

DO PATIENTS WITH A SMALL PROSTATE VOLUME DIFFER URODYNAMICALLY FROM THOSE WITH A LARGER PROSTATE VOLUME?

Hypothesis / aims of study

The relevance of prostate size in the pathophysiology of LUTS is controversial. A large prostate is apt to be related to bladder outlet obstruction (BOO) urodynamically, however, even a small prostate has a large proportion of BOO. Detrusor overactivity or decreased detrusor contractility would be the causes of LUTS [1,2]. The aim of this study was to evaluate the urodynamic findings in men with LUTS and a small prostate volume and compare them with men with a larger prostate volume.

Study design, materials and methods

A retrospective analysis was performed of 417 consecutive male LUTS patients over 50 years of age. All of the collected clinical data were obtained from patients using the same protocol for medical history, lower urinary tract symptoms, uroflowmetry, as well as the measurements of post voided volume (PVR), transrectal ultrasonography (TRUS) and urodynamic studies. Patients were divided into two groups according to the prostate size: small prostate (≤ 30 cc) and larger prostate volume (>30 cc). These two groups were compared with regard to age, maximal flow rate (Qmax), PVR, serum prostate-specific antigen (PSA), prostate volume, IPSS, and urodynamic findings.

Results

The parameters that demonstrated significant differences between the two groups included the serum PSA levels and prostate volume. ($p < 0.001$) Patients with a small prostate volume had a lower PSA (1.35 ± 1.51 versus 3.27 ± 4.07) ($p = 0.001$), and a smaller total (24.05 ± 4.81 versus 51.87 ± 24.05) ($p = 0.001$) and transition volume (8.55 ± 4.91 versus 25.01 ± 20.18) ($p = 0.001$). No significant differences were found in the patient characteristics and other urodynamic findings between the two groups ($p > 0.05$). The BOOI was lower in the patients with a small prostate volume compared to those with a larger prostate volume (31.21 ± 25.19 versus 33.93 ± 29.56); however, these differences were not statistically significant ($p = 0.07$). The mean score for the IPSS and quality of life (QOL) index also showed no significant differences between the two groups ($p > 0.05$). (Table 1)

There were weak correlations between prostate size and BOOI and symptom scores. Otherwise, prostate size had a significant correlation with serum PSA levels. (Table 2)

Table 1. Comparison between patients with small prostate and larger prostate volume

Parameters	Small prostate (n=111)	Larger prostate (n=306)	p-value
Age (yr)	67.85±7.58	68.04±7.87	0.550†
PSA (ng/ml)	1.35±1.51	3.27±4.07	0.001†
Total volume (ml)	24.05±4.81	51.87±24.05	0.001†
Transitional volume (ml)	8.55±4.91	25.01±20.18	0.001†
Maximum flow rate (ml/sec)	9.77±4.98	10.38±5.08	0.398†
Post void residual (ml)	121.57±114.15	112.75±119.40	0.454†
Cystometric capacity (ml)	367.45±109.56	374.63±108.31	0.497†
Involuntary detrusor contraction (%)	26.1	27.5	0.901‡
Poor compliance (%)	10.0	10.7	0.504‡
Bladder outlet obstruction index	31.21±25.19	33.93±29.56	0.077†
Bladder outlet obstruction (%)	26.12	34.31	0.124‡
Bladder contractility index	99.62±28.87	106.61±31.22	0.486†
Detrusor underactivity (%)	53.15	44.12	0.175‡
Pressure at maximum flow (mmHg)	50.75±21.04	54.69±25.38	0.069†
IPSS (sum)	20.93±8.30	19.34±8.22	0.516†
Storage symptoms	12.28±5.73	11.35±5.57	0.878†
Voiding symptoms	8.72±3.85	8.01±3.73	0.738†
Quality of life	4.35±1.32	4.11±1.34	0.997†

† Student t-test, ‡ Chi-square test were used for data analysis

Table 2. Pearson correlation coefficient between age, PSA, prostate size, urodynamic finding and IPSS

	Age	PSA	Prostate volume	Cystometric capacity	Maximum flow rate	IPSS (sum)
PSA	0.089	-	0.389**	-0.062	-0.034	0.068
Prostate volume	0.128**	-	-	-0.034	-0.056	-0.130**
Cystometric capacity	-0.173**	-	-	-	0.112*	-0.148**
Maximum flow rate	-0.120**	-	-	-	-	-0.137*
IPSS (sum)	-0.064	-	-	-	-	-
BOOI	0.114*	0.104*	0.156**	-0.165**	-0.555**	0.048

BOOI, bladder outlet obstruction index

Bivariate correlation analysis was used for data analysis. Asterisk indicated $p < 0.05$, and double asterisks indicated $p < 0.01$

Interpretation of results

The incidence of involuntary detrusor contraction (IDC), bladder outlet obstruction index (BOOI), poor compliance, and detrusor underactivity (DUA) was similar in each group. The only significant differences were found in serum PSA levels and prostate volume ($p=0.001$). The prostate size had weak correlation with BOOI and symptom scores, otherwise prostate volume had significant correlation with serum PSA level.

Concluding message

Patients with a small prostate volume had similar urodynamic as well as subjective symptom profiles as those with a larger prostate volume. The results of this study suggest the importance of dynamic components rather than static parameters in the evaluation of men with LUTS over 50 years of age

Keywords

Benign Prostatic Hyperplasia, Bladder Outlet Obstruction, LUTS in Men, Neurourology: Clinical, Urodynamic techniques

References

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<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes