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Original Article

Four Years' Experience at a Single Referral Center Regarding Urodynamic Findings in Women With Voiding Dysfunction

Zinat Ghanbari; MD.[1], Fatemeh Asadi; MD.[1], Azam Zafarbakhsh; MD.[2], Razie Vahdani; MD.[3], Mamak Shariat; MD.[4], Tahereh Eftekhar; MD.[5], Maryam Deldar; MD.[6], Shahrzad Amirlatifi; B.Sc.[1], Marjan Ghaemi; M.D.[1]

1 Vali-E-Asr Reproductive Health Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran
2 Department of Obstetrics and Gynecology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran
3 Department of Obstetrics and Gynecology, Maternal-Fetal Medicine Research Center, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
4 Maternal, Fetal & Neonatal, Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran
5 Department of Obstetrics and Gynecology, Tehran University of Medical Sciences, Tehran, Iran
6 Division of Female Pelvic Medicine and Reconstructive Surgery, Department of Obstetrics and Gynecology, Imam Khomeini Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran

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Abstract

Objective: This study aimed to evaluate the urodynamic findings in women with voiding dysfunction symptoms at a referral academic center.

Materials and methods: Patients who underwent urodynamics to evaluate voiding dysfunction symptoms between 2019 and 2022 were retrospectively analyzed. Demographic and clinical data were obtained from the electronic data registration system of the urogynecology clinic. Urodynamic findings, such as post-void residual (PVR), maximum urine flow (Q max), detrusor pressure (P det), abdominal leak point pressure (ALPP), and detrusor overactivity, as well as their association with each symptom of voiding dysfunction, were analyzed and reported.

Results: A total of 591 women were enrolled in the study, with a mean age of 54.09±12.3 years. The majority had experienced vaginal deliveries (82.9%). The most frequently reported symptom was incomplete voiding (71.1%), followed by post-void dribbling, intermittent stream and others. Post-void residual (PVR) >150 cc was identified in 2.7% of patients and was significantly associated with hesitancy and straining to void. It was also associated with increasing age and anterior and apical compartment prolapse.

Conclusion: Voiding dysfunction symptoms do not reliably predict urodynamic findings. The low prevalence of post-void residual (PVR) in symptomatic patients and the lack of correlation between PVR and similar symptoms suggest that symptoms alone may not provide adequate evidence to indicate high PVR. Therefore, urodynamics may be necessary for evaluating patients with voiding dysfunction symptoms.

Keywords: Voiding Dysfunction; Urodynamic; Uroflowmetry; Post Voiding Residual (PVR), Underactive Bladder; Bladder Outlet Obstruction

Introduction

Voiding dysfunction is defined as abnormally slow and/or incomplete micturition, characterized by abnormally slow urine flow rates and/or abnormally high post-void residuals (1-3). It significantly affects

Correspondence:
Dr. Razie Vahdani
Email: drrazievahdani@gmail.com

the quality of life and can be found in approximately 2.7% to 23% of the general population (1). Women suffering from voiding dysfunction exhibit various clinical symptoms (2); however, there is a series of common symptoms among patients, including hesitancy, intermittent stream, weak stream, straining to void, and symptoms related to post-voiding, such as incomplete emptying and post-void dribbling (3).

Individuals experiencing voiding dysfunction may encounter urinary retention, a condition that necessitates prompt detection and intervention. Early identification and management of urinary retention are essential, as this condition can predispose individuals to urinary tract infections.

The measurement of post-void residual urine volumes (PVR) can be carried out using a catheter or ultrasound (4). The normal volume of PVR is typically less than 50 cc. Values exceeding 150 cc, particularly, necessitate further investigation and intervention. Further assessments for patients with voiding dysfunction may involve urinalysis and uroflowmetry, as well as checking for post-void residual volume (5).

