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European Association of Urology

Review - Neuro-urology – Voiding Dysfunction

A Shifted Paradigm for the Further Understanding, Evaluation, and Treatment of Lower Urinary Tract Symptoms in Men: Focus on the Bladder

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Article info

Article history:
Accepted February 3, 2006
Published online ahead of print on February 17, 2006

Keywords:
Benign prostatic hyperplasia
Lower urinary tract symptoms
Overactive bladder
Antimuscarinics
Tolterodine

Abstract

Lower urinary tract symptoms (LUTS) are highly prevalent among older men and have a negative impact on health-related quality of life. Frequent comorbidity with potential prostatic disease adds complexity to the management of male LUTS. In this review, we discuss the pathophysiological conditions that underlie male LUTS, and examine the relationship between symptoms and urodynamic findings. The contribution of bladder dysfunction to male LUTS, with a particular emphasis on overactive bladder (OAB) symptoms, is explored. We also consider pharmacotherapeutic options for male LUTS. Pharmacotherapies that target the prostate (α_1-receptor antagonists and 5α-reductase inhibitors) often fail to alleviate OAB symptoms, and may not be the most appropriate therapy for men with storage LUTS. Multiple studies have suggested that antimuscarinic therapy alone or in combination with α_1-receptor antagonists improve OAB symptoms in men with and without bladder outlet obstruction. Although these agents may represent appropriate first-line therapies for men with OAB symptoms, the therapeutic potential of antimuscarinics alone or in combination with α_1-receptor antagonists in this population should be evaluated in large-scale, well-designed clinical trials.

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1. Introduction

Lower urinary tract symptoms (LUTS) are associated with great emotional costs [1] to individuals and substantial economic costs to society [2]. The prevalence and severity of LUTS increase with age [3], and the progressive growth of the aged population group has broadened the societal impact of LUTS.

0302-2838/$ – see front matter © 2006 Published by Elsevier B.V. doi:10.1016/j.eururo.2006.02.018

LUTS comprise storage symptoms (daytime urinary frequency, nocturia, urgency, urinary incontinence), voiding symptoms (slow stream, splitting or spraying, intermittency, hesitancy, straining, terminal dribble), and postmicturition symptoms (sensation of incomplete emptying, postmicturition dribble) [4]. A large-scale multinational study revealed that 90% of men aged 50 to 80 suffer from potentially troublesome LUTS [3]. Questionnaire data from 1,271 men with LUTS indicated that many men have storage and voiding symptoms [5]. The same study demonstrated that voiding symptoms were the most common male LUTS, but that storage symptoms made up four of the five most bothersome LUTS. Although LUTS are also highly prevalent in women, their frequent comorbidity with prostatic disease in men adds complexity to the management of male LUTS.

This review focuses on a number of contemporary issues that relate to the management of male LUTS. First, we discuss the appropriate terminology for categorizing the pathophysiological conditions underlying male LUTS. Second, we review the relationship between symptoms and urodynamic findings. The relative contribution of bladder dysfunction to male LUTS, with a particular emphasis on the subset of storage symptoms that characterize overactive bladder (OAB) syndrome, is explored. Finally, we consider pharmacotherapeutic options for male LUTS, with particular attention to male OAB symptoms. We emphasize the need for large, placebo-controlled trials to investigate the efficacy and safety of antimuscarinics for the treatment of OAB in men, when used alone or in combination with α_1-receptor antagonists.

2. LUTS terminology

Historically, a number of terms such as prostatism, symptoms of benign prostatic hyperplasia (BPH), and clinical BPH have been used to describe male LUTS. However, we recommend that these pseudodiagnostic terms be eliminated from the medical vocabulary because not all male storage and voiding symptoms are prostate related [6,7]. In fact, relationships between voiding symptoms and urodynamic markers of prostatic conditions are weak [8]. Thus, Abrams [7] and Holtgrewe [6] recommended the use of the term *LUTS*. The term *BPH* should be reserved for histopathologically confirmed hyperplastic changes in the prostate [4]. Berry et al. [9] combined the results of five major studies and reported that the prevalence of histologically confirmed BPH at autopsy increased from 42% in men aged 50 to 59 to 88% in men older than 80. BPH is often associated with LUTS, but LUTS generally cannot be used to make a definitive diagnosis of BPH [4]. Extraprostatic conditions associated with LUTS include bladder dysfunction, psychogenic disorders, congestive heart failure, and polypharmacy [10]. Only 25%–50% of men with histologically confirmed BPH have LUTS [11].

Benign prostatic enlargement (BPE) is caused by BPH. The term *prostatic enlargement* should be used when BPH has not been histologically confirmed [4]. Only about half of men with BPH will develop BPE [12]. BPE may cause bladder outlet obstruction (BOO), which is characterized by increased detrusor pressure and reduced urine flow rate. BOO is diagnosed using simultaneous measurements of flow rate and detrusor pressure obtained during urodynamic pressure-flow studies that use criteria defined by the International Continence Society [4]. BOO caused by BPE has both static (increased tissue mass) and dynamic (increased smooth muscle tone) components in the prostate [11], which represent independent targets for pharmacotherapy.

LUTS, when suggestive of BOO, is ''a term used when a man complains predominantly of voiding symptoms in the absence of infection or obvious pathology other than possible causes of outlet obstruction'' [4]. This term should be used until pressure-flow studies have confirmed the presence of BOO, because many men with LUTS do not have BOO. In a study based in the United Kingdom and Italy, Laniado et al. [13] reported urodynamically confirmed BOO in only 48% of referred men with LUTS. Furthermore, in a study of 565 men with LUTS, pressure-flow studies revealed that 301 (53%) had BOO [14]. However, LUTS that are suggestive of BOO may be caused by a poorly functioning detrusor instead of prostatic pathology [15].

In summary, LUTS may result from a complex interplay of pathophysiological influences, including prostatic pathology and bladder dysfunction. LUTS include all storage and voiding symptoms, and the term *LUTS* should be used in place of terms like *BPH* or *BOO* unless the latter conditions have been confirmed by histology or urodynamics, respectively. OAB symptoms form a subset of storage LUTS (urgency, frequency, urgency urinary incontinence [UUI], and nocturia). The use of incorrect and inconsistent terminology may lead to confusion among clinicians and patients and mismanagement of the conditions that underlie male LUTS.

3. Overactive bladder

OAB is characterized by urinary urgency, with or without UUI, usually with frequency and nocturia