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URODYNANIC FEATURES OF FEMALE 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 origens. 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. Here female patients with LUTD were divided as with SUI or without SUI, then their functional states of detrusor and sphincter were categorized. The major aims of the present study were to explore the prevalences of various functional disorders of detrusor and sphincter in female patients with 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, 2195 were female patients with non-neurogenic LUTD. A retrospective study was carried out. The urodynamic investigations included maximum flow rate (free Qmax), 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 (Pves) and abdominal pressure (Pabd), and then detrusor pressure (Pdet=Pves-Pabd) 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 with 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, Pdet, 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 the EAU mode for NLUTD.

Results

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

Tab 1. Prevalence of functional states of detrusor and sphincter in 2195 female patients with non-neurogenic LUTD

According to relation to SUI	Functional states of the elements		No.	%	
	Detrusor	Sphincter		Of the subgroup	Of total
Without SUI (n=1630)	Normal	Normal	805	49.4	36.7
	Overactive	Normal	320	19.6	14.6
	Normal	Overactive	213	13.1	9.7
	Overactive	Overactive	102	6.3	4.6
	Underactive	Overactive	180	11.0	8.2
	Underactive	Normal	10	0.6	0.4
With SUI (n=565)	Normal	Normal	296	52.4	13.5
	Overactive	Normal	81	14.3	3.7
	Normal	Overactive	73	12.9	3.3
	Overactive	Overactive	65	11.5	3.0
	Underactive	Overactive	45	8.0	2.0
	Underactive	Normal	5	0.9	0.2

Methods to define sphincter underactivity by conventional urodynamics were not available, 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 783 (35.7%), 453 (20.7%) and 225 (10.3%) respectively. Underactive detrusor with normal sphincter was deleted from DUA. The majority cases had normal detrusor and sphincter function (52.4%, Fig 1), and dysfunctional voiding (Fig 2) is relatively more than in male patients [3]. It was interesting that we observed one case with 10 years history of urge incontinence had symptoms of dysfunctional voiding, IDO, urge incontinence and bladder outlet obstruction and she was successfully cured after receiving baclofen 10 mg, 3/d (Fig 3, 4).

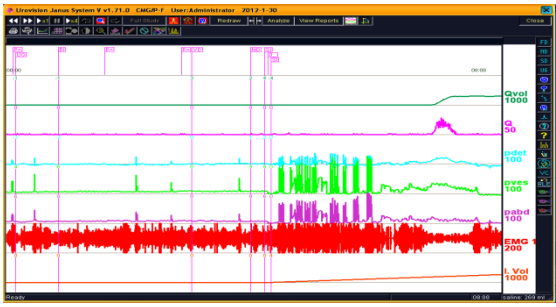

Fig 1

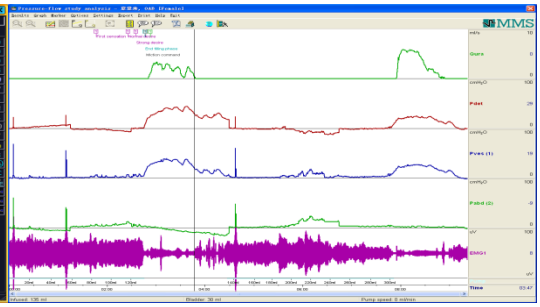

Fig 2

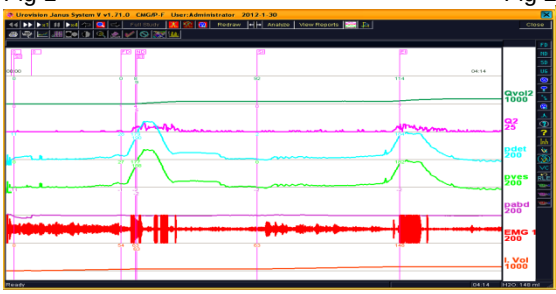

Fig 3

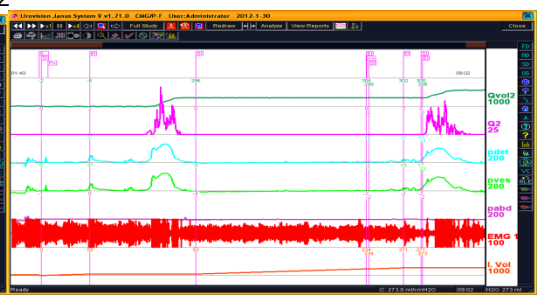

Fig 4

Interpretation of results

Apart from bladder neck obstruction in female patients, OAB, dysfunctional voiding and DUA may also result in much trouble and impact on their life-quality 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 2). This kind of sphincter disorder may be associated with an enforced guarding reflex of the sacral spinal cord [3].

Concluding message

Among female patients with non-neurogenic LUTD, prevalences of IDO, dysfunctional voiding and DUA were 35.7%, 20.7% and 10.3% respectively. During preoperational examination for non-neurogenic female patients suggested of bladder neck obstrucion, other functional abnormality of the detrusor and sphincter should be considered and conventional urodynamic intervention may be a good option in this case.

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Disclosures

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