The factors that cause non-neurological voiding dysfunction symptoms can be divided into two categories: detrusor underactivity (DU) and bladder outlet obstruction (BOO) (6). Diagnosing detrusor underactivity necessitates a combination of low detrusor pressure and slow urine flow (7). Bladder outlet Obstruction is defined by elevated voiding pressure and reduced flow rate (8). BOO affects 2-23% of women, while DU is reported to be present in 9-59% (9). The variations in prevalence among studies may indicate discrepancies in definitions and diagnostic criteria.

There is no perfect way to measure detrusor contraction. One common method is to use cut-off points based on Pdet (detrusor pressure at maximum flow) and Qmax (maximum urine flow rate) thresholds from P/Q (pressure/flow) studies. The specific cut-off points used for Q max are within the range of 10-12-15 mL/s, and for P det, they are 10-20-45 cm H2O in different studies (10, 11).

The most frequent reason for female voiding dysfunction is obstructive issues caused by surgery for stress incontinence and pelvic organ prolapse (11). This study aimed to describe the prevalence of symptoms and their correlation with urodynamic study findings in women who presented with voiding dysfunction, to determine whether subjective symptoms can serve as reliable indicators of objective symptoms, potentially rendering urodynamic studies unnecessary.

Materials and methods

In this cross-sectional study, we included all women with a history of voiding dysfunction symptoms who presented to our tertiary referral urogynecology clinic at Tehran University of Medical Sciences in Tehran, Iran, between March 2019 and February 2022; a urodynamic study was conducted for all participants.

Exclusion criteria

1-Urinary tract infection (UTI)

2-Anatomical obstruction of the lower urinary tract except for pelvic organ prolapses such as meatal stenosis, urethral stricture, carcinoma, or post-radiation fibrosis

3- Neurogenic lower urinary tract dysfunction.

Demographic and clinical information, including patient voiding dysfunction symptoms (hesitancy, incomplete emptying, intermittent stream, weak stream, post-void dribbling, straining to void), age, BMI, parity, delivery type, medical disease (such as diabetes mellitus), previous hysterectomy, stage of pelvic organ prolapse in the apical, anterior and posterior compartments based on Pelvic Organ Prolapse Quantification System (POP-Q) as well as urodynamic study information including Qmax, Pdet ,PVR, detrusor stability and abdominal leak point pressure(ALPP), were obtained from the electronic data registration system of the urogynecology clinic.

Urodynamic Study Method: The test was conducted with the patient in a sitting position following the reduction of any pelvic organ prolapse that extended beyond the hymen. A thin (8 Fr) double-lumen catheter was then inserted transurethrally for bladder filling and pressure recording using an aseptic technique. Cystometry was performed using normal saline at an infusion rate of 30 mL/min. Concurrently, intra-abdominal pressure (Pabd) was measured using a balloon catheter that was inserted transrectally. During the filling phase, and upon reaching maximum cystometric capacity, provocation tests- including coughing and straining- were conducted. Following this, patients were directed to void while seated, and post-void residual volume was measured using a catheter.

For analytical purposes, we defined normal post-void residual (PVR) as PVR < 50 ml and elevated PVR as PVR ≥ 150 ml. Bladder outlet obstruction (BOO) was defined as a maximum flow rate (Q max) < 12 ml/s with a detrusor pressure > 20 cmH2O at Q

max. Detrusor underactivity was defined as Q max < 12 ml/s with a detrusor pressure < 20 cmH2O at Q max, as determined by pressure-flow studies.

The project was approved by the Research Ethics Committees of Imam Khomeini Hospital Complex-Tehran University of Medical Sciences (Approval ID: IR-TUMS-IKHC-REC.1401.339.

