

Bladder diary cannot replace urodynamic study in diagnosing detrusor overactivity. Furthermore, detrusor overactivity appears to be more closely related to urinary urgency incontinence than to urinary urgency.

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Objective: To elucidate whether a 3-day bladder diary be a surrogate for diagnosing detrusor overactivity (DO) in female lower urinary tract dysfunction.

Methods: This study retrospectively reviewed the medical records of all female patients with lower urinary tract dysfunction who presented between July 2009 and December 2023 and underwent urodynamic testing. Patients with lack or incomplete bladder diary entries were excluded. DO is defined by involuntary contractions of the detrusor muscle during filling cystometry. The consistency between DO and bladder diary variables was compared.

Results:

There were 2649 women in this review. A total of 149 women were diagnosing to have DO. Among them, a total of 79 patients had isolated phasic DO, 77 patients had isolated terminal DO, and 7 patients had both phasic and terminal DO (Table 1). A total of 1721 women were diagnosing to have urinary urgency based on their 3-day bladder diary, and 608 women had coexistent urinary incontinence.

The agreement between the DO and bladder diary derived urinary urgency was 37.33% with a kappa value of 0.0098 (p=0.074) and a McNemar’s value of 1488.67 (p<0.001) (Table 2).

The agreement between DO and bladder diary derived urinary urgency with coexistent urinary incontinence was 75.58% with a kappa value of 0.061 (p<0.001) and a McNemar’s value of 325.63 (p<0.001) (Table 3).

If we use the subgroups of DO (i.e., phasic DO or terminal DO) instead of total DO to test the above consistency, the agreements remains poor, and the kappa value is low (Tables 4-7).

Furthermore, logistic regression analysis showed that nighttime urgency was a predictor of DO with an odds ratio of 1.059 (95% CI = 1.011 to 1.110, p=0.016), and daytime urgency was also a predictor of DO with an odds ratio of 1.021 (95% CI = 1.004 to 1.038, p=0.013).

Receiver operating characteristic curve showed that ≥2 episodes of nocturnal urgency was the cutoff for detecting DO with a sensitivity of 54.36 % and a specificity of 60.80%, and an area under the curve of 0.58, 95% CI = 0.53 to 0.62), and ≥4 episodes of daytime urgency was the cutoff for detecting DO with a sensitivity of 47.65 % and a specificity of 61.92%, and an area under the curve of 0.55, 95% CI = 0.50 to 0.60).

Table 1. Relation between phasic and terminal detrusor overactivity (DO)

		Phasic DO		Total
		+	-	
Terminal DO	+	7	70	77
	-	72	2500	2572
Total		79	2570	2649

Table 2. Agreements between DO and bladder diary derived urinary urgency

		Bladder diary derived urinary urgency		Total
		+	-	
DO	+	105	44	149
	-	1616	884	2500
Total		1721	928	2649

Agreements = 37.33%, kappa = 0.0098, p = 0.074.

Table 3. Agreements between DO and bladder diary derived urinary urgency plus urinary incontinence

		Bladder diary derived urinary urgency plus urinary incontinence		Total
		+	-	
DO	+	55	94	149
	-	553	1947	2500
Total		608	2041	2649

Agreements = 75.58%, kappa = 0.060, p < 0.001.

Table 4. Agreements between phasic DO and bladder diary derived urinary urgency

		Bladder diary derived urinary urgency		Total
		+	-	
Phasic DO	+	58	21	79
	-	1663	907	2570
Total		1721	928	2649

Agreements = 36.43%, kappa = 0.0079, p = 0.055.

Table 5. Agreements between phasic DO and bladder diary derived urinary urgency plus urinary incontinence

		Bladder diary derived urinary urgency plus urinary incontinence		Total
		+	-	
Phasic DO	+	32	47	79
	-	576	1994	2500
Total		608	2041	2649

Agreements = 76.48%, kappa = 0.043, p < 0.001.

Table 6. Agreements between terminal DO and bladder diary derived urinary urgency

		Bladder diary derived urinary urgency		Total
		+	-	
Terminal DO	+	52	25	77
	-	1669	903	2572
Total		1721	928	2649

Agreements = 36.05%, kappa = 0.0023, p = 0.316.

Table 7. Agreements between terminal DO and bladder diary derived urinary urgency plus urinary incontinence

		Bladder diary derived urinary urgency plus urinary incontinence		Total
		+	-	
Terminal DO	+	25	52	77
	-	583	1989	2572
Total		608	2041	2649

Agreements = 76.03%, kappa = 0.023, p = 0.022.