



Post void residual urine volume in asymptomatic postmenopausal women

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Abstract

Post void residual (PVR) urine volume is good indicator of voiding function. To find out the normal value of PVR in post menopausal women this study was undertaken. It was an OPD based prospective study. Post menopausal women without any pelvic organ prolapse, urological complain (e.g. stress incontinence, overactive bladder, voiding dysfunction etc.), renal diseases, neurologic disease (e.g. multiple sclerosis, spinal cord injury, or other neuropathies) were evaluated. Post void residual urine volume was measured by ultrasonography within 1 minute of voiding. Total 65 postmenopausal women had undergone PVR estimation. Women of less than 5 years menopause had median PVR 11 ml & mean PVR 16.8 ml. Women of 5 years or more menopause had median PVR 12 ml & mean PVR 21.1 ml. Knowledge of normal PVR in postmenopausal women will help in better managing voiding dysfunction in older women.

Keywords: Menopause, Post void residual, Ultrasonography

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Introduction

Post void residual (PVR) urine is the volume of urine left in the bladder at the completion of micturition.[1] It is a key marker for the efficacy of bladder emptying. The normal value of PVR varies from women to women. According to AHCPR (United States Department of Health and Human Services Agency for Health Care Policy and Research) 1992 recommendations normal PVR

ranges from 50ml-200ml.[2] A PVR urine volume less than 50 ml is suggestive of adequate bladder emptying, and more than 200 ml is indicative of inadequate emptying. These values are common for women of all ages. In fact, only 5% of females who are asymptomatic have PVR volumes greater than 30 mL.[3] In search of values for postmenopausal women (considering the physiological changes after menopause) very few data were available. So this study was undertaken to find out the PVR value in postmenopausal women.

Materials & methods

This was a prospective OPD based study. The study was conducted jointly in the department of Obstetrics & Gynecology and department of Radiodiagnosis of College of Medicine & JNM Hospital, Kalyani. Sixty-five (65) postmenopausal women were studied. Detailed history and physical examination were done. Asymptomatic women were only included. Exclusion criteria were – pelvic organ prolapse, urological complain e.g. stress

incontinence, overactive bladder, voiding dysfunction etc., renal disease, neurologic disease e.g. multiple sclerosis, spinal cord injury, or other neuropathies. Normally voiding women (≤ 8 episodes/day and ≤ 2 episodes/ night) [4] were eligible. PVR was measured by ultrasonography immediately within 1 min of voiding. Informed consent was obtained from all patients.

Results

Age of the women ranged from 40 years to 65 years. The earliest age of menopause was 6 months and longest was 22 years. PVR of the women attained menopause less than 5 years ranged from (0 – 83) ml with a median value 11 ml and mean value 16.8 ml. In case of women attained menopause 5 years or more PVR ranged from (4 - 169) ml with a median value 12 ml and mean value 21.1 ml. (Table 1)

Duration of Menopause	PVR (ml)	
	Median	Mean
Less than 5 years	11	16.8
5 years or More	12	21.1

Table 1

Discussion

There are limited data on which to base an objectively “normal” PVR volume in asymptomatic postmenopausal women. So, there is a need for a reference range of PVR volumes to determine normal bladder emptying function in this population. Establishing “normal” PVR volumes would be important in extrapolating appropriate PVR volume ranges for patients immediately after anti-incontinence or prolapse surgeries to potentially determine criteria for retention and/or interventions such as bladder drainage.[5] Surgery for urodynamic stress incontinence, the most common urogynecological diagnosis (after urodynamics), in the presence of an abnormally high pre-existing PVR might result in a further increase in the PVR or acute or chronic retention. The concomitant finding of a normal urine flow rate is important before such surgery.[6] Hence knowledge of normal PVR in menopausal women is worthy.

Regardless of age, PVR should not exceed 50 ml in asymptomatic women.[7] For the asymptomatic peri & post menopausal women median PVR volume was 19 ml (range 0–145 ml); the mean PVR volume was 24 - 29 ml. Only 15% of patients had a PVR volume greater than 50 ml, and 95% had a PVR volume 100 ml or less. Those who has attained menopause for less than 5 years PVR was 20 ± 27 ml, and those who attained menopause for 5 years or more PVR was 28 ± 30 ml.[5] Median PVR was below 20 ml.[8] In present study PVR of the women attained menopause less than 5 years ranged from (0 – 83) ml with a median value 11 ml and mean value 16.8 ml. In case of women attained menopause 5 years or more PVR ranged from (4 - 169) ml with a median value 12 ml and mean value 21.1 ml.

Bladder scan was used to measure the PVR to avoid the discomfort and chance of infection associated with catheterisation. This method of bladder volume assessment has been shown to be accurate within 15% of bladder volume measured by catheter within a range of actual bladder volume of 0 –999 ml.[5] The overall sensitivity of ultrasound for identification of PVR urine volume greater ≥ 100 ml was acceptable at 66.7%, and specificity was excellent at 96.5%.[9] Few studies are available with asymptomatic postmenopausal women regarding PVR assessment. One study comprised 40 postmenopausal women (mean age 75 years), but all were institutionalized, and many had significant comorbidities.[10] Another study of PVR in asymptomatic women, 24 volunteers was evaluated, out of which 10 women were postmenopausal.[8] Gehrich A et al [5] studied 96 asymptomatic perimenopausal and postmenopausal women for establishing PVR where 80% women were postmenopausal. Present study comprised 65 asymptomatic postmenopausal women. In future we would like to do further study of PVR assessment, may be multicentre, with more number of asymptomatic post menopausal women.

Conclusion

Knowledge of normal PVR in postmenopausal women is valuable when we deal with the voiding dysfunction in older women. In fact, International Consultation on Incontinence recommends that, PVR estimation should be a part of initial assessment in women suspected to have voiding problems. [11]

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