

THE BEST PARAMETER OF BLADDER DIARY CORRELATES WITH THE VOLUME AT STRONG DESIRE TO VOID OF FILLING CYSTOMETRY

Hypothesis / aims of study

Bladder diary is important for clinical assessment of female lower urinary tract symptoms. Some mentioned about the association of the largest voided volume in bladder diary and cystometric bladder capacity, but not the best parameter associated with cystometric bladder capacity [1]. Therefore, the aim of this study was to investigate the best parameter of bladder diary that is well correlated to the volume at strong desire to void of filling cystometry.

Study design, materials and methods

Between 2009 and 2011, all of the women with lower urinary tract symptoms who consecutively underwent urodynamic studies were prospectively enrolled. All enrolled patients were requested to complete the 3-day bladder diary before urodynamics studies. The correlation between the parameter of bladder diary and the volume at strong desire to void of cystometry was evaluated.

Results

A total of 900 women were enrolled. Among all parameters of bladder diary, the mean maximum voided volume in the daytime was the best parameter to correlate the filled volume at the strong desire to void (median: 258 mL, 25-75 interquartile range (IQR): 183-327 mL vs. median: 251 mL, IQR: 193-310mL; $Rho = 0.50$, $P < 0.001$) (Tables 1 & 2). Among them, 158 patients underwent follow-up urodynamics studies. Among all parameters of bladder diary, the follow-up change of the mean maximum voided volume in the daytime was the best parameter to correlate to the follow-up changes of the filled volume at strong desire to void (Mean: 22.3 ± 98.9 mL vs. 26.5 ± 72.0 mL; $Rho = 0.32$, $P < 0.001$) (Tables 3 & 4).

Interpretation of results

The mean daytime maximum voided volume in the 3-day voided diary, not the whole day, was the best parameter that was well correlated to the volume at strong desire to void. Besides, the change of the mean daytime maximum voided volume was also associated with the change of the volume at strong desire to void in cases of repeat measurement.

Concluding message

The mean daytime maximum voided volume in the daytime of bladder diary is the best parameter that is well correlated to the strong desire to void of urodynamic studies, and may be used as a good parameter to monitor therapeutic efficacy for women with lower urinary tract symptoms.

Table 1. Baseline clinical, urodynamic and voiding diary variables (n = 900)

Variables	Values
Age (years)	57 (49,68)
Para	3 (2,4)
Strong desire to void (ml)	251 (193,310)
Maximum VV based on 24 hour VD (day 1)	300 (200,400)
Maximum VV based on 24 hour VD (day 2)	300 (210,420)
Maximum VV based on 24 hour VD (day 3)	300 (210,405)
Maximum VV based on 24 hour VD (maximum)	350 (300,490)
Maximum VV based on 24 hour VD (mean)	313 (233,408)
Maximum VV based on daytime VD (day 1)	250 (175,327)
Maximum VV based on daytime VD (day 2)	250 (170,310)
Maximum VV based on daytime VD (day 3)	250 (165,320)
Maximum VV based on daytime VD (maximum)	300 (220,400)
Maximum VV based on daytime VD (mean)	258 (183,327)

VV: voided volume; VD: voiding diary; Values were expressed as median (25-75 interquartile range)

Table 2. Correlation between strong desire to void and voiding diary variables (n = 900)

Variables	Rho	P*
Maximum VV based on 24 hour VD (day 1)	0.42	<0.001
Maximum VV based on 24 hour VD (day 2)	0.43	<0.001
Maximum VV based on 24 hour VD (day 3)	0.47	<0.001
Maximum VV based on 24 hour VD (maximum)	0.47	<0.001
Maximum VV based on 24 hour VD (mean)	0.49	<0.001
Maximum VV based on daytime VD (day 1)	0.44	<0.001
Maximum VV based on daytime VD (day 2)	0.46	<0.001
Maximum VV based on daytime VD (day 3)	0.46	<0.001
Maximum VV based on daytime VD (maximum)	0.47	<0.001
Maximum VV based on daytime VD (mean)	0.50	<0.001

VV: voided volume; VD: voiding diary; * By Spearman correlation test

Table 3. Baseline and follow-up urodynamic and voiding diary variables of patients who underwent repeat measurement (n = 158)

Variables	Pre-treatment	Post-treatment	Change	P*
Age (years)	60.1±39.1	-	-	-
Para	3 (2-4)	-	-	-
Strong desire to void (ml)	238 (191-291)	266 (214-316)	26.5±72.0	<0.001
Maximum VV based on 24 hour VD (day 1, ml)	310 (210-400)	330 (250-450)	19.5±135.0	0.15
Maximum VV based on 24 hour VD (day 2, ml)	310 (225-450)	345 (250-410)	9.1±141.9	0.77
Maximum VV based on 24 hour VD (day 3, ml)	300 (250-423)	328 (293-450)	4.4±159.5	0.40
Maximum VV based on 24 hour VD (maximum, ml)	400 (300-470)	400 (300-500)	8.0±148.6	0.59
Maximum VV based on 24 hour VD (mean, ml)	328 (250-400)	346 (267-423)	11.7±110.7	0.38
Maximum VV based on daytime VD (day 1, ml)	270 (175-325)	300 (200-350)	20.2±130.0	0.005
Maximum VV based on daytime VD (day 2, ml)	250 (160-320)	300 (200-350)	26.1±121.4	0.007
Maximum VV based on daytime VD (day 3, ml)	230 (150-300)	270 (200-340)	28.9±129.6	0.002
Maximum VV based on daytime VD (maximum, ml)	300 (210-370)	340 (250-430)	21.6±141.3	0.001
Maximum VV based on daytime VD (mean, ml)	253 (180-315)	297 (203-343)	22.3±98.9	<0.001

VV: voided volume; VD: voiding diary; *Wilcoxon sign-rank test

Table 4. Correlation of follow-up changes between strong desire to void and clinical voiding diary variables of patients who underwent repeat measurement (n = 158)

Variables	rho	P*
Maximum VV change based on 24 hour VD (day 1)	0.11	0.17
Maximum VV change based on 24 hour VD (day 2)	0.09	0.25
Maximum VV change based on 24 hour VD (day 3)	0.09	0.28
Maximum VV change based on 24 hour VD (maximum)	0.13	0.11
Maximum VV change based on 24 hour VD (mean)	0.12	0.14
Maximum VV change based on daytime VD (day 1)	0.22	0.005
Maximum VV change based on daytime VD (day 2)	0.25	0.002
Maximum VV change based on daytime VD (day 3)	0.25	0.002
Maximum VV change based on daytime VD (maximum)	0.25	0.001
Maximum VV change based on daytime VD (mean)	0.32	<0.001

VV: voided volume; VD: voiding diary; * Spearman rank correlation test

References

1. Diokno AC, Wells TJ, Brink CA. Comparison of self-reported voided volume with cystometric bladder capacity. J Urol 1987;137:698-700.

Disclosures

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