

ADVANCED AGE AND VAGINAL INFECTION AS RISK FACTORS FOR BACTERIURIA AFTER URODYNAMICS STUDY

Hypothesis / aims of study

Urodynamics study (UDS) involves bladder catheterization and carries a risk of urinary tract infection (UTI). Prevalence of female UTI post UDS ranges from 1.1% to 28.3% (1). Due to the large discrepancy, we collected urine samples for culture aseptically by transurethral catheterization. This technique allowed us to decrease the discrepancy and find out the true incidence of bacteriuria after UDS which was our primary aim in this study. We also aimed at studying the prevalence of asymptomatic bacteriuria before UDS among women planned for the investigation.

Study design, materials and methods

This prospective study was carried out between March and September 2011 after institutional review board's approval was obtained. One hundred and forty consecutive consented women who were planned for UDS were recruited from the urogynaecology clinic. Women with symptoms of UTI, on antimicrobials and refused to participate were excluded. Urine for culture and sensitivity was collected by transurethral catheterization with a sterile 10F catheter after disinfecting the perineum. UDS was performed according to standard protocol within 5 days of urine sample collection. A second urine sample collection using the similar method was taken within 5 to 7 days after UDS. Women with bacteriuria before UDS were excluded from the main study group and grouped as asymptomatic bacteriuria. They were also given an appointment within 5 to 7 days for a second urine sample collection. Prophylactic antibiotics was not prescribed to any of the women in both groups. Significant bacteriuria was defined as 10^2 cfu/ml or more of a single organism cultured (2). Assuming an infection rate of 10% and a statistical power of 80% with 95% confidence interval, a sample size of 78 subjects were required for this study.

Results

Thirty (21.4%) of the 140 women who participated in this study had significant bacteriuria before UDS and grouped into the asymptomatic bacteriuria group. Among the 110 women in the study group, 4(3.6%) had bacteriuria post UDS. Group B streptococcus was cultured in 2 women, 1 grew yeast like organism and 1 had proteus mirabilis. Demographic data showed that the mean age of women in the study group without bacteriuria 58.2 years compared to 70.8 years among women with bacteriuria. Comparison of demographic data among the women with and without bacteriuria in the study group revealed that women who were 60 years and above were statistically significant for risk of infection post UDS. None of the infected women had any symptoms of UTI. The mean age of women in the asymptomatic bacteriuria group was 60.7 years. In contrast to the study group, the commonest organism cultured among women in the asymptomatic bacteriuria group was E.coli in 19 (63.3%) of them. Among the 30 women in this group, 11 (36.7%) had persistent significant bacteriuria and the other 19 (63.3%) had negative results in the repeat urine culture. None of the women with persistent infection had any symptoms of UTI.

Interpretation of results

Strict urine collection technique by sterile transurethral catheterization under aseptic conditions and definition of significant bacteriuria of 10^2 cfu/ml or more was adopted in this study to reveal the true incidence of bacteriuria and to decrease the discrepancy. The incidence of bacteriuria of 3.6% is low. This study revealed that among the women who had bacteriuria post UDS, 75% had been infected with organism which originated from the vagina compared to most studies which show that the commonest infection is by E.coli (1). Patients of older age group, 60 years and above, were significantly at higher risk of infection which suggests the need for screening for bacteriuria in this age group. The prevalence of asymptomatic bacteriuria was 21.4% which was although high, is still acceptable considering the mean age in this group of 60.7 years. Prevalence of asymptomatic bacteriuria among women aged 60 years and more is 15% to 25%. About two thirds of women with asymptomatic bacteriuria had a negative culture in the second urine sample which show that it is mostly a transient infection.

Concluding message

This study shows that the risk of bacteriuria post UDS is low. The type of pathogens cultured which originates from the vagina has revealed that screening for vaginal infection may be required before performing UDS. This has prompted us to commence a phase 2 study on screening for bacteriuria and vaginal infection before and after UDS. Advanced age is also a risk factor and women above 60 should be screened for bacteriuria prior to UDS.

References

1. Yip SK, Fung K, Pang MW, Leung P, Chan D, Sahota D. A study of female urinary tract infection caused by urodynamic investigation. *Am J Obstet Gynecol.* 2004;190(5):1234-40. Epub 2004/05/29.
2. Mobley HLT, Warren JW. *Urinary tract infections : molecular pathogenesis and clinical management.* Washington, D.C.: ASM Press; 1996. xiv, 439 p. p.

Disclosures

Funding: NONE **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** Institutional Review Board, Chang Gung Memorial Hospital **Helsinki:** Yes **Informed Consent:** Yes