

## THE DIAGNOSTIC VALUE OF URODYNAMIC TECHNIQUES IN URGE-FREQUENCY SYNDROME

### Aims of Study

Overactive bladder syndrome (OAB) or urge-frequency syndrome is one of the most common conditions of lower urinary tract dysfunction(1). The diagnosis in clinical practice is often empirical based on the complaints of the patient, dominated by urgency and increased voiding frequency. Efforts have been made to identify objective observations obtained by urodynamic techniques as a tool for confirming the diagnosis and for follow-up. Several diagnostic modalities have been advocated, like filling cystometry and ambulatory urodynamic measurements (AUM). However, the reproducibility and the diagnostic value of the parameters gained by these techniques remains controversial(2).

We have performed a retrospective analysis of data of patients with urge incontinence and OAB in order to investigate the relationship between signs and symptoms observed from frequency volume charts and urodynamic measurements collected by cystometry and AUMs. The aim of this study was to investigate the reproducibility of the measurements and to identify the variable with the highest correlation with the 24-hour voiding frequency.

### Methods

The main inclusion criteria were: subjective signs and symptoms of OAB, minimally 8 voiding episodes/24 hrs (reported and observed from frequency volume charts), minimally 1 involuntary contraction of at least 5 s and an amplitude of at least 10 cmH<sub>2</sub>O above baseline in the 6 hrs AUM.

24-hour voiding frequency has been calculated from bladder diaries recorded by the patients collecting among other variables the total number of daytime voids and episodes of nocturia during 3 consecutive days.

AUMs were performed for 6 hours on 2 separate occasions within a timeframe of less than 3 months, using a Medical Monitoring Services (MMS) urodynamic investigations recording device. This study investigated: total number of detrusor contractions and total area under the detrusor pressure/time curve (AUC).

Filling cystometry was performed also on 2 separate occasions using an MMS device within a timeframe of less than 3 months. All urodynamic measurements were performed after a wash-out period of minimally 10 days following any treatment for OAB.

### Results

Sixteen patients with overactive bladder were included in the study.

The average voiding frequency/24 hours was 11,8 (SD 3,0).

AUMs: there was a large difference between the mean numbers of detrusor contractions during the AUMs, although not statistically significant: 7,5 (SD 7,5) and 4,9 (SD 5,5); the mean AUC 1260 (SD 1343) and 1720 (SD 2736). The mean number of urgencies reported during AUM was 10,2 (SD 4,7) and 7,8 (SD 4,1).

Filling cystometry: the average number of instabilities registered during cystometry was 1,4 (SD 2,5) and 2 (SD 2,6) during the first and second measurements, respectively. No instabilities were registered in 11 cases during the first, and in 7 cases during the second assessment. In 5 women no instabilities were registered at all. The average voiding frequency in these five women was 10,5/24 hrs. In one of the cases AUM also failed to show involuntary detrusor contractions. The mean frequency of involuntary detrusor contractions in the other cases was 4,6.

No correlation was found between the 24 hrs voiding frequency and the number of involuntary detrusor contraction in the AUM (1<sup>st</sup> AUM:  $r=0,09$ ; 2<sup>nd</sup> AUM:  $r=-0,11$ , both NS). Neither was the AUC of all involuntary detrusor contractions related to the frequency of voiding (1<sup>st</sup> AUM:  $r=-0,33$ ; 2<sup>nd</sup> AUM:  $r=-0,15$ , both NS). The number of involuntary detrusor contractions was also not related to the number of urge episodes during AUM (1<sup>st</sup> AUM:  $r=0,14$ ; 2<sup>nd</sup> AUM:  $r=0,07$ , both NS).

Statistically significant relationship has been found between the 24 hrs voiding frequency and the number of urge episodes reported during AUM, in both measurements (1<sup>st</sup> AUM:  $r=0,6$   $p<0,01$ ; 2<sup>nd</sup> AUM:  $r=0,49$   $p<0,05$ )

### **Conclusions**

1. The reproducibility of urodynamic measurements in women with the clinical diagnosis of OAB based on 24 hrs voiding frequency is poor. This may be due to the fact that urge-frequency syndrome is an extremely variable disease rather than the shortcoming of the applied methodology.
2. No relationship could be demonstrated between the voiding frequency and the number and AUC of involuntary contractions registered during AUM.
3. Filling cystometry failed in the majority of the cases to confirm the diagnosis of OAB.
4. The statistically significant relationship between the 24 hrs voiding frequency and the urgency reported during AUM on one hand and the lack of relationship between the subjective symptoms of urgency reported by the patients during AUM and the observed contractions on the other hand, prompts us to speculate that the experience of urgency is not solely related to the mechanical function of the bladder. Therefore we suspect that an urge-frequency syndrome can not be always demonstrated by urodynamic techniques.
5. The high expectations towards AUM being more predictive and a better diagnostic tool for the quantification of subjective symptoms in OAB patients has not been confirmed in this study.

### **References**

1. Urology 2002 Nov;60(5 Suppl 1):7-12
2. J Urol 2001 Dec;166(6):2253-8