

VIDEO-URODYNAMIC CHARACTERISTICS OF NON-NEUROGENIC, IDIOPATHIC UNDERACTIVE BLADDER IN MEN – A COMPARISON OF MEN WITH NORMAL TRACING AND BLADDER OUTLET OBSTRUCTION

Hypothesis / aims of study

Underactive bladder is frequently encountered in elderly patients. It may result from detrusor underactivity (DU) or low detrusor contractility due to a urethral sphincter inhibitory effect. This study analyzed the video-urodynamic study (VUDS) characteristics of patients with underactive bladder in a large cohort of men with lower urinary tract symptoms (LUTS).

Study design, materials and methods

Male patients with LUTS who had failed the initial treatment were consecutively enrolled. All patients underwent detailed urological investigations including prostate measurement, free uroflowmetry, post-void residual volume (PVR) measurement, cystoscopy and VUDS. The VUDS characteristics of the men with underactive bladder were analyzed and compared with those of men with bladder outlet obstruction and normal tracing.

Results

A total of 1329 men who underwent VUDS were included in this retrospective analysis. After VUDS, the final diagnosis was DU in 165 patients, poor relaxation of external sphincter (PRES) in 525, bladder outlet obstruction in 501, and normal tracing in 138. VUDS findings in DU patients showed a slowly increased detrusor pressure, intermittent detrusor contractions, or early decline of detrusor contraction, resulting in a low maximum flow rate (Q_{max}), and large PVR. In comparison with the PRES groups. (Figure). DU patients were older, had reduced bladder sensation, lower detrusor pressure (P_{det}), lower Q_{max}, larger PVR volume, and lower voiding efficiency. Patients with urodynamic PRES also had low-pressure–low-flow tracings, but their bladder sensation was similar to that with normal tracing. DU patients with very low P_{det} also had low detrusor tonicity, and more medical comorbidities than the other groups did. (Table 1)

Interpretation of results

This study demonstrates that low-pressure–low-flow underactive bladder involves urodynamic DU and PRES. Both lower urinary tract dysfunctions result in low Q_{max}, increased PVR and LUTS including slow stream and dysuria. However, the urodynamic characteristics of DU and PRES differ for bladder sensation, voiding pressure, and VE. Urodynamic DU is associated with reduced bladder sensation and a larger cystometric bladder capacity than PRES or BOO. These urodynamic characteristics may help urologists in the diagnosis of underactive bladder and with decisions on its treatment.

Concluding message

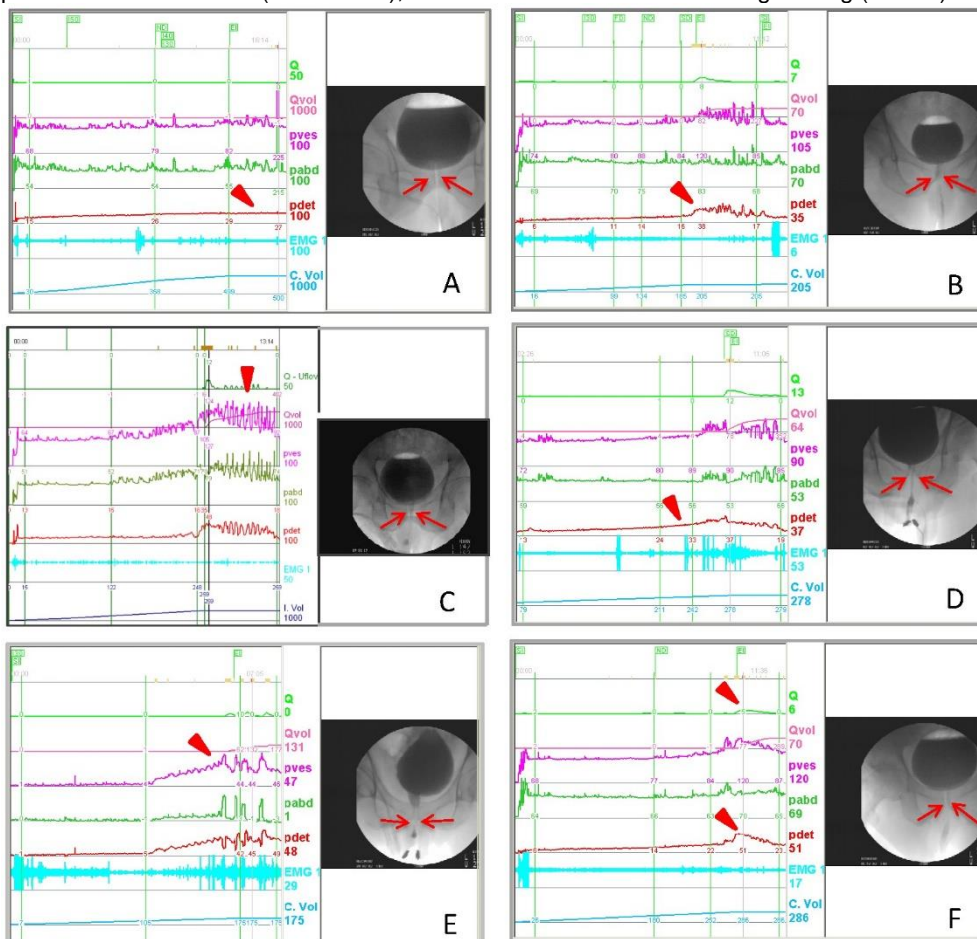
Idiopathic underactive bladder may be attributed to urodynamic DU and PRES. DU is associated with older age, reduced bladder sensation, and medical comorbidities. DU patients with very low voiding pressure also have low detrusor tonicity and a large PVR in addition to diminished bladder sensation. VUDS provides information to determine the vesicourethral dysfunction in men with underactive bladder. Videourodynamic data also aid in determining treatment options.