Statistical analysis: SPSS version 23 software was used for data analysis. The comparisons and relationships between categories were examined. The Kolmogorov-Smirnov test indicated that all variables exhibited a non-normal distribution. Therefore, we employed the Mann-Whitney test to compare the frequency and values of quantitative variables between the groups. Chi-square and Fisher's exact tests were used to compare the frequencies of qualitative and categorized variables between groups. A p-value < 0.05 was considered the significance level

Results

Patients' characteristics: A total of 591 women presenting with voiding dysfunction symptoms were enrolled in the study, with a mean age of 54.09±12.3 years (range 25-87). The majority had experienced vaginal deliveries (82.9%), and 11.8% had undergone a previous hysterectomy. Demographic information for the patients is shown in Table 1 and the prevalence of voiding dysfunction symptoms is presented in Table 2. The most frequently reported symptom was incomplete voiding (71.1%), followed by post-void dribbling (56.5%), intermittent stream (54.3%), straining to void (29.3%), hesitancy (22.5%), and weak stream (15.9%). Out of the 591 patients reporting voiding dysfunction symptoms, 492 successfully underwent uroflowmetry after filling cystometry. Of these, 298 patients were able to urinate with a catheter, and their P det was recorded. (Uroflowmetry was conducted after catheter removal in 40% of the patients).

Uroflowmetry findings: Among the 492 patients, 102 (20.7%) exhibited a Q max < 12. Within this group, 19 patients were diagnosed with detrusor underactivity (P det < 20), while 60 patients were identified with bladder outlet obstruction (P det > 20).

We observed that among patients with Q max < 12 and a measured P det, the prevalence of bladder outlet obstruction (BOO) was three times higher than that of detrusor underactivity (DU). For the remaining 23 patients who were unable to urinate with a catheter, P det was not recorded.

Table 1: Characteristics of 591 women who presented with voiding dysfunction symptoms

Characteristics	Data (number-percent)
Age (years): Mean ± SD	54.09±12.33
BMI (Kg/m²): Mean ± SD	27.87±3.76
Number of Parity:	
0	6(1%)
1-3	263(44.5%)
≥4	322(54.5%)
Mean ±SD	4.26±2.02
Delivery type:	
NVD	490(82.9%)
C/S	34(5.8%)
NVD+C/S	53(9%)
Nothing	14(2.4%)
Instrumental delivery:	
Yes	7(1.2%)
No	584(98.8%)
History of diabetes mellitus: Yes	
Insulin dependent	9(1.5%)
Non-insulin dependent	84(14.2%)
No	497(84.1%)
History of Hypertension:	
Yes	155(26.2%)
No	435(73.6%)
History of renal stone:	
Yes	10(1.7%)
No	580(98.1%)
History of lumbar disk herniation:	
Yes	25(4.2%)
No	565(95.6%)
History of lumbar spinal stenosis:	
Yes	7(1.2%)
No	584(98.8%)

NVD: Normal Vaginal Delivery; C/S: Cesarian Section

Table 2 presents urodynamic findings and their association with each symptom of voiding dysfunction. Q max < 12 was significantly associated with incomplete emptying, intermittent stream, weak stream, and straining to void. Conversely, P det < 20 showed no significant association with voiding dysfunction symptoms.

Most women reported a symptom severity of 7 on a scale of 0–10 (98.2%). Correlation analysis between symptom severity and uroflowmetry results revealed that individuals with Q max < 12 in uroflowmetry reported a higher severity of symptoms, and this increase was statistically significant (P = 0.029, Mann-Whitney test) (Table 3). Other uroflowmetry findings did not demonstrate a significant association with symptom severity.

Table 2: Voiding dysfunction symptoms

Characteristics	Data (number-percent)
Vaginal prolapse	
Apical compartment:	
Mild prolapses (non protrude from hymen)	91(69.4%)
Advance prolapse (protrude from hymen)	172(30.6%)
Anterior compartment:	
Mild prolapses (non protrude from hymen)	337(59.9%)
Advance prolapse (protrude from hymen	226(40.1%)
Posterior compartment:	
Mild prolapses (non protrude from hymen)	472(83.8%)
Advance prolapse (protrude from hymen	91(16.2%)
Vaginal atrophy:	
Yes	332(56.2%)
No	258(43.7%)
Symptoms severity score:	
Median	7
History of Hysterectomy:	
Yes	70(11.8%)
No	521(88.2%)
Previous midurethral sling surgery:	
Yes	16(2.7%)
No	575(97.3%)

Post-void residual (PVR) values of <50 cc, between 50 and150 cc, and >150 cc were identified in 87.6%, 9.8% and 2.7% of the 591 patients, respectively. PVR > 150 was significantly associated with hesitancy and straining to void (P =0.009 and 0.021, respectively).

The study explored the relationship between patient characteristics and uroflowmetry findings (Table 4). The results indicated that PVR > 150 cc was associated with increasing age, with 14 out of 15 patients being over 50 years old. Additionally, elevated PVR was directly associated with anterior and apical compartment prolapse. In patients with high PVR (PVR>150 and between 50 cc and 150 cc), there was a greater likelihood of having prolapse beyond the hymen within these compartments (P = 0.0001) (Table 3). However, no significant relationship was observed between BMI, parity, and uroflowmetry findings.

Filling cystometry findings (Detrusor overactivity/positive ALPP): The prevalence of detrusor overactivity (DO) among all patients was 43.7% (258/591). DO was significantly lower in patients with a weak stream (P =0.001). The prevalence of positive ALPP was 54% (319/591) of all patients. Positive ALPP was significantly more common in the patients with post-void dribbling, while it was significantly less common in patients who presented with strain to void and intermittent stream. (P = 0.010, 0.015, 0.031, respectively) (Table 2).

Furthermore, the study examined the relationship between the findings of the filling cystometry and the voiding phase. The results demonstrate that the prevalence of positive ALPP is higher in patients with normal urine flow (Q max>12) (85.3 % vs. 14.7% with P = 0.001).

There was no significant association between cystometry findings and other uroflowmetry parameters such as P det and PVR.

Discussion

The validity of urodynamics as the primary method for studying bladder function has come under scrutiny (12). We aimed to evaluate the relationship between voiding dysfunction symptoms in females and urodynamic findings in order to determine whether symptoms and their severity alone can indicate the type of disorder and potentially eliminate the need for urodynamic studies.

The feeling of incomplete bladder emptying was the most frequently mentioned symptom in numerous prior studies (3, 13), aligning with the findings of the present study.

Table 3: Association between female voiding dysfunction symptoms and urodynamic findings

Symptoms		n (%)	Uroflowmetry [n (%)]									Filling cystometry			
			Qmax < 12	P value*	Pdet Qmax < 20	Pdet Qmax > 20	P value*	PVR < 50	PVR 50-150	PVR > 150	P value**	Detrusor overactivity	P value*	Positive ALPP	P value*
Hesitancy	Yes	133 (22.5)	27 (25.2)	0.227	15 (27.5)	39 (72.5)	0.270	102 (82.3)	14 (11.3)	8 (6.5)	0.009	49 (36.8)	0.074	68 (51.1)	0.490
	No	458 (77.5)	75 (19.7)		90 (36.9)	154 (63.1)		391 (89.1)	41 (9.3)	7 (1.6)		209 (45.71)		251 (54.8)	
Incomplete Emptying	Yes	420 (71.1)	81 (23.8)	0.021	72 (36.2)	127 (63.8)	0.700	346 (86.7)	41 (10.3)	12 (3.0)	0.583	180 (42.9)	0.522	223 (53.1)	0.525
	No	171 (28.9)	21 (14.4)		33 (33.3)	66 (66.6)		147 (89.6)	14 (8.5)	3 (1.8)		78 (45.9)		96 (56.1)	
Intermittent Stream	Yes	321 (54.3)	65(25.4)	0.014	57 (37.0)	97 (63.0)	0.545	258 (85.4)	32 (10.6)	12 (4.0)	0.083	143 (44.7)	0.618	160 (49.8)	0.031
	No	270 (45.7)	37 (16.0)		48 (33.3)	96 (66.6)		235 (90.0)	23 (8.8)	3 (1.1)		115 (42.6)		159 (58.9)	
Weak Stream	Yes	94 (15.9)	25 (31.6)	0.015	11 (25.0)	33 (75.0)	0.171	72 (80.9)	14 (15.7)	3 (3.4)	0.101	27 (28.7)	0.001	47 (50.0)	0.430
	No	497 (84.1)	77 (18.9)		94 (37.0)	160 (63.0)		421 (88.8)	41 (8.6)	12 (2.5)		231 (46.6)		272 (54.7)	
Post-void Dribbling	Yes	334 (56.5)	51 (18.5)	0.144	57 (33.3)	114 (66.7)	0.463	285 (89.6)	25 (7.9)	8 (2.5)	0.209	148 (44.4)	0.783	196 (58.7)	0.010
	No	257 (43.5)	51 (24.2)		48 (37.8)	79 (62.2)		208 (84.9)	30 (12.2)	7 (2.9)		110 (42.8)		123 (47.9)	
Strain to Void	Yes	173 (29.3)	42 (29.4)	0.003	38 (42.2)	52 (57.8)	0.113	135 (83.9)	17 (10.6)	9 (5.6)	0.021	67 (38.7)	0.144	80 (46.2)	0.015
	No	418 (70.7)	59 (17.2)		67 (32.2)	141 (67.8)		357 (89.0)	38 (9.5)	6 (1.5)		190 (45.7)		239 (57.3)	

*Fisher Exact test, **Chi-square test

Table 4: Association between uroflowmetry findings and patients' characteristics in women presenting with voiding dysfunction (Part I)

Uro-flowmetry Findings	Patients characteristics [n (%)]									
	Age < 50	Age > 50	P value*	BMI<25	BMI>25	P value*	Parity 0	Parity 1-3	Parity ≥ 4	P value**
Q max<12	37 (19)	65 (22.3)	0.427	12 (20)	39 (26)	0.476	1 (20)	47 (21.2)	52 (20.4)	0.737
Q max>12	158 (81)	226 (77.7)		48 (80)	111 (74%)		4 (80)	175 (78.8)	203 (79.6)	
	T=100%	T=100%		T=100%	T=100%		T=100%	T=100%	T=100%	
P det<20	38 (31.7)	67 (37.9%)	0.323	14 (32.6)	34 (34)	0.514	1 (20)	45 (34.4)	58 (36.5)	0.719
P det>20	82 (68.3)	110 (62.1)		29 (67.4)	66 (66)		4 (80)	86 (65.6)	101 (63.5)	
	T=100%	T=100%		T=100%	T=100%		T=100%	T=100%	T=100%	
PVR<50	216 (96.4)	277 (81.7)	<0.0001	56 (91.8)	148 (84.6)	0.199	6 (100)	214 (87.3)	268 (87.3)	0.199
PVR 50-150	7 (3.1)	48 (14.2)		3 (4.9)	23 (13.1)		0	23 (9.4)	32 (10.4)	
PVR>150	1 (0.4)	14 (4.1)		2 (3.3)	4 (2.3)		0	8 (3.3)	7 (2.3)	
	T=100%	T=100%		T=100%	T=100%		T=100%	T=100%	T=100%	

Table 4: Association between uroflowmetry findings and patients' characteristics in women presenting with voiding dysfunction (Part II)

Uro-flowmetry Findings	Patients characteristics [n (%)]								
	Ant Compartment prolapse			Post Compartment prolapse			Apical Compartment prolapse		
	Mild	Advance (protrude beyond hymen)	P value*	Mild	Advance (protrude beyond hymen)	P value*	Mild	Advance (protrude beyond hymen)	P value*
Q max<12	65 (22)	37 (19.4)	0.569	87 (21.3)	15 (19.2)	0.763	74 (21.9)	28 (18.8)	0.470
Q max>12	231 (78)	154 (80.6)		322 (78.7)	63 (80.8)		264 (78.1)	121 (81.2)	
	T=100%	T=100%		T=100%	T=100%		T=100%	T=100%	
P det<20	60 (34.1)	45 (36.9)	0.624	88 (35.9)	17 (32.1)	0.637	63 (31.8)	42 (42.0)	0.095
P det>20	116 (65.9)	77 (63.1)		157 (64.1)	36 (67.9)		135 (68.2)	56 (58.0)	
	T=100%	T=100%		T=100%	T=100%		T=100%	T=100%	
PVR<50	314 (93.2)	179 (79.2)	0.0001	417 (88.3)	76 (83.5)	0.435	359 (91.8)	134 (77.9)	0.0001
PVR 50-150	17 (5.0)	38 (16.8)		43 (9.1)	12 (13.2)		26 (6.6)	29 (16.9)	
PVR>150	6 (1.8)	9 (4.0)		12 (2.5)	3 (3.3)		6 (1.5)	9 (5.2)	
	T=100%	T=100%		T=100%	T=100%		T=100%	T=100%	

*Fisher Exact test, **Chi-square test

However, the sequence of symptoms varied across different investigations. For example, Moossdorff et al.'s (3) study found that incomplete voiding was followed by intermittency, slow stream, and straining to void. Conversely, in this study, post-void dribbling and intermittent stream were identified as the subsequent prevalent symptoms. Notably, the sequence of symptoms in studies involving male participants differed from those involving female participants(14). Therefore, apart from the feeling of incomplete bladder emptying, the prevalence of other symptoms has not been consistently reported across various studies.

The prevalence of detrusor underactivity varies widely in the literature, ranging from 9% to 59%, depending on the specific thresholds used for Q max (10-12-15 mL/s) and P det at Qmax (10-20-45 cm H2O) (10, 11) .Additionally BOO affects 2-23% of women (9).

Kocadag et al. assessed 50 women experiencing lower urinary tract symptoms (LUTS) using video-urodynamics. Their results showed that 26.4% had bladder outflow obstruction (BOO), and 18% had detrusor underactivity (DU) (15). Furthermore, Chang et al. evaluated the prevalence of DU and BOO in female with ≥stage II cystocele, finding that 7% of women were diagnosed with DU and 3% had BOO (16). In this research, the ratio of bladder outlet obstruction (BOO) to detrusor underactivity (DU) was found to be higher compared to previous studies. This disparity may be attributed to variations in the demographics of the study population and the specific cut-off levels used to distinguish between these two diagnoses.

The relationship between patient characteristics and uroflowmetry findings has been investigated in various studies (17, 18). Wong et al. identified a direct association between post-void residual (PVR) levels and the prolapse of the anterior and apical compartments of the vagina (18). In Lowenstein et al.'s study, patients with urinary retention exhibited differences in age compared to the normal PVR group (5). The evaluation of the correlation between factors influencing PVR in various studies confirms the significant association between age and prolapse with PVR, as demonstrated in this study.

Numerous studies have been conducted to assess the association between lower urinary tract symptoms experienced during the storage or voiding phases and urodynamic findings (19-22). Al Taweel et al. evaluated the correlation between urinary incontinence symptoms and urodynamics findings. Their study showed 86% of patients (24/28) with pure stress urinary incontinence (SUI) symptoms had positive urodynamic findings, while 55% (11/20) of patients with pure urge incontinence symptoms had positive urodynamic findings. In patients with mixed urinary incontinence symptoms, 51% had a urodynamic diagnosis of SUI, and 35% had a diagnosis of detrusor overactivity (DO). They found good correlation between incontinence and urodynamic findings; however, their sample size was small, and the severity score of symptoms was not evaluated (17). D'Alessandro et al. analyzed patients who underwent urodynamics for pelvic floor disorders retrospectively. According to their research, the highest level of agreement was observed for stress urinary incontinence (SUI) and urodynamic SUI, with an agreement proportion of 0.68 and a Cohen's Kappa of 0.37. Conversely, minimal agreement was noted for overactive bladder/urge urinary incontinence (OAB/UUI) and detrusor overactivity, voiding dysfunction and positive post-void residuals (18). The results of these studies indicated that storage phase symptoms, such as urinary incontinence, align more closely with urodynamic findings compared to voiding phase symptoms. Our study further supports this by demonstrating minimal compatibility between voiding phase symptoms and urodynamic findings.

