Quantitative Assessment of Urgency

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ABSTRACT

Urgency is the primary symptom of the overactive bladder (OAB). It is important to assess the severity of urgency and the change in urgency as part of the treatment of OAB. Thus, it is reasonable to develop a rational method to evaluate urgency. This article is to review the methods currently used, from subjective tools to objective studies and the combinations of these, to capture the entity of urgency. *Key word:* urgency, warning time, urgency scale, urge score.

QUANTITATIVE ASSESSMENT OF URGENCY

'Urgency, with or without urinary incontinence, usually associated with frequency and nocturia' can be described as the overactive bladder (OAB) based on the International Continence Society's definition in 2002 [1]. These symptoms must be exhibited in the absence of obvious pathology such as urinary tract infection or bladder cancer. Urgency is the primary symptom in OAB. There cannot be the diagnosis of OAB without the complaint of urgency. Urgency can lead to frequency, nocturia and urinary incontinence, with approximately one-third of OABs being, so called OAB wet.

Since urgency is the core symptom of OAB, the ICS also defined urgency as 'a sudden compelling desire to pass urine, which is difficult to defer'. In normal bladder physiology, there are different levels of bladder sensation in the storage phase, including filling sensation, normal desire to void, strong desire to void, and even urge to void. Urge to void is a normal phenomenon associated with bladder storage function; while urgency is a pathological condition. Nonetheless, it is not easy to differentiate the "urge to void" desire from urgency.

The role of urodynamics in the diagnosis of urgency or OAB is still controversial. In traditional filling cystometry, the object is to detect the presence of unstable detrusor contractions, and the management of urgency or urge incontinence has focused on detrusor instability. However, although the sensations of urgency contribute greatly to the patients' symptoms, little is known about the significance of unstable detrusor contractions. Some authors considered that OAB patients can be treated safely on the basis of the symptoms complex without the need for an invasive urodynamic examination; or even an urodynamic test, the results of which often correlated poorly with the patients' symptoms [2,3]. In contrast, some authors recommended that urodynamic evaluation should be mandatory in the management of the symptoms of OAB. Digesu GA et al reported that in 4,500 women, 54.2% of the OAB cases had urodynamically proven detrusor instability and 27.5% of verified detrusor instability cases had OAB symptoms. Symptomatic diagnosis of OAB does not correlate with the urodynamic diagnosis of detrusor instability. The diagnosis of OAB based on urinary symptoms is underestimated the detrusor instability [4]. Thus, the ICS indicates that OAB symptom combinations are suggestive of urodynamically demonstrable detrusor overactivity, but can also be due to other forms of urethra-vesical dysfunction.

New medications or instruments developed for the treatment of OAB have been applied to clinical trials. In addition to using invasive urodynamic studies to objectively evaluate detrusor overactivity, many other methods have been designed to assess improvements brought about by therapy directed at the symptoms of OAB, especially in urgency and urge incontinence, and the effect of urgency, like frequency and nocturia (Table 1).

To evaluate the efficacy of tolterodine in the treatment of OAB, the Urgency Perception Scale (UPS) is constructed to assess perceived urinary urgency. Urodynamics are not performed and the patients are recruited on the basis of their symptoms. Three categories of desire to urinate are described as follows: 1 = "I am usually not able to hold urine", 2 = "I am usually able to hold urine until I reach the toilet if I go immediately", and 3 = "I am usually able to finish what I am doing before going to the toilet [5]". Improvements in the UPS score at the end of treatment are consistently associated with significant reductions in micturitions associated with urgency, incontinence episodes and pad use [6]. The Indevus Urgency Severity Scale (IUSS), a 4-point qualitative scale, was developed to assess the severity of urgency in the anticholinergic therapy [7]. A 7-day bladder diary records each void, urgency severity, and urge urinary incontinence episode per day. The patients are asked to rate the urgency severity before voiding on the following scale: 0, non-no urgency; 1, mild-awareness of urgency, but easily tolerated; 2, moderate-enough urgency discomfort such that it interferes with usual activity/tasks; 3, severe-extreme urgency discomfort that abruptly stops all activity/tasks. From this study, the conclusion is that a moderate degree of urgency improved to a mild sensation of urgency with each voiding. However, in these two scoring system, most of the categories are measuring a normal desire to void rather than urgency [8].

'Warning time' is defined as the time from the first sensation of urgency to voiding. To measure the change of warning time have been applied as a primary endpoint in the recent clinical trial for the treatment of OAB. Warning time and the levels of sensation were recorded in ambulatory individuals with the aid of small portable electronic event recorders [9]. The research concluded that a prolonged average warning time demonstrated a significant, positive effect in the treatment of OAB and that warning time could be employed to assess the efficacy of treatments for urgency. However, the range of average warning times

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Table 1. Measurement commonly used in the assessment of urgency

Measurement	Characteristic	Drawback
Urodynamics	Objective	Invasive; DO≠OAB
UPS or IUSS	Common use; simple	Confused with normal bladder sensation
Warning time	Simple	Confused with normal bladder sensation; large variation
Bladder diary	Primary tool in OAB evaluation; Recording urgency as well as other symptoms	
Urge keypad test	Combined subjective sensation scoring, bladder diary, and objective urodynamics	Invasive; Laboratory use

DO: Detrusor overactivity; OAB: Overactive bladder; UPS: Urgency Perception Scale; IUSS: Indevus Urgency Severity Scale

was up to 30 min in some patients and this suggests that these episodes measured were not urgency, but rather were urge.

A bladder diary records the times of micturitions and voided volumes, incontinence episodes, fluid intake, the degree of urgency and the degree of incontinence [1]. To assess the symptoms of frequency, urgency, and urge urinary incontinence, bladder diaries serve as a primary tool to assess symptoms of OAB in clinical settings and in the clinical trials of treatments for OAB. In a 7-day patient-completed bladder diary study, Brown et al indicated that the diary exhibited good to excellent reliability with the estimated intraclass correlation coefficient ranging from 0.76 to 0.95 for the symptoms of strong urge, diurnal and nocturnal micturitions, total incontinence, and urge incontinence episodes. Furthermore, the 3 or 4-day diary was demonstrated to have good reliability in measuring urgency episodes [10,11].

The 'Urge keypad' test combining with a standard cystometrogram (CMG) to measure the bladder sensation and urgency was introduced by Oliver S et al in 2003 [12]. Different from the traditional filling CMG, the objective is not to detect detrusor overactivity, but to evaluate bladder sensation. While performing CMG with repeated filling and emptying, all patients used a keypad to grade their bladder sensation according to 0 to 4 "urge score." The scores were defined as (0) none, (1) mild, (2) moderate, (3) strong, and (4) "desperate". In this study, a positive relationship between increasing bladder volume and increasing urge score was found in all patients and unstable detrusor contractions were found to be associated with different levels of urge.

A 6-point-scale keypad test during urodynamics combined with a frequency-volume chart to assess the bladder sensation was designed currently by Dr. Abrams. The test was used to compare the grade of urgency for each micturition with a frequency-volume chart and bladder sensations of urodynamics. The aim of this study was to reproduce the symptoms of the disease during an urodynamic test [13].

In summary, urgency is the hallmark of OAB. It is difficult to differentiate the normal desire to void from the pathological condition of urgency. As new drugs and instruments are developed, it is important to assess the efficacy of these modalities on the treatment of OAB by focusing on changes in urgency. Although the initial single-item scale has been criticized as not able to capture the entity of urgency, currently the instruments combining the subjective tools and the objective urodynamic study to reproduce the symptoms in daily life was developing.

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