

URODYNAMIC FACTORS AFFECTING THE BACTERIAL POPULATION OF THE DISTAL MALE URETHRA

Aims of Study

The importance of the urodynamic studies in the evaluation of voiding dysfunctions and mainly before the institution of more aggressive therapies is now well established. However, its accomplishment presents specific morbidity, as urinary retention, macroscopic haematuria and infection. In the recent literature revision about the main complications after such exam, the occurrence of urinary infection varied from 1.8% to 36% (1-5) with the infection happening mainly in male senior patients with large residual urine (over 150 ml) and with some degree of outlet obstruction. Considering the ascension of bacteria caused by the urethral manipulation with the catheters as a possible form of development of the infection, we tried here to identify the bacteria of the distal urethra in men immediately before the accomplishment of this exam, comparing the bacteriological and urodynamic findings. Our expectancy is that the best knowledge of these facts may predict those suitable to complications, facilitate the prophylaxis and guide the premature treatment of those symptomatic patients.

Methods

A prospective study was accomplished in 49 consecutive male patients with clinical indication for urodynamic examination. The criteria for inclusion were: male patients without clinical and laboratorial evidence of urinary infection and not in use of ureteral or vesical catheters and antibiotics in the last 3 months. A swab of the patients' distal urethra was made immediately before the beginning of the exam, by introduction of the tip into the distal urethra after the foreskin retraction. The material was immediately directed to the laboratory, submerge in the transportation solution of Stewart. The analysis was made after 48 and 72 hours of incubation in agar-culture. After collection of the material, the urodynamic examination was performed, comprising fluxometry, cystometry and voiding study (concomitant flow and vesical pressure), by means of urethral catheter 07 French (Cook) and rectal balloon 10 French. The parameters considered for comparison were the patient's age, urodynamic diagnosis, urinary free flow, evidence of bladder outlet obstruction and post voiding residual urine. After the exam, all the patients stayed under antibiotic prophylaxis with norfloxacin 400 mg BID, for three days. The criterion for considering a patient with bladder outlet obstruction was flow below 10 ml/s simultaneous to detrusor pressure above 40 cm H₂O.

Results

The microorganisms found are related in Table 1. Six patients had growth of more than one bacteria. There were no differences among the proportions of microorganisms regarding the age of patients, considering groups above and under 62 and above and under 51 years old. The analysis of the patients didn't reveal significant differences between the isolated bacterias, considering those with residual urine under 50 ml and equal or above this value. The results comparing different flows and with or without bladder outflow obstruction (BOO), are in Table 1. The only significant differences were the negative cultures in urinary flows over 8 ml/s and with no urinary obstruction.

Table 1 – Results of bacteria cultures related to urinary flow and bladder outlet obstruction

Microorganism	Flow < 8ml/s		Flow > = 8ml/s	BOO n= 43	No BOO n=19	
<i>Escherichia coli</i>	2	1	0	02	0	
<i>Klebsiella pneumoniae</i>	1	1	0	0	01	Gram - 4 (7%)
<i>Morganella Morganii</i>	1	1	0	01	0	
<i>Micrococcus sp</i>	1	1	0	1	0	
<i>Enterococcus sp</i>	5	3	2	03	02	
<i>Staphylococcus aureus</i>	5	3	2	03	02	
<i>Corynebacterium sp</i>	5	2	2	05	0	
<i>Streptococcus hemolítico</i> β-	1	1	0	01	0	Gram + 53 (93%)
<i>Staphylococcus saprophyticus</i>	8	6	2	05	04	
<i>Staphylococcus cagulase neg</i>	11	8	3	08	03	
<i>Streptococcus viridans</i>	8	4	4	4	04	
<i>Staphylococcus epidermidis</i>	3	2	1	3	0	
<i>Streptococcus sp not hemolitic</i>	6	5	1	5	01	
<i>Negative cultures</i>	5	1	4 *	2	3 **	

* p=0.0252 **p=0,045

Conclusions

The great majority (93%) of the male patients submitted to urodynamic examination had gram positive bacterias at the distal urethra. The age of the patients and the presence of residual urine does not seems to interfere with this bacterial population. Conversely, low micturition flows and bladder outlet obstructions were related to the development of bacteria in cultures collected by swab of at the distal urethra. This fact makes the patients with these characteristics more suitable to ascending contamination during urodynamic exams and subjects to more attention in preventive cares. The presence of bacteria in the distal urethra and its significance in the induction of urinary infection is still to be determined.

References

- Neurourol Urodynam. 1996; 15(4):305-306.
- Lancet. 1988; ii:1123-1126.
- Brit J Urol. 1983; 55:568-569.
- Neurourol Urodynam. 1996; 15(4):304-305.
- Age Ageing. 1994; 23:62-64.