

Bladder diary cannot replace urodynamic study for the diagnosis of urodynamic stress incontinence. However, patients with at least moderate stress urinary incontinence often have both daytime urinary incontinence and urodynamic stress incontinence.

Ho-Hsiung Lin^{1,2}, Sheng-Mou Hsiao^{1,2}, Pei-Chi Wu¹
¹Department of Obstetrics and Gynecology, Far Eastern Memorial Hospital, Taiwan
²Department of Obstetrics and Gynecology, National Taiwan University Hospital, Taiwan

Objective: To elucidate whether a 3-day bladder diary be a surrogate for diagnosing urodynamic stress incontinence (USI) 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 and a 20-minute pad testing. Patients with incomplete bladder diary entries were excluded. Women who experience involuntary leakage of urine during bladder filling cystometry due to increased abdominal pressure (such as coughing or straining) without detrusor muscle contraction are diagnosed with USI. Women who experienced urinary leakage due to increased abdominal pressure during stress urethral pressure profile tests (SUPP) were also documented. Women experiencing daytime urinary incontinence in their 3-day bladder diaries were presumed to have high risk for stress urinary incontinence (i.e., bladder diary derived urinary incontinence). According to previous studies, a 20-minute pad weight ≥ 8 grams is considered moderate stress urinary incontinence [1].

Results:

There were 2649 women in this review. A total of 309 women were diagnosing to have USI. In addition, a total of 525 women had urine leak in the SUPP but without USI (Table 1). Furthermore, a total of 694 women had daytime urinary incontinence in their bladder diaries.

The agreement between the USI and bladder diary derived daytime incontinence was 71.35% with a kappa value of 0.098 ($p < 0.001$) and a McNemar's value of 195.29 ($p < 0.001$) (Table 2).

The agreement between USI and/or urinary leakage in SUPP and bladder diary derived daytime incontinence was 64.97% with a kappa value of 0.149 ($p < 0.001$) and a McNemar's value of 21.2 ($p < 0.001$) (Table 3). Logistic analysis revealed daytime urinary incontinence was a predictor of USI with an odds ratio of 1.070 (95% CI = 1.044 to 1.096, $p < 0.001$).

Receiver operating characteristic curve revealed that ≥ 1 episodes of daytime incontinence was the cutoff point for detecting USI with a sensitivity of 39.48 % and a specificity of 75.56, and an area under the curve of 0.58, 95% CI = 0.55 to 0.61, Figure 1).

Furthermore, among those with USI ($n = 309$), patients with daytime urinary incontinence in their bladder diary ($n = 122$) had a higher mean pad weight, compared to those without daytime urinary incontinence ($n = 187$) (20-minute pad weight: 41.2 ± 39.9 vs. 26.3 ± 36.4 gm, $p = 0.0002$).

A 20-minute Pad weight ≥ 8 g was the optimal cutoff for predicting daytime urinary incontinence in the bladder diary with an area under the curve of 0.63 (95% CI = 0.56 to 0.69), a sensitivity of 70.83% and a specificity of 52.94% (Figure 2).

Reference

Chang TC, Hsiao SM, Chen CH, Wu WY, Lin HH. Utilizing preoperative 20-minute pad testing with vaginal gauze packing for indicating concomitant midurethral sling during cystocele repair. Eur J Obstet Gynecol Reprod Biol 2014;172:127-30.

Table 1. Agreements between USI and urine leak in SUPP

		Urinary leakage in SUPP		Total
		+	-	
USI	+	165	144	309
	-	525	1815	2340
Total		690	1959	2649

Table 2. Agreements between USI and bladder diary derived daytime incontinence

		Bladder diary derived daytime urinary incontinence		Total
		+	-	
USI	+	122	187	309
	-	572	1768	2340
Total		694	1955	2649

Agreements= 71.35 %, kappa = 0.098, p <0.001

Table 3. Agreements between bladder diary derived daytime incontinence and USI and/or urine leak in SUPP

		Bladder diary derived daytime urinary incontinence		Total
		+	-	
USI and/or urinary leakage during SUPP	+	300	534	834
	-	394	1421	1815
Total		694	1955	2649

Agreements= 64.97 %, kappa = 0.149, p <0.001

Figure 1. Daytime urinary incontinence for predicting USI in the whole study population (n=2649)

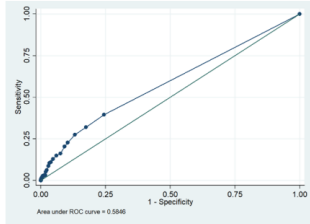


Figure 2. pad weight for predicting coexistent daytime urinary incontinence among patients with USI (n=309)

