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CLINICAL REVIEW

The management of lower urinary tract symptoms in men

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Lower urinary tract symptoms (LUTS) are common in men and increase in frequency and severity with age. Over one third of men aged 50 or more are living with moderate to severe symptoms, equating to 3.4 million men in the United Kingdom alone and 24 million in countries of the European Union.[1] Most men with LUTS can be managed effectively in primary care, with either conservative lifestyle measures or medical treatment.[2] We discuss the causes of LUTS in men and summarise the current evidence on assessment and management of patients.

How can LUTS be classified?

Terms such as prostatism, symptoms of benign prostatic hyperplasia (BPH), and clinical BPH have been ascribed to men presenting with LUTS.[3] These descriptions are, however, imprecise and imply that all LUTS in men arise from the prostate, whereas the symptoms can be related to a large number of other causes (box 1). A symptom based approach to classification can therefore be useful[4] (box 2). Voiding symptoms are the most common in men with LUTS but generally are less bothersome than storage symptoms, which are typically the reason for men seeking medical advice.[3 5]

Voiding symptoms suggest the presence of bladder outflow obstruction, usually caused by benign prostatic enlargement but also by urethral stricture, meatal stenosis, or a tight phimosis of the foreskin. However, voiding symptoms can be due to impaired contractility of the detrusor muscle, and this should be suspected when patients fail to respond to initial management or in men with known or suspected neurological problems. Mixed symptoms (both storage and voiding) are common in patients with bladder outflow obstruction due to BPH. Obstruction is believed to lead to both morphological and functional changes to the detrusor, leading to secondary storage symptoms.

Isolated storage symptoms are most commonly due to an overactive bladder. The overall prevalence has been estimated at 11.8%, with only a slight preponderance in women (12.8% women and 10.8% men).[6] Prevalence increases with age, particularly in those aged more than 60 years. The cardinal symptom is urgency of micturition, a sudden compelling desire to void that is difficult to defer. This may be accompanied by urgency urinary incontinence, which may be associated with increased daytime urinary frequency and nocturia. Symptoms may be exacerbated by social and psychological factors. Overactive bladder can be classified as primary (idiopathic) or secondary (causes include bladder outflow obstruction due to BPH, inflammatory and neoplastic bladder conditions, or neurological conditions such as Parkinson's disease, multiple sclerosis, or spinal cord injury).

Post-micturition symptoms include post-micturition dribble, caused by urine remaining in the bulbar urethra after voiding, or a feeling of incomplete emptying, which may indicate a degree of chronic retention of urine (although the absence of this sensation does not exclude chronic retention).

As an isolated urinary symptom, nocturia is common, particularly in aging men, with a recent meta-analysis estimating a frequency of 30-60% in men aged more than 70, based on a definition of two or more voids nightly.[7] There are a wide range of potential causes (box 3). Nocturnal polyuria occurs when an excessive proportion of total 24 hour urine output occurs at night (including the first void of the morning), and has been defined as greater than 20% of total daily urine produced at night in younger men (<60 years), or more than 33% in older men.[8]

Are LUTS associated with other conditions?

Evidence from epidemiological studies suggests that LUTS are closely associated with erectile and ejaculatory dysfunction.[10] A large multinational survey showed that the prevalence of ejaculatory dysfunction increased with increasing severity of LUTS and persisted regardless of the presence of major comorbidities such as diabetes, cardiovascular disease, or dyslipidaemia.[11] Benign prostatic hyperplasia and overactive bladder are linked to many aspects of the metabolic syndrome, including type 2 diabetes, obesity, and hypertension,[12] although precise mechanisms for these associations are not fully understood.[13] LUTS increase the risk of recurrent falls in older men, particularly those with urgency, nocturia, or hesitancy.[14]

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Summary points

Lower urinary tract symptoms (LUTS) in men have many causes and are often multifactorial

A full assessment helps in making a diagnosis and avoids the assumption that LUTS in all men are due to benign prostatic hyperplasia (BPH)

