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Assessment and diagnosis of overactive bladder in women

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Abstract

Overactive bladder (OAB) is a distressing problem that affects many women in the UK. Symptoms of OAB include urinary urgency with or without urgency incontinence, usually with frequency and nocturia. This article discusses the assessment of women reporting lower urinary tract symptoms, including simple tests to be performed and specialist investigations that may be required before a diagnosis of OAB can be confirmed.

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PATIENTS WITH SYMPTOMS of urinary urgency or incontinence usually present to and are identified in the primary care setting (Department of Health (DH) 2000). Assessment and diagnosis of overactive bladder (OAB) is based on lower urinary tract symptoms and the effect these have on the person's daily life, and excluding other pathology or infection that may be causing the symptoms. This article discusses the assessment of women presenting with lower urinary tract symptoms, including the investigations necessary to diagnose OAB in the primary care setting. Some of these investigations can be performed by practice nurses or GPs, however for some patients referral to a community continence adviser may be appropriate as he or she will have more specialised knowledge and skills. This article also discusses further investigations that may be performed if it is necessary for the patient to be referred to secondary care.

Defining overactive bladder

According to Haylen *et al* (2010), OAB is characterised by urinary urgency with or without urgency incontinence, usually with frequency and nocturia, and in the absence of urinary tract infection or other obvious pathology. This definition was established following a consensus report by the International Urogynecology Association and the International Continence Society, defining standardised terminology for female pelvic floor dysfunction. The report defines urinary urgency as 'a sudden, compelling desire to pass urine which is difficult to defer' and urgency incontinence as 'involuntary loss of urine associated with urgency'. Increased daytime urinary frequency is defined as micturition that 'occurs more frequently during waking hours than previously

deemed normal by the woman', and nocturia as the 'interruption of sleep one or more times because of the need to micturate. Each void is preceded and followed by sleep' (Haylen *et al* 2010).

There are two categories of OAB: OAB dry and OAB wet. People with OAB wet experience urgency urinary incontinence, and those with OAB dry do not experience urinary incontinence. Coyne *et al* (2012) suggested that women with symptoms of OAB can usually distinguish between a normal urge or desire to pass urine and urgency, suggesting that urinary urgency is a continuum where sensations can increase or decrease in severity.

Prevalence of overactive bladder

A population-based survey in Europe showed that the overall prevalence of OAB symptoms in men and women aged 40 and over was 16.6% (Milsom *et al* 2001). OAB is a chronic long-term condition. In a study of 174 women aged 18-75 diagnosed with idiopathic detrusor overactivity in the UK, 88% of women had persisting OAB symptoms lasting ten years or more (Garnett *et al* 2009). Reeves *et al* (2006) suggested that the prevalence of OAB in the UK will rise by 24% over the next 20 years because of the ageing population.

OAB is a distressing problem that can significantly affect a woman's quality of life by constraining her social, physical, occupational and sexual activities. Despite an improvement in diagnosis and treatment and increased awareness, OAB remains under-reported as many people may be reluctant to discuss the condition with their healthcare provider or family (Abrams *et al* 2000).

TABLE 1

Types of incontinence

Type	Definition
Stress urinary incontinence	Involuntary leakage of urine on effort or exertion, or on sneezing or coughing.
Urgency incontinence	Involuntary leakage of urine associated with urgency.
Mixed urinary incontinence	Involuntary leakage of urine associated with urgency as well as exertion, effort, sneezing or coughing.
Nocturnal enuresis	Loss of urine during sleep.
Overflow incontinence	Involuntary leakage of urine associated with poor bladder emptying.
Functional incontinence	Urinary incontinence where no organic cause can be found. May occur as a result of cognitive and physical factors.
Postural urinary incontinence	Involuntary loss of urine associated with change of body position, for example rising from a seated or lying position.
Continuous urinary incontinence	Continuous involuntary loss of urine.
Insensible urinary incontinence	Leakage of urine where the woman has been unaware of how it occurred.
Coital incontinence	Involuntary loss of urine with coitus. May occur with penetration or intromission, or during orgasm.

