TAMUSULOSIN ALTERS STRUCTURE OF PROSTATIC URETHRA: OBSERVATION BY PROCESSED ENDOSCOPIC IMAGE

Hypothesis / aims of study
BPH is one of common diseases related to LUTS and α1-Adrenoceptors(α1aARs) antagonists have become a mainstay of LUTS treatment because they relax prostate smooth muscle and decrease urethral resistance. However, there is no study to observe the prostatic urethra before and after administration of α1-Adrenoceptors antagonist. In ICS2008, we introduced method and software which process an opened, three-dimensional image of the prostatic urethra from cystourethroscopic video image automatically(1). Using the software, we estimate the structural change of prostatic urethra before and after administration of α1-Adrenoceptors antagonist. This is the first study to observe the prostatic urethra by opened image before and after medical treatment.

Study design, materials and methods
Opened three-dimensional image of the prostatic urethra was processed in 5 patients with BPH before and 1 month after medical treatment. All patients were given Tamsulosin (0.2mg / day) for medical treatment. The video image was recorded by pulling out the resectoscope slowly through the urethra. On the opened image, a cursor line is put on the verumontanum as midline of the urethra. Parallel lines to this cursor line adjacent to verumontanum are put on the image too. The distance between these lines and distance between prostatic wall at the bladder neck were measured. The ratio of these parameters before and after treatment were compared.

Results
Size of prostate were 26-58ml (median39ml) and IPSS, maximum flow rate and residual urine were ranged between 8 and 30 (median 20.4), 8.3 to 15.7ml/s and 20-87ml(median 44ml) before treatment, respectively. IPSS, maximum flow rate and residual urine were improved significantly after treatment (IPSS; ranged 4 to 7(median5.6), maximum flow; ranged 13.8 to 18.2ml/s(median 15.98ml/s), residual urine; ranged 0-22ml(median 8ml)). The distances at bladder neck and at verumontanum after treatment were increased significantly compared with before treatment (Bladder neck; 113 +/- 6 %,105.1-118.6%,p=0.016, Verumontanum; 123.1 +/- 11.9%, 105.3-135.8%, p=0.0142).

Interpretation of results
Several studies indicate that blockade of prostate α1aARs results in the relaxation of prostate smooth muscle. However, there is no study to observe the effect of blockade of α1aARs simply by the shape of prostatic urethra. This is the first study that reveals opening of the prostatic urethra by blockade of prostate α1aARs. Such alteration of the shape of the prostatic urethra may be attributable to the modification of its tonus by antagonist of α1aARs. Our results suggest that the tamsulosin may have effectson the site around verumontanum rather than that of bladder neck.

Concluding message
Analysis of the open image of prostatic urethra is a new clue to know the function of prostatic α1aARs.

References
1. Igarashi T et al. J Endourol 22; 1569,2008