Frequency volume charts are underused but often provide important diagnostic clues

Lifestyle measures, in particular altering fluid intake, can be useful for men with LUTS

α blockers are the usual treatment for LUTS due to BPH, and antimuscarinics for overactive bladder

5 α reductase inhibitors reduce the risk of clinical progression and should be targeted at those at high risk of clinical progression

A range of surgical options are available for men who fail initial medical management

Sources and selection criteria

We performed a search of PubMed to identify peer reviewed original articles, meta-analyses, and reviews, using the search terms "lower urinary tract symptoms", "benign prostatic hyperplasia", and "overactive bladder". In addition we reviewed national and international guidelines and the Cochrane Collaboration and clinical evidence databases. We considered only papers written in English, with emphasis on more recent articles where available and where we deemed the scientific validity to be sufficient.

Box 1: Potential causes of lower urinary tract symptoms in men

Benign prostatic enlargement (due to benign prostatic hyperplasia)

Overactive bladder (for example, due to overactivity of the detrusor muscle)

Urinary tract infection

Chronic prostatitis (or chronic pelvic pain syndrome)

Nocturnal polyuria (see box 3)

Detrusor hypocontractility (failure)

Neurogenic bladder dysfunction

Foreign body in bladder or urethra

Urethral stricture, meatal stenosis, or phimosis

Calculus in bladder, distal ureter, or urethra

Bladder tumour

Advanced prostate cancer

Drugs
- Prescribed—for example, diuretics, calcium channel blockers
- Dietary or over the counter—for example, caffeine, alcohol, decongestants, or antihistamines
- Illicit—for example, ketamine

Excessive fluid intake

Box 2 Classification of lower urinary tract symptoms

Storage—urgency, frequency of micturition, nocturia, urgency urinary incontinence

Voiding—hesitancy, intermittency, slow stream, straining, terminal dribble

Post-micturition—post-micturition dribble, sensation of incomplete empyting

Box 3 Causes of nocturia in men[7 8 9]

- Impaired bladder storage—benign prostatic hyperplasia, overactive bladder, bladder or prostate cancer, reduced functional bladder capacity (for example, through extrinsic compression or disease of the bladder wall)
- Nocturnal polyuria—excessive consumption of fluid in the evening, impaired secretion of nocturnal antidiuretic hormone, peripheral oedema or heart failure, obstructive sleep apnoea
- 24 hour polyuria—diabetes mellitus, diabetes insipidus, primary polydipsia
- Drugs—for example, diuretics, calcium channel blockers, selective serotonin reuptake inhibitors, antihypertensives, psychotropics, lithium, decongestants
- Sleep disturbance
- Parkinson's disease
- Anxiety
- Dementia

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How should a man presenting with LUTS be assessed?

A focused history should be undertaken asking specific questions about the presence of storage, voiding, and post-micturition symptoms. Examination should include assessment for a palpable or percussable bladder, genital examination to look for meatal stenosis, phimosis, or hypospadias, and a digital rectal examination to assess the prostate for volume and surface consistency. Some elements of a more general examination may also be required, depending on the clinical presentation—for example, patients with nocturia should also be examined for peripheral oedema.

A urine dipstick test should be performed, to look for glycosuria, haematuria, or the presence of leucocytes or nitrites suggesting possible urinary tract infection. Serum creatinine should be tested when renal impairment is suspected—for example, in the presence of a palpable or percussable bladder, recurrent urinary tract infection, a history of renal calculi, or where there is nocturnal enuresis suggesting possible overflow incontinence.[3]

Patients should be asked to complete a urinary frequency and volume chart (for a minimum of three days),[3] measuring timing and volume (using a measuring jug) of urine output, as well as recording the type, volume, and timing of fluids consumed. Table 1⇓ presents a guide to interpreting the results.

The international prostate symptom score, which assesses the presence and severity of symptoms, has been recommended for use in the evaluation of patients with LUTS by both American and British Urological Association guidelines.[5 15] The guideline on LUTS from the National Institute for Health and Care Excellence recommends that patients should complete the international prostate symptom score before starting medical treatment for benign prostatic hyperplasia, allowing repeat assessment for an objective measure of response to treatment.[3]

Should all men presenting with LUTS be offered a prostate specific antigen test?

In the United Kingdom, NICE recommends offering men a prostate specific antigen test if they have LUTS suggestive of BPH, an abnormal digital rectal examination, or concerns about prostate cancer.[3] The American Urological Association recommends testing in men with at least a 10 year life expectancy for whom knowledge of the presence of prostate cancer would change management, or in those for whom the measurement may change the management of voiding symptoms.[15] However, given the controversy surrounding prostate specific antigen testing as a screening tool for prostate cancer, it is vital that patients are counselled adequately before a test.[16]

When should men with LUTS be referred?

Any patient who fails to respond adequately to medical management should be referred for specialist assessment.[5] Early referral should be considered for those with abnormalities such as a digital rectal examination suggestive of possible malignancy, increased levels of prostate specific antigen, acute or chronic urinary retention, or recurrent urinary tract infection. Patients with new onset storage symptoms who do not respond to medical management or with red flag signs such as haematuria or sterile pyuria with dysuria should be referred for urological assessment to exclude secondary causes such as bladder cancer or carcinoma in situ.

What are the options for conservative management of LUTS?

Simple conservative measures may be sufficient to adequately control LUTS in some men. Little high quality evidence supports tackling lifestyle factors in the management of LUTS. Some simple changes, however, may be worth trying before treatment is started. Altering the type, timing, and volume of fluid intake can be helpful, such as decreasing the intake of caffeinated, carbonated, or alcoholic drinks to improve storage symptoms, or decreasing evening fluid consumption to improve nocturia. Treatment of chronic constipation can improve LUTS in some patients. Men with post-micturition dribble can be taught urethral milking techniques to empty residual urine pooled in the bulbar urethra. Limited evidence from a randomised trial shows that pelvic floor exercises can also help men with post-micturition dribble.[17] Men with overactive bladder should be taught bladder training techniques. These aim to increase the interval between the desire to void and the actual void; the best results may be achieved under the supervision of a trained continence adviser.[3] Evidence from a randomised controlled trial shows that participation in a formal self management programme can improve outcomes over simple lifestyle advice alone.[18]

Evidence from observational studies suggests that many commonly prescribed drugs can contribute to LUTS. Therefore all patients should be reviewed for both prescribed and over the counter drugs.[19 20]

Can men at highest risk of progressive LUTS or complications be identified?

BPH is a progressive condition, with the prostate continuing to grow as men age. Progression can be defined as the worsening of LUTS, the development of acute urinary retention, or the requirement for BPH related surgery.[21] Several baseline variables can be used to identify a population of men at high risk of clinical progression (box 4).

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Box 4 Risk factors for clinical progression in men with lower urinary tract symptoms due to benign prostatic hyperplasia

- Increasing age
- Severe symptoms (international prostate symptom score >20)
- Prostate volume >40 mL (that is, a large prostate on digital rectal examination)
- Prostate specific antigen >1.4 ng/mL
- Maximum urinary flow rate (Qmax) <12 mL/sec (that is, a slow flow rate)

3

Tables

Table 1| Interpretation of frequency and volume chart

Finding on chart	Possible causes
Normal urinary frequency, normal voided volumes	Normal
Increased urinary frequency with normal volumes	Excessive fluid intake but exclude other causes of polyuria, such as type 2 diabetes mellitus
Increased nocturnal fluid output	Excessive fluid intake during the evening. Consider nocturnal polyuria—defined as passing more than one third of total daily urine output at night (including first void of morning as a night time void, but not last void before bedtime)
Reduced volume voids with noticeable variation in voided volume	Characteristic of overactive bladder syndrome
Reduced volume voids without major variation in voided volume	“Red flag” finding, suggestive of bladder wall disease (for example, carcinoma in situ)

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