

## URODYNAMIC FEATURES OF MALE PATIENTS WITH NON-NEUROGENIC LOWER URINARY TRACT SYMPTOMS

### Hypothesis / aims of study

Both in congenital and in acquired neurogenic lower urinary tract dysfunction (NLUTD), early diagnosis and treatment is essential as irreversible changes may occur, even if the related neuropathological signs may be normal [1]. This proposition is certainly the same for those with non-neurogenic LUTD. The functional classification for motor function of detrusor and sphincter are based on urodynamic and clinical findings, and this system is also suited and recommended to non-neurogenic LUTD [2]. There were two kinds of causes for obstruction of lower urinary tract: organic and functional origins. As compared with the organic obstruction, such as benign prostatic hyperplasia, or primary bladder neck obstruction, functional obstruction and over- or underactivity of detrusor and sphincter is relatively difficult to display. Due to the bad impact on prognosis of patients with low compliance, male patients with LUTD were divided into low and normal compliance groups, and then their functional states of detrusor and sphincter were categorized. The major aims of the present study were to measure the prevalences or distribution of various functional disorders of detrusor and sphincter (LUTD).

### Study design, materials and methods

From 2002 to 2012, a total of 7200 patients with LUTD received conventional urodynamic examination in our institution. Among them, 2500 belonged to the population of male patients with non-neurogenic LUTD. A retrospective study was carried out. The urodynamic investigations included maximum flow rate (free Q<sub>max</sub>), filling cystometrography (CMG), voiding pressure-flow study (PFS), external anal sphincter electromyography (EAS EMG) and urethral pressure profilometry (UPP) according to previously described techniques. Methods, definitions and units were employed according to the standards recommended by the ICS (International Continence Society), except where specifically noted [3]. During CMG and PFS, vesical pressure (P<sub>ves</sub>) and abdominal pressure (P<sub>abd</sub>), and then detrusor pressure (P<sub>det</sub>=P<sub>ves</sub>-P<sub>abd</sub>) were measured by using a two-lumen 8 French catheter and a rectal balloon catheter, respectively. EAS EMG was also simultaneously monitored using two needle-guided-wire electrodes which were inserted at 3 and 9 o'clock of the anus aperture with lateral distance of 0.5 cm. Filling CMG was performed at a flow rate of 50 to 70 mL/min of saline and the compliance was recorded continuously. The infusion was stopped to initiate voiding with changing position from supine to sitting when maximum cystometric capacity (MCC) was reached. The urinary flow rates, P<sub>det</sub>, detrusor contraction fashion and EAS EMG were measured during the voiding phase when the patient was instructed to void. Finally, the UPP was obtained and the maximum urethral closure pressure (MUCP) and the functional profile length (FPL) were recorded [3]. The distribution of various functional disorders of detrusor and sphincter was calculated and measured according to EAU mode used for NLUTD.

### Results

The distribution of various functional disorder combinations of detrusor and sphincter was listed in Tab1.

Table 1. Prevalence of functional disorder combinations of detrusor and sphincter in 2500 male patients with non-neurogenic LUTD

Compliance	Functional states of the elements		No.	%
	Detrusor	Sphincter		
> 10 ml/cmH <sub>2</sub> O	Normal	Normal	1071	42.8
	Overactive	Normal	650	26.0
	Normal	Overactive	125	5.0
	Overactive	Overactive	148	5.9
	Underactive	Overactive	206	8.3
< 10 ml/cmH <sub>2</sub> O	Normal	Normal	215	8.6
	Underactive	Overactive	85	3.4

Methods to define sphincter underactivity by conventional urodynamics were not available now, so this disorder was not involved in our study. Among the population, cases (%) of IDO (idiopathic detrusor overactivity), dysfunctional voiding or sphincter overactivity and detrusor underactivity (DUA) were 798 (31.9%), 273 (10.9%) and 291 (11.7%) respectively. The majority cases had normal detrusor and sphincter function (42.8%, Fig 1), and dysfunctional voiding (Fig 2) is relatively less than in female patients [3]. It was interesting that we observed 23 cases (0.9%) of the patients had symptoms of dysfunctional voiding complained sustained poor-weak flow or frequency after TURP, some of them received baclofen 10 mg, 3/d, and got their symptoms relieved significantly (Fig 3).

