

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 alpha1-Adrenoceptors(α 1ARs) 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 alpha1-Adrenoceptors antagonist. In ICS2008, we introduced method and software which processes an opened, three-dimensional image of the prostatic urethra from cystourethrosopic video image automatically(1). Using the software, we estimate the structural change of prostatic urethra before and after administration of alpha1-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. International Prostatic Symptom Score(IPSS), Residual Urine, Uroflowmetrys were compared too. Institutional review board approval was obtained.

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%, $p=0.0142$).



Fig.1



Fig.2

Before treatment

1 month after treatment

The images indicate anterior view of the prostatic urethra opened. Left side indicates bladder.

Figure 1 is taken before treatment and figure 2 was taken 1 month after treatment. Comparing figure1 and 2, prostatic urethra is opened after treatment.

Interpretation of results

Several studies indicate that blockade of prostate α 1ARs results in the relaxation of prostate smooth muscle. However, there is no study to observe the effect of blockade of α 1ARs simply by the shape of prostatic urethra. This is the first study that reveals opening of the prostatic urethra by blockade of prostate α 1ARs. Such alteration of the shape of the prostatic urethra may be attributable to the modification of its tonus by antagonist of α 1ARs. 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 α 1ARs.

References

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

Specify source of funding or grant	none
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Ethics Committee of Graduate School of Medicine, Chiba University
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes