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-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 DU 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 ≥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, below).

❖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, below).

Table 2.	DU	BOO	P value
IPSS total	20.06±6.91	20.29±4.45	0.904
IPSS 2+4+7	8.67±2.70	7.71±2.39	0.274
IPSS 1+3+5+6	11.39±5.39	12.59±4.14	0.468

❖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, below).

Table 3.	DU	BOO	P value
Voiding Symptoms %	56.9±26.9	62.9±20.7	0.468
Storage Symptoms %	57.7±18.0	51.4±15.4	0.274
OAB index%	44.8±11.1	38.9±12.3	0.150

❖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).

❖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, below)

Table 4.	OR	95% CI	P value
Qmax	0,801	0,660-0,972	0.025
BVE%	1,065	1,012-1,121	0.016

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 DUA, 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

IPSS questions 1+3+5+6 ≥5	n=66	Mean age (years)	Mean Qmax (ml/s)	Mean VV (ml)	Mean PVR (ml)	Mean BVE (%)
BOO	25.8% (n=17)	53.05	10.48	189.0	123.8	70.0%
DU	19.7% (n=13)	63.77	13.92	187.0	140.0	56.4%
Abdominal Urination	7.6% (n=5)	61.0	17.48	177.2	159.8	53.9%

References

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