

Introduction

Underactive bladder (UAB) 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 UAB in a large cohort of men with lower urinary tract symptoms (LUTS).

Materials/ Methods

Men with LUTS who had failed the initial treatment were consecutively enrolled. All patients underwent detailed exam including transrectal ultrasound of prostate, free uroflowmetry, post-void residual volume (PVR) measurement, cystoscopy and VUDS. The VUDS characteristics of the men with UAB were analyzed and compared between those 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.

Table 1. Video urodynamic parameters in men with UAB

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

* 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, Pdet: detrusor pressure, PRES: poor relaxation of external sphincter, Qmax: maximum flow rate, TPV: total prostate volume, TZI: transition zone index, VE: voiding efficiency.

BOO

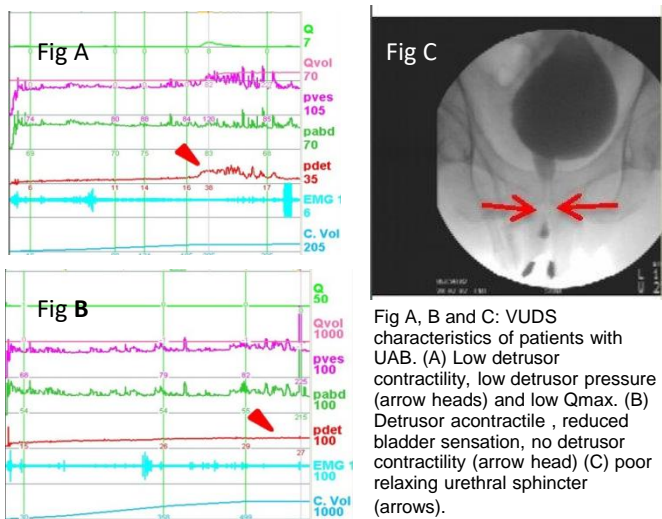
- Pdet.Qmax ≥ 50cmH₂O or a BOOI ≥ to 40.

DU

- low voiding pressure (Pdet≥5 cmH₂O) and
- very low voiding pressure (Pdet<5 cmH₂O) (Fig A and B).

PRES

- low voiding Pdet.Qmax, non-relaxation of urethral sphincter EMG and VUDS image showing narrow membranous urethral during voiding (Fig C).



Conclusions

Idiopathic underactive bladder in elderly men could be attributed to urodynamic DU and PRES. DU is associated with old age, reduced bladder sensation, low voiding efficiency, and medical co-morbidities.

Disclosures statement: None

Table 2. The urodynamic parameters between patients with DU of different detrusor contractility

	Pdet.Qmax <5cmH ₂ O (n= 54)	Pdet.Qmax ≥5cmH ₂ O (n=111)	P value
FSF (ml)	225 ± 117	209 ± 117	0.409
FS (ml)	340 ± 130	317 ± 126	0.276
CBC (ml)	420 ± 140	405 ± 155	0.540
Compliance	110 ± 118	55.5 ± 73.7	0.003
Pdet (cmH ₂ O)	0.91 ± 1.21	14.0 ± 10.5	<0.0001
Qmax (ml/s)	0.83 ± 2.42	2.43 ± 3.56	0.001
PVR (ml)	397 ± 169	327 ± 193	0.023
BCI	5.06 ± 12.3	26.1 ± 24.7	<0.0001
VE (%)	8.0 ± 23.5	22.2 ± 33.3	0.002
BOOI	-0.75 ± 4.80	9.10 ± 9.38	<0.0001

BCI: bladder contractility index, BOOI: bladder outlet obstruction index, CBC: cystometric bladder capacity, FS: full sensation, FSF: first sensation of filling, Pdet: detrusor pressure, Qmax: maximum flow rate, VE: voiding efficiency.