

## DO SYMPTOMS OF OVERACTIVE BLADDER PREDICT URODYNAMICS DETRUSOR OVERACTIVITY?

### Hypothesis / aims of study

The standardisation subcommittee of the International Continence Society (ICS) in its latest report in February 2002 defined overactive bladder (OAB) syndrome as urgency, with or without urge incontinence, usually with frequency and nocturia, if there is no proven infection or other obvious pathology. These symptom combinations are suggestive of urodynamically demonstrable detrusor overactivity (DO) but can be due to other forms of urethro-vesical dysfunction. DO is a urodynamic observation characterised by involuntary detrusor contractions during the filling phase which may be spontaneous or provoked. (ICS 2002)

A previous study in male patients showed that 75% of patients with urge incontinence but only 44% of those with frequency and urgency had DO (1). In another study of female patients, 54.2% of patients with symptoms of OAB had DO (2). These studies were conducted before the new ICS report was published and thus may have been based on older definitions of urgency (strong desire to void accompanied by fear of leakage or fear of pain) and urge urinary incontinence (involuntary loss of urine associated with a strong desire to void).

According to the new definition, symptoms of OAB are suggestive of DO, however the definition does not specify the actual correlation between OAB and DO. Based on clinical experiences, the aim of this paper is to define how well symptoms of overactive bladder syndrome predict urodynamic DO.

### Study design, materials and methods

All urodynamics (UDS) were conducted in a specialist referral centre performing about 20-25 UDS tests per week. This includes male and female children and adults undergoing standard, video and ambulatory UDS. The machines used include LectroMed and Dantec. Either an 8Fr filling catheter and epidural catheter, to measure vesical pressure ( $p_{ves}$ ), or 6Fr double-lumen catheter was used. All the information from UDS including the medical history and examination was entered during the test onto a medical database. For the purposes of this study, the UDS database had to be converted into an easily accessible format (MS Access).

All UDS investigations were done according to the ICS good urodynamics practices protocol (3) and all the investigators have obtained a certificate in UDS.

The inclusion criteria were male and female adults ( $\geq 18$  years old) with at least one symptom of OAB (urgency (U); urinary urge incontinence (UUI); frequency (F)), from February 2002 to February 2004. Nocturia was not included in the analysis. We then looked to see if these patients had DO or not. Patients who reported only UUI and no U were assumed to have urgency by definition. Patients with F alone ( $\geq 7$  voids during the daytime) were not considered to have OAB.

### Results

1809 patients had urodynamics in that period. 1452 (80%) of those had complete storage symptom data entries. The others had one or more missing data on the database and thus were excluded. Of the 1452 patients, 1074 had symptoms of OAB and 378 had no symptoms of OAB.

Table 1 summarises the results of all the patients with storage symptoms and those with storage symptoms and UDS DO. Table 2 summarises the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of UDS in patients with storage symptoms.

**Table 1.**

SYMPTOMS	No. of patients with storage symptoms			No. of patients with DO and symptoms			% of patients with DO and symptoms		
	Male	Female	Total	Male	Female	Total	Male	Female	Overall
No symptoms	57	128	185	22	40	62	38.6	31.25	33.5
F only	48	145	193	30	46	76	62.5	31.7	39.4
<b>Total without OAB</b>	<b>105</b>	<b>273</b>	<b>378</b>	<b>52</b>	<b>86</b>	<b>138</b>	<b>59.5</b>	<b>31.5</b>	<b>36.5</b>
U only	42	25	67	29	11	40	69.05	44	59.7
U&UUI	36	232	268	33	134	167	91.67	57.76	62.31
U&F	78	64	142	56	30	86	71.79	46.86	60.56
U&F&UUI	128	469	597	105	286	391	82.03	60.98	65.49
<b>Total with OAB</b>	<b>284</b>	<b>790</b>	<b>1074</b>	<b>223</b>	<b>461</b>	<b>684</b>	<b>78.52</b>	<b>58.35</b>	<b>63.69</b>
<b>TOTAL</b>	<b>389</b>	<b>1063</b>	<b>1452</b>	<b>275</b>	<b>547</b>	<b>822</b>	<b>70.7</b>	<b>51.5</b>	<b>56.6</b>

**Table 2.**

Sensitivity	Specificity	PPV	NPV
0.64	0.62	0.83	0.38

**Interpretation of results**

The results show that 92% of men with U&UUI alone and 82% with U&F&UUI will have DO. This is not a significant difference ( $p=0.2$ ). UUI in men seems to increase the probability that they will have DO. This is true for women as well, however the results are not as high as the men. In both men and women, having U&F does not seem to differ from having U alone in terms of predicting DO. In women, having U&F&UUI has the highest sensitivity in predicting DO. The possible reason for this is that women can experience both stress incontinence and UUI (mixed incontinence) making it difficult to differentiate the two while men rarely experience stress incontinence. In fact, 202 of the 232 women who had symptoms of U&UUI also had symptoms of stress incontinence. Also 71 of the 134 women who had DO and U&UUI also had UDS stress incontinence. Frequency alone is a poor predictor of DO (39%) in patients with OAB but better in men (62%) than women (32%).

Overall, 83% of patients with DO have symptoms of OAB (PPV) and 64% of patients with OAB have DO (sensitivity).

**Concluding message**

This study is the first one to look at the correlation between the symptoms of OAB and UDS DO since the publication of the new definition of OAB. It is also the first to involve both men and women.

The definition of OAB is the best we have at the present time in predicting patients with DO. It seems to be a better predictor in men than in women. The more symptoms there are in women the better the correlation however in men the presence of urgency with urge incontinence alone can predict DO in about 92% of cases. 78.5% of men and 58.4% of women with OAB will have DO. This is mainly due to the presence of stress incontinence and sphincter weakness in women.

From a clinical and practical point of view, the most important thing before UDS is to enquire about and treat the patient's most bothersome symptom. UDS should be done only if it is going to change management.

**References**

1. Detrusor instability in men: correlation of lower urinary tract symptoms with urodynamic findings. *J Urol.* Aug 2001; 166: 550-553.
2. Overactive bladder symptoms: do we need urodynamics? *Neurourol Urodynam.* 2003; 22 (2): 105-108.
3. Good urodynamic practices: uroflowmetry, filling cystometry and pressure flow studies. *Neurourol Urodynam.* 2002; 21: 261-274.