

CAN FEELING OF INCOMPLETE BLADDER EMPTYING REFLECT SIGNIFICANT POSTVOID RESIDUAL URINE? CAN WE TRUST THE PATIENTS?

Hypothesis / aims of study

Measurement of postvoid residual urine volume (PVR), the amount of residual urine in the bladder after a voluntary void, is widely used as a screening test for evaluating voiding dysfunction in daily practice. Residual urine can be measured by draining the bladder with a catheter or by using ultrasound. The catheter method is an invasive method and has a slight risk of causing infection or injury to the urethra. Normally PVR is less than 12 cc for healthy males. This measurement helps to identify patients in need of further evaluation and to evaluate the efficacy of treatment during follow-up. Its reliability and usefulness have been questioned because of its high variability.

Although measurement of PVR is an objective data, sensation of incomplete bladder emptying is subjective. In this study, we aimed to detect the correlation between these objective and subjective findings, and to find an answer to that question; "Can sensation of incomplete bladder emptying reflect significant PVR?" Secondary aims were investigating the relation of other parameters like age, comorbidity, medications and lower urinary tract symptoms with PVR.

Study design, materials and methods

Between October 2014 and February 2015, male volunteers, older than 40 years who admitted to urology outpatient clinics were included to study. A questionnaire including demographic characteristics, comorbidities, medications, history of surgery, presence and frequency of nocturia, pollakuria and urgency, voiding and post voiding symptoms was administered to all patients. The sensation of incomplete bladder emptying was also questioned. Finally PVR measurement was performed by transabdominal ultrasound in all patients after a voluntary voiding according to ICI recommendations. Statistical analysis was performed using SPSS 17.0 software. Percentage and mean±SD values for used to define demographic data and PVR. Mann Whitney U test and Kruskal Wallis analysis were used to calculate the difference for PVR in study groups because the PVR was not distributed normally. The relation between age and PVR was calculated by using linear regression analysis.

Results

A total of 275 men with a mean age of 61.8 (40-90) years were included in this study. Demographic data and the prevalence of LUTS were presented in Table-1. The mean daytime frequency was 6.6±4.0 (range, 2-20) and the mean night time frequency was 3.1±2.2 (range: 0-10). Among men who reported urgency, 47.2% had urgency every day, 30.1% more than once a week and 21.8% had once a week or less.

In the whole study group, PVR ranged between 0 and 400 mL (mean:64.4, median:38.5, SD: 73.2). The PVR volumes (Mean±SD) in men with and without the sensation of incomplete emptying were 72.2±80.0 and 52.7±60.0, respectively and the difference was not statistically significant (P=0.105). When patients were grouped according to age (40-60 yrs and >60 yrs), PVR (mL) was significantly higher (Mean±SD; 71.8±74.5 vs 54.5±70.7, P=0.007) in older patients and for each year of increase in age, a 0.9 mL increase in PVR was found (P=0.04).

There was no significant difference in PVR of men who reported pollakuria and nocturia when compared to others who did not have such complaints. In men with and without urgency, the mean PVR volumes (mL) were 73.6±81.9 and 53.0±59.5. Although a higher mean PVR was detected in men with urgency, the difference was not significant (P=0.057).

Regarding voiding symptoms, intermittent stream, hesitancy and straining were significantly related to a higher PVR volume (P<0.01). The mean PVR in men with and without slow stream, splitting or spraying and terminal dribble were not different significantly. None of the comorbid illnesses were found to be related to an increased PVR volume, including diabetes. Also, there was no relation between PVR volume and any medication.

	n	%		n	%
Comorbidities	151	54.9	LUTS		
Diabetes	49	17.8	Storage symptoms		
Hypertension	60	21.8	Frequency	171	62.2
Heart disease	25	9.1	Nocturia	222	80.7
COPD	7	2.5	Urgency	147	53.5
Other	27	9.8	Voiding symptoms		
			Slow stream	138	50.2
Medications	162	58.9	Splitting or spraying	117	42.5
Alpha-blockers	28	10.2	Intermittent stream	153	55.6
5 α -reductase inhibitors	4	1.5	Hesitancy	133	48.4
Anticholinergics	4	1.5	Straining	95	34.5
Antihypertensives	47	17.1	Terminal dribble	164	59.6
Antidiabetics	43	15.6	Postvoiding symptoms		
Others	37	13.5	Incomplete emptying	165	60.0
			Postmicturition dribble	141	51.3
Age (mean)	61.8 (40-90)				

Interpretation of results

There is a continuous debate about the cut-off values of PVR and its use in daily practice. Although non-invasive methods of determining PVR are available in the majority of urology departments, it may not be practical to measure PVR always, especially in high volume outpatient clinics. Urologists should not make a decision according to the patients' statements regarding PVR in men older than 40 years. Increasing age is a significant risk factor for a high PVR volume. Regarding LUTS, not storage but some of the voiding symptoms (intermittent stream, hesitancy and straining) were related to a high PVR.

Concluding message

Urologists should not rely on the patients' statements regarding feeling of incomplete bladder emptying as a reliable predictor of PVR. Further studies including younger age groups, females and specific patient groups are needed to confirm and generalize these conclusions.

References

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Disclosures

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