26.
2. Guralnick ML, et al. (2010) Objective differences between overactive bladder patients with and without urodynamically proven detrusor overactivity. *Int Urogynecol J* 21:325–329.
3. Hashim H, Abrams P (2006) Is the bladder a reliable witness for predicting detrusor overactivity? *J Urol* 175:191–194.

#### Disclosures

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