

THE STUDY PROTOCOL WAS APPROVED BY INSTITUTION REVIEW BOARD OF TAIPEI VETERANS GENERAL HOSPITAL.Hypothesis / aims of study

Measurement of post void residual urine (PVR) is crucial in the management of functional disorder of lower urinary tract. PVR is commonly measured following uroflowmetry (UFR).[1] However, patients often are encouraged to drink water prior to UFR to ensure adequate void volume. It is unknown that how water drinking would affect the PVR measurement.[2]

Study design, materials and methods

17 patients with symptomatic benign prostate hyperplasia (BPH) and 22 volunteers without lower urinary tract symptoms participated this study. All 39 persons received PVR measurement with Bladder Scan at following periods: immediately, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, and one hour after voiding. Before the first serial PVR measurements no water drinking was allowed at least one hour before the measurement. Then in a separate occasion the serial measurements were repeated again following drinking 800 ml water. Student t-test was used for comparing the difference of bladder urine volume. Kaplan Meier method was applied to determine the time and the proportion of individuals with bladder urine more than 100 ml. (The ethical approval was none)

Results

For all 39 individuals when without prior water drinking, 30 minutes was required to show PVR being significantly larger than that immediately after voiding (mean 26.9 vs 73.9ml). However, prior-measurement water intake made the significant difference appear much earlier, at 10 minutes (35.7 vs 91.5ml). Kaplan Meier analysis showed that without prior water drinking only 25% of control group had more than 100ml bladder urine at one hour. After water drinking, at 30 minutes 50% of control group already had more than 100ml bladder urine. In BPH patients, without prior water drinking, 50% patients had more than 100 ml bladder urine at 30 minutes. However, with prior water drinking, as early as at 15 minutes 50% of BPH patients had more than 100ml bladder urine.

Interpretation of results

This study clearly shows that prior fluid intake significantly enhance the rate of renal urine production with a result of falsely high PVR, particularly in persons without bladder outlet obstruction.

Concluding message

According to our study, PVR is preferably measured immediately after voiding and should not be measured later than 10 minutes after voiding, especially when there is a large amount of fluid intake before PVR measurement.

References

1. C Elisabetta, et al. Uroflowmetry in FemaleVoiding Disturbances Neurourology and Urodynamics 22:569-573 (2003)
2. G Alivizatos, et al. Unreliable residual volume measurement after increased water load diuresis International Journal of Urology (2004)11,1078–1081

Disclosures

Funding: none **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Institution Review Board of Taipei Veterans General Hospital **Helsinki:** Yes **Informed Consent:** Yes