

THE EFFECT OF AGING ON URODYNAMIC PARAMETERS IN WOMEN WITH STRESS URINARY INCONTINENCE

Hypothesis / aims of study

Stress urinary incontinence (SUI) is one of the most common lower urinary symptoms in women. We analyze age-associated changes in urodynamic parameters in women with SUI.

Study design, materials and methods

We analyzed the UDS of patients with urodynamically proven SUI between March 2008 and July 2014. In uroflowmetry, maximal flow rate (Qmax), time to Qmax, voided volume and post-void residual urine volume (PVR) and cystometry data including first, strong desire to void and Valsalva leak point pressure (VLPP) were measured. Also, Qmax and detrusor pressure at Qmax (Pdet@Qmax) of pressure flow data were analyzed. The Shapiro Wilk test was used for test of normality and the Kruskal Wallis test was used for continuous variables comparisons between age groups.

Results

The subjects included 776 patients. Among the patients, 151 were withdrawn due to incomplete UDS data or because they were under the exclusion criteria. A total of 625 patients enrolled in our study. The mean age of the population was 57.3 years old. The mean Qmax, voided volume, voiding time, and PVR were 26.2 ml/s, 292.1 ml, 25.7 seconds, and 31.7 ml, respectively. Qmax (P=0.001) in uroflowmetry, PVR (P=0.042), first desire to void (P=0.042), Pdet@Qmax (P=0.016) and BCI (P=0.046) were significantly different between the age groups. Qmax and Pdet@Qmax were decreased and PVR was increased significantly with age after 60 years (Table 2).

Interpretation of results

The major finding of our study is that Qmax and voided volume showed a significant decrease, and PVR and desire to void showed a significant increase with aging. Also, Pdet@Qmax and BCI were significantly decreased with aging.

Concluding message

Older women with SUI also have worsened voiding function with age as the results of urodynamic parameters. Specifically, detrusor contractility was decreased with age after 60 years.

Table 1. Clinical characteristics of women with SUI.

Variables	Mean ± SD	Median (25th, 75th percentile)
Age (yr)	57.3 ± 10.9	56.0 (49.0, 66.0)
Medical history	DM	82 (13.1%)
	HTN (n)	178 (28.5%)
	Parity	3.0 ± 1.4
Uroflowmetry	Qmax (ml/s)	24.3 (18.5, 32.8)
	Time to Qmax (sec)	6.0 (4.0, 9.0)
	Voiding time (sec)	22.0 (16.0, 31.0)
	Voided volume (ml)	277.5 (191.0, 383.0)
Cystometry	PVR (ml)	17.5 (10.0, 35.0)
	MCC (ml)	445.0 (402.5, 500.0)
	First desire to void (ml)	208.0 (113.0, 208.0)
	Strong desire to void (ml)	361.0 (299.0, 406.0)
	VLPP (cmH2O)	70.0 (60.0, 85.0)
Pressure flow study	Qmax (ml/s)	19.3 (10.4, 28.8)
	Voided volume (ml)	286.5 (106.5, 422.0)
	pdet@Qmax (cmH2O)	23.5 (15.0, 39.0)
	BCI	123.5 (85.0, 170.0)

SUI: stress urinary incontinence, SD: standard deviation, DM: diabetes mellitus, HTN: hypertension, Qmax: maximal flow rate, PVR: post-void residual urine volume, MCC: maximal cystometric capacity, VLPP: valsalva leak point pressure, Pdet@Qmax: detrusor pressure at Qmax. BCI: bladder contractility index.

Table 2. Urodynamic parameters by age group.

	Age				P value*
	< 50 (n=171)	50~59 (n=217)	60~69 (n=132)	> 69 (n=105)	
Uroflowmetry					
Qmax (mean±SD, mL/sec)	26.3 ± 10.4	28.6 ± 11.2**	24.7 ± 10.1	22.9 ± 10.1	0.001
Voided Volume (mean±SD, mL)	314.0 ± 141.9**	306.1 ± 132.4**	264.7 ± 119.9	261.4 ± 121.5	<0.001
Voiding time (mean±SD, sec)	27.0 ± 17.6	24.0 ± 13.5	24.6 ± 12.5	28.7 ± 19.2	0.120
PVR (mean±SD, mL)	25.9 ± 58.2	24.8 ± 32.5**	30.3 ± 40.4	41.4 ± 56.0**	0.042
Cystometry					
First desire to void (mean±SD, mL)	156.3 ± 66.9**	162.5 ± 70.4**	173.1 ± 84.0	186.4 ± 88.9	0.042
Strong desire to void (mL)	354.2 ± 84.4	352.8 ± 80.7	355.7 ± 85.8	361.4 ± 94.7	0.901
VLPP (mean±SD, cmH ₂ O)	74.0 ± 18.0	74.5 ± 19.2	71.3 ± 19.3	71.0 ± 19.0	0.242
Pressure flow study					
Qmax (mean±SD, mL/sec)	25.4 ± 14.3	25.1 ± 11.4	22.4 ± 13.1	18.8 ± 15.0	0.036
Pdet@Qmax (mean±SD, cmH ₂ O)	33.0 ± 25.0**	32.1 ± 22.7**	24.7 ± 19.6	26.2 ± 23.5	0.016
BCI (mean±SD)	160.1 ± 78.7**	157.6 ± 62.9**	136.9 ± 71.2	120.2 ± 76.2**	0.046

* Analyzed by Kruskal Wallis test.

P value less than 0.008 according to Bonferroni's method by Wilcoxon rank sum test comparison with age group 60~69**

References

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Disclosures

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