

## CAN WE PREDICT A DIAGNOSIS OF DETRUSOR UNDERACTIVITY (DUA) OR BLADDER OUTLET OBSTRUCTION IN WOMEN BY NON-INVASIVE PARAMETERS?

### Hypothesis / aims of study

Detrusor Underactivity (DUA) is being increasingly recognised as a cause of voiding symptoms in men and women, but little published data exist, suggesting an increase in incidence with age: studies identified DUA in 13% of women >65 years old and in up to 80% of women in nursing home facilities. Interestingly, bladder outlet obstruction (BOO), detrusor overactivity (DO) and stress incontinence may commonly coexist with DUA. Diagnosis of DUA remains a challenge, particularly in women, where the 'male' Detrusor Contractility Index (DCI), Qmax and voiding detrusor pressure cut-off values have been used somewhat arbitrarily. Having previously set up parameters to diagnose and exclude female BOO, we aimed to identify non-invasive clinical parameters which may characterise DUA as opposed to BOO in women.

### Study design, materials and methods

Women with treatment-resistant LUTS who were submitted to invasive urodynamic investigation and completed the IPSS comprised the study population. Those with a score sum of  $\geq 5$  in the IPSS questions 1+3+5+6 were considered to suffer voiding symptoms, as in previously published large epidemiological studies (1). Bladder outlet obstruction (BOO) was defined by a combination of the Blaivas-Groutz (B-G) nomogram and the Urethral Resistance Association index (URA). Those in the severe and moderate BOO categories according to the B-G nomogram and those with mild-BOO and URA $>20$  were considered to be obstructed. Those with mild-BOO and URA $<20$  and those with no BOO but with a Bladder Voiding Efficiency (BVE) index of less than 80% comprised the DUA group (2). Male indices for obstruction (BOOI) and detrusor underactivity (DCI) were also examined in this female population.

### Results

Of 88 consecutive women, 66 (75%) had a voiding symptom score  $\geq 5$ . Of those, 17 were diagnosed as 'BOO' and 18 as 'DUA', with the remaining diagnosed as 'non-BOO, non-DUA'. Mean age was higher in the DUA group (63 $\pm$ 12.9 vs 53.1 $\pm$ 15.8 years,  $p=0.049$ ). There were no differences between the 'BOO' and 'DUA' groups in total IPSS ( $p=0.904$ ), voiding subscore ( $p=0.274$ ) or storage subscore ( $p=0.468$ ). The DCI was also no different ( $p=0.938$ ), but the BOOI was significantly higher in the BOO group ( $p=0.019$ ). An increase in the voiding score by 5 points resulted in a more obvious increase in the diagnosis of BOO (25.8% - 30% - 35% for sums of 5, 10, 15 respectively) than in diagnosing DUA (27.5% - 27.3% - 30%, respectively). From the free uroflow parameters, Qmax and BVE showed a trend for difference ( $p=0.09$ ), while voided volume and post-void residual were no different ( $p=0.92$  and 0.69 respectively). In a multivariate regression model however, a lower Qmax and a higher BVE were found to be more predictive of BOO as opposed to DUA (OR 0.801,  $p=0.025$  and OR 1.065,  $p=0.016$ , respectively)

### Interpretation of results

Both BOO and DUA are ill-defined in women. As DUA is being increasingly recognized as a prevalent urodynamic entity in both genders, the scientific community is working towards the identification of clinical symptoms that better define this condition. In this patient cohort, neither IPSS nor the voiding and storage subscores could identify between BOO and DUA, but rises in voiding subscore were more indicative of BOO, as well as a higher BOOI. In addition, freeflow parameters such as Qmax and BVE may help identify between the two conditions.

The small study sample and the lack of prospective study design may limit the interpretation of results analysis.

### Concluding message

Voiding symptoms appear to be common among women with treatment-resistant LUTS. Age, Qmax at uroflowmetry, BVE and BOOI may be useful in differentiating women with DUA from those with BOO.

### References

1. Hall SA, Cinar A, Link CL, et al. Do urological symptoms cluster among women? Results from the Boston Area Community Health Survey. *BJU Int.* 2008 May;101(10):1257-66.
2. Mytilekas K.V., Oeconomou A., Sokolakis I., et al. Defining voiding problems in women: Bladder outlet obstruction versus detrusor underactivity. *Eur Urol Suppl.* 2014;13(e688)

### Disclosures

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