Can we predict a diagnosis of detrusor underactivity (DU) or bladder outlet obstruction (BOO) in women by non-invasive parameters?

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Hypothesis / aims of study
Detrusor Underactivity (DU) 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.

Diagnosis of DU 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 DU as opposed to BOO in women.

Study design, materials and methods

Study population:
Women with treatment-resistant LUTS who were submitted to invasive urodynamic investigation and completed the IPSS.

Clinical criteria:
Those with a score sum of ≥5 in the IPSS questions 1+3+5+6 were considered to suffer voiding symptoms, as in previously published large epidemiological studies (1).

Urodynamic criteria:
BOO was defined by a combination of the Blaivas-Grouzot (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 DU group (G).

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 ≥5.

17 were diagnosed as ‘BOO’ and 18 as ‘DU’, the remaining diagnosed as ‘non-BOO, non-DU’.

Mean age was higher in the DU group (63.7±12.9 vs 53.1±15.8, years, p=0.049) (Table 1).

From the free uroflow parameters, Qmax and BVE showed a trend for difference (p=0.09), while voided volume (VV) and post-void residual (PVR) were no different (p=0.92 and 0.69 respectively) (Table 1).

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) (Table 2).

Neither the voiding nor the storage symptoms were more prevalent in the ‘BOO’ or ‘DU’ groups. OAB index >40% (storage/total IPSS ratio) was somewhat more common in DU women, but not significantly (Table 3).

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 DU (27.5% - 27.3% - 30%, respectively).

In a multivariate regression model, a lower Qmax and a higher BVE were found to be more predictive of BOO as opposed to DU (Table 4).

Conclusions
Voiding symptoms appear to be common among women with treatment-resistant LUTS.

In this patient cohort, neither IPSS nor the voiding and storage subscores could identify between BOO and DU, but rises in voiding subscore were more indicative of BOO, as well as a higher BOOI.

Age, Qmax at uroflowmetry, BVE and may be useful in differentiating the two patient groups.

References