(Haylen *et al* 2010)

Assessment

Guidelines from the National Institute for Health and Care Excellence (NICE) (2006) on the management of urinary incontinence in women emphasise the importance of a comprehensive initial assessment to establish the type of incontinence and to rule out infections or other causes of symptoms. Gerrits *et al* (2008) revealed that most women who presented to GPs with urinary incontinence were not managed according to NICE (2006) guidelines, and one of the main reasons for this was lack of time during the clinical encounter. To overcome this problem, primary care clinicians may make use of the services provided by continence specialist nurses. These nurses provide a comprehensive assessment of patients with continence needs, including the effect on their family and carers and, if applicable, will implement conservative and pharmacological management plans.

The DH's (2000) guidance on good practice in continence services suggested integral components that should be performed during a routine continence assessment, and this is discussed in the following text.

Urological symptoms

Women with OAB may present with many symptoms, including daytime frequency, urgency, urgency incontinence, nocturia and nocturnal enuresis. Although these are the most common symptoms associated with OAB, there are many other types of incontinence that women may experience (Table 1). The onset of urinary symptoms and their severity should be recorded. Some women might also describe mixed symptoms of OAB and stress incontinence. For these women, the most troublesome symptom should be treated first. It is important to assess how symptoms are affecting quality of life and if further assessment and treatment are required. Examples of relevant history-taking questions for patients with possible OAB are listed in Box 1 (McCrimmon 2005).

Medical history

It is important that a complete medical history (gynaecological, obstetric, surgical and neurological) is taken. Assessment of the individual's mobility, manual dexterity, hearing, eyesight and mental alertness should be performed (DH 2000). For example, reduced dexterity may mean that individuals cannot get their clothing unbuttoned quickly, so improving access to the toilet and suitable clothing can be helpful. In addition, these assessments may help in the planning of suitable therapies and in meeting patients' additional needs. The presence of coexisting conditions that may affect bladder function and cause increased urgency and frequency need to be considered (Box 2).

Medication history

Many medications can exacerbate symptoms of OAB. A review of the patient's concurrent medications should be undertaken. For example, taking diuretics regularly may increase urinary frequency. Alpha blockers cause relaxation of the striated muscle of the urethral sphincter, causing urinary leakage. Parasympathomimetics increase the contractility of the detrusor muscle and may exacerbate symptoms of OAB (Rosenberg 2007). Medications that might cause or exacerbate symptoms of urinary incontinence are listed in Table 2.

Physical examination

An abdominal and vaginal examination should be performed and if indicated, a rectal examination should be carried out. The presence of pelvic organ prolapse, for example a cystocele, may cause urinary urgency and frequency as it drags on the trigone and causes messages of bladder fullness to be sent to the brain (Getliffe and Dolman 2003).

Performing a bimanual examination of the vagina and abdomen will help to rule out pelvic masses, for example ovarian cysts, fibroids and uterine enlargement, which can also cause urinary symptoms. For post-menopausal women with an atrophic vagina and symptoms of OAB, oestrogen deficiency may be a contributory factor in their symptoms (Parsons and Cardozo 2004). Treatment with topical vaginal oestrogens may resolve symptoms (Cardozo *et al* 2004).

A rectal examination is indicated where faecal impaction may be suspected as a contributory factor, or if the woman reports symptoms of faecal urgency or anal incontinence. Recommendations for the physical examination of patients with urinary incontinence are listed in Box 3.

Urinalysis

Urinalysis could indicate the presence of serious disease, for example renal disease, biliary disease or malignancy (Steggall 2007). Testing should be undertaken to rule out the presence of an underlying urinary tract infection, which can cause symptoms of frequency, urgency and incontinence. Lower urinary tract symptoms can be exacerbated or caused by a bacterial infection, and effective treatment with appropriate antibiotics may resolve the symptoms. In some situations, such as investigating a patient with recurrent urinary tract infections, it is necessary to request cultures for organisms such as *Mycoplasma hominis*, *Ureaplasma urealyticum* and *Chlamydia trachomatis*.

