

RELATIVE LONG PROXIMAL PROSTATIC URETHRA AS A CAUSE OF OBSTRUCTIVE URINARY SYMPTOMS IN PATIENTS WITH PROSTATE VOLUME LESS THAN 25 CM³

Hypothesis / aims of study

Urinary flow encounters most resistance in prostatic urethra. Considering prostatic anatomy prostatic urethra from bladder neck to verumontanum, which is defined as proximal prostatic urethra, has largest resistance because this portion can be affected by both prostate adenoma and urethral sphincter. The long proximal prostatic urethra is assumed to have the role in difficulty voiding. This can elucidate why patients with small prostate and without bladder outlet obstruction complain of lower urinary tract symptoms (LUTS). We investigated the composition effect of the prostatic urethral length on LUTS in men without benign prostatic enlargement.

Study design, materials and methods

Between August 2009 and March 2010, 1235 men with LUTS aged ≥ 45 years were enrolled. The patients completed the International Prostate Symptom Score (IPSS), uroflowmetry, and transrectal ultrasound (TRUS). Voiding symptom score was defined as the sum of scores for questions 1, 3, 5, and 6 of the IPSS. Bladder storage symptom score was defined as the sum of scores for questions 2, 4, and 7 of the IPSS. Proximal prostatic urethra (PPU) and distal prostatic urethra (DPU) were defined as a urethra from bladder neck to the verumontanum and urethra from verumontanum to the apex on the mid-sagittal plane of TRUS, respectively. The ratio of proximal-to-distal prostatic urethral length (PDPUL) was defined as proximal prostatic urethral length divided by distal prostatic urethral length. The relationship between PDPUL ratio and total IPSS, voiding symptom score, and bladder storage symptom score ratio were evaluated.

Results

According to the IPSS, 101 patients with prostate volume less than 25 cm³ were divided into two groups (Group 1: IPSS <8, n=42; Group 2: IPSS ≥ 8 , n=59). There was no age difference between Group 1 (64.7 $\pm$ 9.6 years; range, 46-80) and Group 2 (64.7 $\pm$ 7.5 years; range, 49-80, p=0.964). There was also no prostate volume difference between Group 1 (22.1 $\pm$ 2.1 cm³; range, 15.5-24.9) and Group 2 (22.1 $\pm$ 2.3 cm³; range, 14.8-24.9, p=0.986). PDPUL ratio was significantly higher in Group 2 (1.76 $\pm$ 0.31) than Group 1 (1.61 $\pm$ 0.39, p=0.036, 2-tailed statistical test with a 5% level of significance, power=81%). The correlation between IPSS and PDPUL ratio was evaluated including both Group 1 and 2. PDPUL ratio positively correlated with voiding symptom score (r=0.295, p=0.003), bladder storage symptom score (r=0.161, p=0.107), and total IPSS (r=0.243, p=0.014).

Interpretation of results

PDPUL ratio was significantly higher in LUTS patients with prostate volume less than 25 cm³. The PDPUL ratio positively correlated with voiding symptom score.

Concluding message

The long proximal prostatic urethra compared with distal prostatic urethra could be an important factor of voiding symptom in patients without benign prostatic enlargement.

<i>Specify source of funding or grant</i>	None
<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	Institutional Review Board of Bundang CHA Medical Center
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	No