Table. VUDS parameters in men with underactive bladder

	Normal (n=138)	DU (n=165)	PRES (n=525)	BOO (n=501)	ANOVA
Age (years)	62.9±10.2	71.1±11.7 *	65.3±11.3	65.6±10.5	<0.0001
TPV (ml)	30.1±13.6	37.6±23.7	29.5±15.8	61.5±41.9	<0.0001
TZI (%)	32.7±12.1	30.1±12.5	42.6±14.8	47.5±12.8	<0.0001
Urodynamic DO (%)	0	0	5.7%	77.3%	<0.0001
FSF (ml)	171±78.9	214±117 *	148±71.2	113±58.0	<0.0001
FS (ml)	299±96.2	324±127 *	255±101	179±87.8	<0.0001
CBC (ml)	526±151	409±150 *	348±136	260±131	<0.0001
Compliance	98.5±88.1	73.1±93.3	72.7±68.6	53.5±58.9	<0.0001
P _{det} (cmH ₂ O)	31.3±9.94	9.74±10.6 *	29.1±22.3	70.1±27.7	<0.0001
Q _{max} (ml/s)	19.3±4.24	1.92±3.30 *	9.40±4.72	7.79±4.82	<0.0001
PVR (ml)	28.0±65.3	348±188*	69.4±100	70.3±99.2	<0.0001
BCI	128±23.1	19.3±23.6 *	76.0±34.5	105±34.9	<0.0001
VE (%)	95.6±6.28	17.6±31.1 *	79.1±26.9	80.4±26.4	<0.0001
BOOI	-7.23±13.3	5.91±9.39	10.3±23.1	54.6±29.8	<0.0001

* Significant difference between DU and PRES; BCI: bladder contractility index, BOO: bladder outlet obstruction, BOOI: bladder outlet obstruction index, CBC: cystometric bladder capacity, DO: detrusor overactivity, DU: detrusor underactivity, FS: full sensation, FSF: first sensation of filling, P_{det}: detrusor pressure, PRES: poor relaxation of external sphincter, Q_{max}: maximum flow rate, TPV: total prostate volume, TZI: transition zone index, VE: voiding efficiency.

Figure. The videourodynamic characteristics of patients with underactive bladder. (A) Detrusor acontractile with a tight bladder neck (arrows). (B) Low detrusor contractility with open bladder outlet during voiding (arrows). (C) Low detrusor contractility with straining voiding (arrow head) and open bladder outlet (arrows). (D) Detrusor overactivity and impaired contractility (arrow head) with open bladder outlet (arrows). (E) Slowly increased detrusor pressure (arrow head) with PRES (arrows). (F) Normal voiding pressure and low Qmax (arrow head), with a narrow bladder neck during voiding (arrows).



Disclosures

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