Bladder diaries

Bladder diaries can aid evaluation of patients with lower urinary tract symptoms and voiding dysfunction. They can be used to record time of micturition, voided volume, incontinence episodes, pad use and other information such as fluid intake, and degree of urgency and incontinence (Srikrishna *et al* 2007). A completed bladder diary

BOX 1

History-taking questions for patients with possible overactive bladder

- Do you go to the toilet more than eight times per day?
- Do you wake up more than once per night needing to go to the toilet?
- Do you have to hurry to reach the toilet?
- Do you ever not reach the toilet in time?
- If you leak urine, is it a large amount?

(McCrimmon 2005)

BOX 2

Causes of urinary urgency and frequency

Urological:
- Bladder calculus.
- Bladder tumour.
- Chronic urinary residual.
- Detrusor overactivity.
- Interstitial cystitis.
- Radiation cystitis and/or fibrosis.
- Small capacity bladder.
- Urethral diverticulum.
- Urethral syndrome.
- Urinary tract infection.

Medical:
- Congestive heart failure.
- Constipation.
- Diabetes insipidus.
- Diabetes mellitus.
- Impaired renal function.
- Upper motor neurone lesion.

Gynaecological:
- Cystocele.
- Pelvic mass (fibroids).
- Previous pelvic surgery.

Genital:
- Atrophy.
- Herpes.
- Urethral carbuncle.
- Urethritis.
- Vulvovaginitis.
- Warts.

General:
- Anxiety.
- Excessive fluid intake.
- Habit.
- Pregnancy.

assists history taking, and has been shown to be a valuable and reliable tool in the assessment of micturition patterns (Roe *et al* 2007). Frequency volume charts help to establish which patients are drinking excessively, and their habits relating to fluid intake and toileting. However, these can be difficult to complete for patients with functional and cognitive impairments, and therefore are inappropriate for use with these patients.

Quality of life

Symptom and quality of life scoring is used to quantify the effect of urinary symptoms on patients and provides a measure that can be used to assess treatment outcomes. There are many condition-specific questionnaires that can be used in the assessment of women with urinary incontinence. These include the King's Health Questionnaire, International Consultation on Incontinence Modular Questionnaire (ICIQ), Bristol Female Lower Urinary Tract Symptoms, Overactive Bladder Questionnaire (OAB-q), Urogenital Distress Inventory and Incontinence Impact Questionnaire (Abrams 2013). The effect of symptoms on quality of life and desire for treatment should be assessed as this will affect concordance and adherence to therapy (Abrams *et al* 2009). Many of these questionnaires can be obtained from the ICIQ homepage (www.iciq.net/index.html).

Post-micturition residual volume

Measurement of post-void residual volume – the amount of urine in the bladder after a voluntary void – is useful to evaluate voiding dysfunction (Kelly 2004). The symptoms of voiding dysfunction can mimic those of OAB, with implications for management; specifically, drug treatments for OAB tend to decrease voiding efficacy and can precipitate urinary retention (Dwyer and Rosamilia 2002). Residual urine volume can be measured using a bladder ultrasound or an 'in and out' catheter.

'Red flags'

Once an initial assessment has been performed, there are some symptoms or findings that warrant referral to secondary care for specialist investigation. Examples of such symptoms or 'red flags' are listed in Box 4, however this is not an exhaustive list.

