

DIFFERENCES OF VOIDING PATTERN BETWEEN WOMEN AND MEN ON URODYNAMIC STUDIES

Hypothesis / aims of study

In general, women and men have each unique characteristics of lower urinary tract function, because there are sex-specific anatomic differences in lower urinary tract including pelvic organs. We retrospectively investigated the differences of voiding pattern between women and men using urodynamic studies (UDS).

Study design, materials and methods

Forty-five women and 59 men with non-neurogenic lower urinary tract symptoms (LUTs) were enrolled in this study. All patients underwent UDS from January 2010 to December 2014. UDS included filling cystometry for volume at first and maximum sensation, pressure flow study (PFS) for maximum flow rate (Qmax) and detrusor pressure at Qmax (Pdet at Qmax), and post-void residuals (PVR). Bladder outlet obstruction index (BOOI) was used for evaluating the bladder outlet resistance. (1) BOOI was calculated using the following formula; $BOOI = P_{det} \text{ at } Q_{max} - 2 \times Q_{max}$. Statistical analyses were performed using Mann-Whitney U test and $p < 0.05$ was considered statistically significant.

Table 1

Characteristics	women (n=45)	Characteristics	men (n=59)
Mean age(range)	67.1(34-82)	Mean age(range)	71.5(45-89)
Vaginal Delivery	2.1(0-4)	BPH	49(83.1%)
POP	18(40%)	Urinary Retention	5(8.4%)
SUI	10(22.2%)	Other	8(13.5%)
UUI	1(2%)	Prostate Volume	43.4(28.4)
Mixed UI	5(11%)		

Table 2

	Women (n=45)	Men (n=59)	P-value
Volume at first sensation (mL)	161.3 (63.0)	167.3 (86.3)	N S
Maximal bladder capacity (mL)	323.2 (88.7)	284.1 (98.6)	P=0.035
Maximal flow rate (mL/s)	21.5 (9.2)	7.4 (5.3)	P<0.001
Post-void residuals (mL)	13.6 (22.9)	79.6 (63.8)	P<0.001
Pdet at Qmax (cmH2O)	14.3 (15.2)	66.4 (32.1)	P<0.001
BOOI	-28.7 (27.1)	51.7 (38.2)	P<0.001

Figure 1A

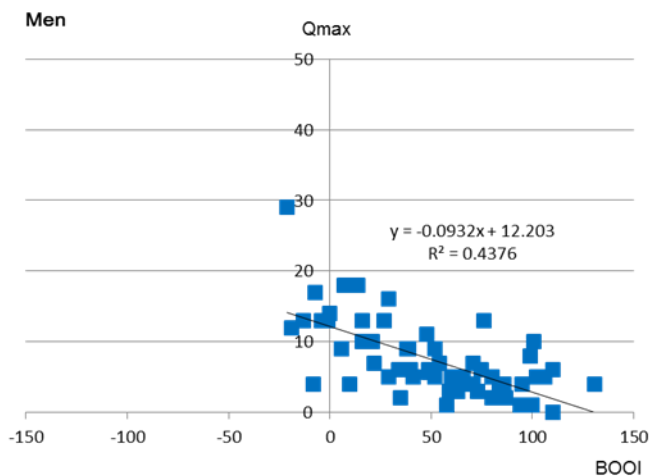
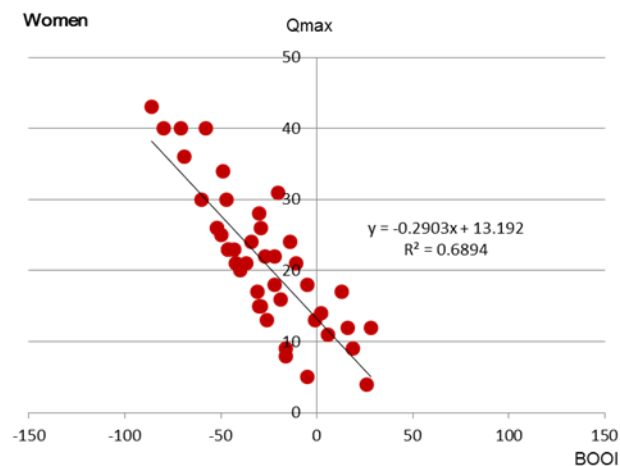


Figure 1B



Results

The characteristics of all patients are shown in Table 1. Maximal bladder capacity and Qmax in women were significantly higher than men. PVR, Pdet at Qmax, and BOOI in men were significantly higher than women. (Table 2, $p < 0.0001$, respectively) Qmax showed a significant negative-correlation with BOOI in both women ($R = 0.8303$, $p < 0.0001$) and men ($R = 0.6351$, $p < 0.0001$). (Figure 1A and 1B) Regarding a significance of correlation between Qmax and BOOI in women and men, women showed stronger correlation than men ($p = 0.0328$)

Interpretation of results

We recognized that men voided with higher pressure of detrusor and lower flow, while women did with lower pressure and higher flow. PVR was significantly higher in men compared to women. This result is derived from the difference of bladder outlet resistance between women and men, as previously reported. (2)

Comparing significance of correlation between BOOI and Qmax in women and men, we considered that micturition in women was more affected by the bladder outlet resistance than men. Namely, urethral function or pelvic floor muscle is more important in micturition of women compared to men.

Concluding message

Urethral function or pelvic floor muscle, which is the factor associated with bladder outlet resistance, could be more critical role in female micturition.

References

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2. Nitti VW. Pressure flow urodynamic studies: the gold standard for diagnosing bladder outlet obstruction. *Reviews in urology*. 2005;7 Suppl 6:S14-21. PubMed PMID: 16986024. Pubmed Central PMCID: PMC1477621. Epub 2006/09/21. eng.

Disclosures

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