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[1] Urodynamic Use of Fiberoptic Microtipped Catheter. J Urol 1986;137:936-938
 [2] A Comparison of Urethral Profilometry Using Microtip and Fiberoptic Catheters. (accepted for publication: Int Urogyn J)

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THE EFFECT OF VOLUNTARY PELVIC FLOOR CONTRACTION AND RELAXATION ON THE URETHRAL CLOSURE PRESSURE

Aims of study

The maximum urethral closure pressure at rest (MUCP) is defined by the ICS as the maximum difference between intravesical and intraurethral pressure. In clinical practice the MUCP at rest is used to characterize the intrinsic pressure of the urethra. It has gained wide acceptance to define a low pressure urethra (MUCP ≤20 cmH₂O), which is indicative of intrinsic sphincter deficiency (1). It is also used to assess urethral pressure changes as a treatment effect of bladder neck surgery for stress incontinence (2).

Hypothetically, the urethral pressure profile (UPP) at rest is independent of striated pelvic floor muscle (PFM) activity. This study has been designed to assess the effect of voluntary PFM-contraction and voluntary PFM-relaxation on the MUCP.

Patients and methods

In 103 consecutive patients attending our urodynamic unit the UPP at rest was performed as a part of our standard urodynamics according to the recommendations of the ICS. A Gaeltec microtip dual pressure transducer was used and withdrawn at a rate of 1mm/s. Women were then instructed to perform a maximum PFM-contraction and maximum PFM-relaxation. Instruction consisted of verbal explanation followed by biofeedback using perineal ultrasound. After these instructions two further UPP's were carried out: one at maximum voluntary PFM-contraction and one at maximum voluntary PFM-relaxation.

Results

MUCP	Mean (±SD, cmH ₂ O)
at rest	50.6 ± 23.4 (range 16–126)
during maximum pelvic floor contraction	68.3 ± 29.6 (range 17–151) *
during maximum pelvic floor relaxation	43.1 ± 23.2 (range 10–117) *

- significantly different to MUCP at rest (paired t-test , p <0.001)

Compared with the mean MUCP at rest, there was a significantly higher MUCP at maximum voluntary PFM-contraction (p<0.001; mean difference 18 cmH₂O, range -21 to 98 cmH₂O) and a significantly lower MUCP at maximum voluntary PFM-relaxation (p<0.001; mean difference 7.5 cmH₂O, range -14 to 38 cmH₂O). In only eight women the MUCP during PFM-relaxation remained unchanged compared with the resting MUCP. In seven women the MUCP did not increase with voluntary PFM-contraction.

In five women the resting MUCP was ≤20 cmH₂O. At maximum voluntary PFM-contraction only one woman had an MUCP ≤20 cmH₂O, which is a significant decrease (p=0.046, Wilcoxon test). At maximum PFM-relaxation 16 women had an MUCP ≤20 cmH₂O, which is a significant increase compared with the number (=5) during the resting UPP (p=0.002, Wilcoxon test).

Conclusions

The results show that the resting MUCP measurements are influenced by pelvic floor muscle activity. The MUCP values relate to both pelvic floor contraction, and clinically more important, to pelvic floor relaxation; which has been neglected so

far. Conscious or unconscious pelvic floor activity might mask a low pressure urethra. The MUCP at rest is used as an important outcome measure and efforts should be made to improve definitions and standardizations.

References

- 1) Am J Obstet Gynecol 1997; 177: 303-310
- 2) Br J Obstet Gynaecol 1983; 90:934-939

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AGE-RELATED INCREASE OF THE CONNECTIVE TISSUE IN THE ANTERIOR FIBROMUSCULAR STROMA OF THE PROSTATE

AIMS OF STUDY

Lower urinary tract symptoms (LUTS) commonly ascribed to benign prostatic obstruction are frequently present in elderly men who have no benign prostatic enlargement. Age-related urodynamic changes such as the decrease of peak urinary flow rate have been noted in asymptomatic individuals (1). In addition, age-related smooth muscle dysfunction in the bladder has been also recognized (2). Thus, the pathogenesis of LUTS remains to be elucidated in elderly men.

According to McNeal's zonal anatomy (3), the prostate has an anterior fibromuscular stroma (AFMS) as non-glandular tissue composed of smooth muscle surrounding the urethra. Despite detailed anatomical description of the AFMS, its physiological function and pathogenesis remain unknown. Recently, we reported the possible contribution of the prostate to micturition mainly through the active movement of the AFMS in the opening of the prostatic urethra (4). We hypothesized that histological changes of the AFMS could be one of the causes of LUTS or age-related urodynamic changes in elderly men. The aim of this study is to reveal the possible age-related change of the AFMS in terms of the distribution of the connective tissue.

METHODS

Prostate glands were obtained from 11 men (45±21 years, 18-76 years); 8 at autopsy in subjects with no urinary tract diseases (18-76 years), and 3 at cystoprostatectomy for bladder cancer (58-64 years). The prostate specimens were fixed in 20% formalin and dehydrated in graded alcohol before being embedded in paraffin. The cross-sectioned prostates were processed with Azan stain, which colored the smooth muscle and the connective tissue in red and blue, respectively. Each section was viewed under a biological microscope with a high resolution color video camera head. Captured video images were displayed on a 12-color monitor and simultaneously digitized using a personal computer. In each section fields were selected to cover almost all the area of the AFMS and the peripheral zone (PZ). Using a computer assisted color image analysis system the surface area of the smooth muscle and the connective tissue was measured. The ratio of connective tissue-to-smooth muscle (the C/S ratio)