Also, we aimed to determine whether the voiding dysfunction symptoms could indicate the presence of a higher PVR. Our investigation demonstrated that only 2.7% of patients with voiding dysfunction symptoms had a PVR greater than 150cc, and this was associated with hesitancy and straining to void. Other studies have demonestrated the association of high PVR with various symptoms. Ozlulerden et al. found that PVR volume was closely associated with the sensation of incomplete bladder emptying, slow stream, and post-void dribbling in women (19). However, the study by Cayetano-Alcaraz et al. did not find a statistically significant relationship between the sensation of incomplete emptying and high PVR (20).

Lowenstein et al. evaluated the relationship between measured PVR and self-reported bother from obstructive voiding symptoms. Their study showed that obstructive voiding symptoms have poor sensitivity and specificity for elevated PVR in women with pelvic floor disorders (4). The low prevalence of post-void residual (PVR) in symptomatic patients and

the lack of correlation between PVR and similar symptoms across different studies suggest that symptoms alone may not provide adequate evidence to indicate high PVR.

The relationship between detrusor underactivity (DU) and overactive bladder (OAB) has been explored in academic literature in recent years (23). Storage phase symptoms are commonly observed in this population, with urgency reported in more than half of patients with urodynamically confirmed DU (21). Santis-Moya et al. discussed the prevalence of female voiding dysfunction among patients with OAB who underwent urodynamic testing. They found that 19.7% of patients had BOO, while 3.3% had DU. The study revealed that BOO is more common than DU, and it should be considered in patients with detrusor overactivity and a high post-void residual volume (22).

In this study, detrusor overactivity (DO) was reported as a urodynamic finding in 43.7% of all patients; however, there was no significant difference between patients with Q max<12 and Q max >12. As mentioned, voiding and storage phase symptoms can coexist in patients with voiding dysfunction, and the use of urodynamics can facilitate the concurrent diagnosis of these disorders. Hubeaux et al. conducted a study to investigate the correlation between voiding dysfunction (VD) symptoms and uroflowmetry in women with stress urinary incontinence. Out of the 93 women, 61% reported VD symptoms. In the VD group, only 18 women (18/57, 32%) had abnormal uroflowmetry result. No statistical correlation was found between VD symptoms and BOO, as defined by uroflowmetry (P value=0.64), in this specific population with stress urinary incontinence. The results suggest that uroflowmetry may be necessary rather than multichannel cystometry in evaluating patients with SUI (23). In this study, a positive ALPP was reported in 54% (319/591) of all patients and was higher in those with normal urine flow (Q max>12).

Based on the association of cystometry phase findings in patients who report voiding phase symptoms, simultaneous urinary disorders can also be diagnosed through a urodynamic study. Additionally, preoperative voiding dysfunction may complicate postoperative outcomes in patients undergoing prolapse repair or anti-incontinence treatment. Therefore, it is essential to consider voiding phase symptoms in patients with urinary incontinence and prolapse before treating these disorders.

Limitation: The primary limitation of this study was its retrospective design. Additionally, certain essential flowmetry factors, such as the shape of the flow rate curve, were not assessed in patients, as this data was not documented in the electronic data registration system.

Conclusion

Voiding dysfunction symptoms do not reliably predict urodynamic findings. The low prevalence of post-void residual (PVR) in symptomatic patients and the lack of correlation between PVR and similar symptoms suggest that symptoms alone may not provide adequate evidence to indicate high PVR. Therefore, urodynamics may be necessary for evaluating patients with voiding dysfunction symptoms.

Conflict of Interests

Authors declare no conflict of interests.

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