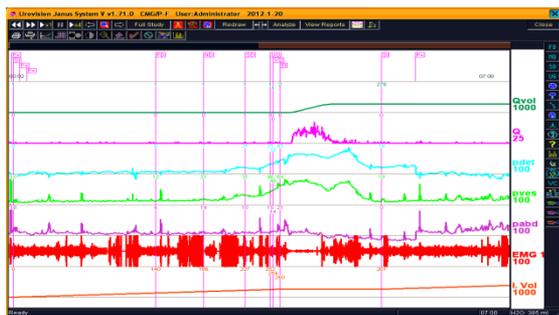


Fig 1

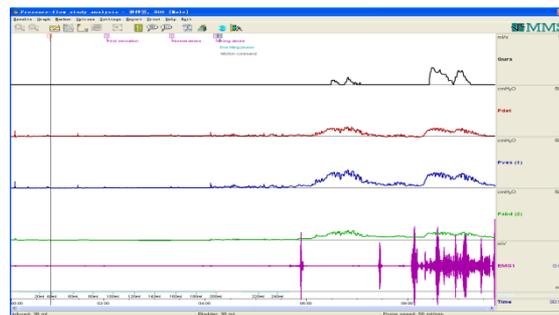


Fig 2

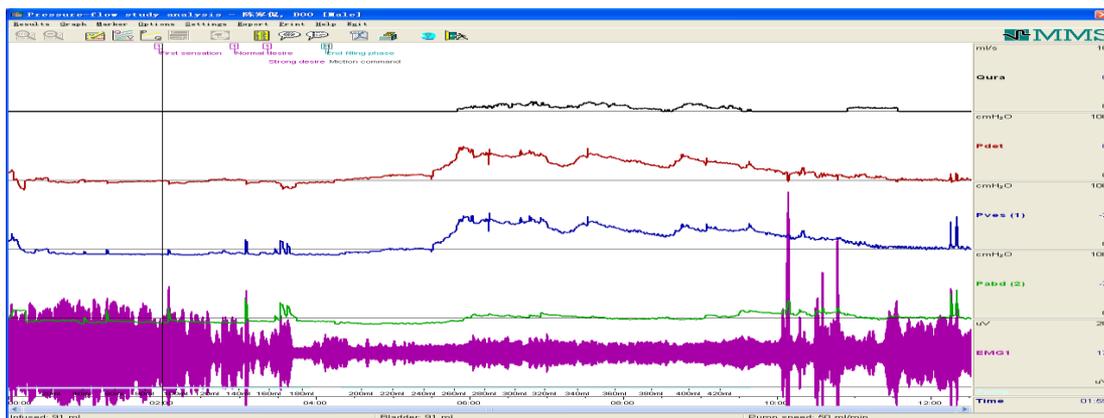


Fig 3

### Interpretation of results

Apart from bladder neck obstruction in old male patients, IDO, dysfunctional voiding and DUA may also result in much trouble and impact on their life-quality too like in female patients. According to our observation, when the detrusor initiates its contraction, the sphincter usually relaxes, whereas just before the flow begins, the sphincter contracts suddenly anomalously in patients with dysfunctional voiding (Fig 3). This kind of sphincter disorder may be associated with an enforced guarding reflex of the sacral spinal cord [3].

### Concluding message

Among male patients with non-neurogenic LUTD, prevalences of IDO, dysfunctional voiding or sphincter overactivity and DUA were 31.9%, 10.9% and 11.7% respectively. During preoperational examination for non-neurogenic male patients suggestive of bladder neck obstruction, other functional abnormality of the detrusor and sphincter should be considered and conventional urodynamic intervention may be a good option in this case.

### References

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- 3 Qu CY, Xu DF, Wang CZ, Chen J, Yin L & Cui XG. Anal sphincter electromyogram for dysfunction of lower urinary tract and pelvic floor. In: Mizrahi Joseph, edi. *Advances in Applied Electromyography*. Rijeka: InTech, 2011: 161-188. <http://www.intechopen.com/articles/show/title/anal-sphincter-electromyogram-for-dysfunction-of-lower-urinary-tract-and-pelvic-floor>

### Disclosures

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