

VIDEOURODYNAMIC ANALYSIS OF PATHOPHYSIOLOGY OF MEN WITH BOTH STORAGE AND VOIDING LOWER URINARY TRACT SYMPTOMS

Hypothesis / aims of study

Lower urinary tract symptoms (LUTS) are highly prevalent among elderly men. Not all men with LUTS have urodynamically confirmed bladder outlet obstruction (BOO). Overactive bladder (OAB) symptoms are often caused by bladder dysfunctions alone or in combination with BOO. Detailed diagnosis to identify the causes of LUTS in men seems mandatory to correctly target different therapy at various underlying pathologies.

Study design, materials and methods

1407 male patients referred for investigation of LUTS were included in this study. All patients had both storage and voiding symptoms. Videourodynamic study was performed for diagnosis of bladder and urethral dysfunction. The videourodynamic study was repeated at least twice to obtain a reproducible pressure flow tracing. Benign prostatic obstruction (BPO), bladder neck dysfunction (BND), poor relaxation of the urethral sphincter, urethral sphincter pseudodysynergia, detrusor overactivity (DO), DHIC, increased bladder sensation were diagnosed based on the findings of characteristic bladder and urethral dysfunction during the videourodynamic study. The results of videourodynamic studies were further analyzed for four age groups (≤ 55 , 56-65, 66-75 and ≥ 76 years old). The urodynamic parameters (including cystometric capacity, Pdet, Qmax, PVR and the presence of DO) were also analyzed according to presenting storage and voiding LUTS. Statistical analysis was performed to investigate the correlation between age and presenting pathophysiology and to compare the urodynamic parameter results between patients with and without BPO, and between patients with and without DO. Chi-square test and ANOVA test with post-hoc analysis were performed using SPSS software.

Results

Videourodynamic study revealed that among the 1407 patients with bladder dysfunction, 150 (10.7%) had increased bladder sensation, 722 (51.5%) had DO, 65 (4.6%) had detrusor hyperactivity with inadequate contractility (DHIC) and 153 (10.9%) had detrusor underactivity. The causes of BOO included bladder neck dysfunction in 19 patients (1.4%), benign prostatic obstruction in 413 (BPO, 29.4%), urethral sphincter pseudodysynergia in 30 (2.1%) and poor relaxation of urethral sphincter in 283 (20.1%). Comparison of the LUTS between 413 patients with BPO and 994 patients without BPO revealed no significant difference in the presenting storage symptoms. More than 90% of patients either with or without BPO complained of frequency and more than 80% of patients of both groups complained of dysuria. DO was found in 334 (80.9%) of the 413 patients with BPO but only in 388 (39.3%) of the 994 patients without BPO. By contrast, BPO was found in 334 (46.3%) of the 772 patients with DO, and in 79 (11.5%) of the 685 patients without DO.

Interpretation of results

The presenting symptoms of LUTS in this study were similar in patients with or without BPO. More than 80% of patients without BOO also complained of dysuria. By comparison, urgency was highly prevalent in patients with DO, DHIC as well as in patients with bladder outlet dysfunctions such as bladder neck dysfunction and BPO. Urgency was also noted in one third of the patients with detrusor underactivity, poor relaxation of urethral sphincter and normal urodynamic findings. These results suggest that bladder symptoms are not a reliable indicator of the presence of DO. Patients might feel dysuria because they have urgency sensation at a small bladder volume. They might have a tolerable sensory urgency but still feel urge to void. A more detailed questionnaire for the severity of urgency might be necessary in order to quantitate urgency and provide more accurate correlation with urodynamic DO.

Concluding message

This study indicates that LUTS can result from a complex interplay of pathophysiology which may include bladder and bladder outlet dysfunction such as BPO or poor relaxation of urethral sphincter. About one third of men with LUTS and over age 55 years had BPO. Patients younger than 55 years old were more likely to have poor relaxation of the urethral sphincter as a likely cause of LUTS.

Table Analysis of pathophysiology of male LUTS in 1407 men by age

Pathophysiology	<55 years (172)	56-65years (282)	66-75years (519)	>76 years (434)	Total (1407)	P value
Bladder dysfunction						
Hypersensitive bladder	28(16.3%)	38(13.5%)	56(10.8%)	28(6.5%)	150(10.7%)	0.001
Detrusor overactivity	32(18.6%)	103(37%)	285(55%)	302(70%)	722(51.5%)	0.000
DHIC	1 (0.6%)	6 (2.1%)	20(3.9%)	51(11.8%)	65 (4.6%)	0.000
Detrusor underactivity	10(5.8%)	31(11.0%)	58(11.2%)	54(12.4%)	153(10.9%)	0.127

Bladder outlet dysfunction						
BN dysfunction	6 (3.5%)	5 (1.8%)	5 (1.0%)	3 (0.7%)	19 (1.4%)	0.041
BPO	18(10.5%)	80(28.4%)	167(32%)	148(34%)	413(29.4%)	0.000
Pseudodyssynergia	3 (1.7%)	4 (1.4%)	14(2.7%)	9 (2.1%)	30 (2.1%)	0.656
Poor relaxation of sphincter	78(45.3%)	74(26.2%)	90(17.3%)	41(9.4%)	283(20.1%)	0.000
Normal UDS finding	24(14.0%)	31(11.0%)	35(6.7%)	15(3.5%)	105(7.5%)	

Abbreviations: DHIC= detrusor hyperactivity with inadequate contractility, BN= bladder neck, BPO= benign prostatic obstruction, UDS= urodynamics

FUNDING: None

HUMAN SUBJECTS: This study was approved by the Institution Review Board of Tzu Chi University and Tzu Chi General Hospital and followed the Declaration of Helsinki Informed consent was obtained from the patients.