Treatment pathways

The NICE (2006) guidelines on the management of urinary incontinence in women included a framework of best practice for patients presenting with symptoms of OAB. The framework recommends that following initial assessment, patients with urge or mixed urinary incontinence should receive at least six weeks of bladder retraining as first-line treatment. If this is not

TABLE 2

Medications that might cause or exacerbate symptoms of urinary incontinence

Medication	Effects
Angiotensin-converting enzyme inhibitors	Diuresis, cough with relaxation of the pelvic floor leading to stress urinary incontinence.
Alpha-receptor antagonists	Urethral relaxation and decreased urethral resistance, causing stress urinary incontinence.
Alpha-adrenergic agonists	Increased urethral resistance causing post-void dribbling, straining, hesitancy and urinary retention.
Anti-cholinergics (H1 antihistamines, anti-parkinsonian agents)	Urinary retention, with symptoms of post-void dribbling, straining, hesitancy in urine flow, overflow incontinence and faecal impaction.
Antipsychotics and/or sedatives, hypnotics	Sedative effect, causing confusion, may relax detrusor muscle leading to urinary retention.
Beta-receptor antagonists	Urinary retention.
Caffeine, also theophylline (methylxanthines)	Polyuria and bladder irritation.
Calcium channel blockers	Urinary retention and faecal impaction.
Diuretics	Polyuria, leading to urgency and frequency.
Neuroleptics (chlorpromazine)	Anticholinergic effect and sedation.
Opioids	Urinary retention, sedation, faecal impaction and delirium.
Tricyclic antidepressants	Anticholinergic and alpha-receptor antagonist effects, causing post-void dribbling, straining and hesitancy in urine flow.

(Rosenberg *et al* 2007)

effective, immediate release generic oxybutynin (an antimuscarinic agent) should be used as first-line drug treatment. The NICE (2006) guidelines are in the process of being updated and are expected to be published in September 2013.

In addition, the International Consultation on Incontinence published guidelines on initial and specialised management of female urinary incontinence (Abrams *et al* 2013).

Specialist investigations

For women referred to secondary care for further investigation of OAB symptoms, several diagnostic tests may be performed. Investigations are only valid if targeted at the appropriate population and the risks of invasive treatments must be balanced against the consequences of under-diagnosis.

Tests such as uroflowmetry, urodynamics and cystourethroscopy as well as radiological imaging, for example intravenous urogram and magnetic resonance imaging, may be undertaken to assess for detrusor overactivity and to observe anatomical abnormalities that may affect choice of management.

Uroflowmetry

Uroflowmetry is a non-invasive screening test for voiding difficulties in women with lower urinary tract dysfunction and helps to determine which patients require further investigation (Abrams *et al* 2005). It is a measurement of the urinary flow rate. To perform this test, women void while seated on a commode connected to a flowmeter that records the volume of urine passed per unit time. A post-void residual volume can be measured following this test.

Urodynamics

There are three types of urodynamic tests that can be performed to investigate symptoms of OAB:

- Subtracted cystometry (cystometrogram (CMG)) – measures the relationship between the detrusor pressure and bladder volume on filling, and between the detrusor pressure and urine flow rate on voiding.
- Video urodynamics (voiding cystourethroscopy (VCU)) – measures the same pressure relationships as in subtracted cystometry, but also uses fluoroscopic images to visualise the lower urinary tract.
- Ambulatory urodynamics monitoring is used to investigate detrusor overactivity, where CMG or VCU have failed to replicate the symptoms that are experienced by the patient in her normal environment. It follows the same principles as subtracted cystometry, but under more physiological conditions (for example, patients fill their bladders naturally by drinking) and bladder pressure is assessed over a longer period of time (for example, four hours). It also aims to reproduce the patients' day-to-day activities.

Cystourethroscopy

Cystourethroscopy visualises the inside of the bladder and urethra. It is an invasive but relatively low-risk procedure that can be undertaken for

BOX 3

Recommendations for the physical examination of patients with urinary incontinence

General health:
- Observe mobility and dexterity and any other health problems, including obesity and mental status.

Abdominal/flank examination:
- Check the abdomen for masses, bladder distention and relevant surgical scars.

Pelvic examination:
- Examine the perineum and external genitalia, including tissue quality and sensation.
- Examine the vagina (half-speculum) for prolapse.
- Carry out bimanual pelvic and anorectal examination for pelvic mass, pelvic muscle function, faecal impaction, anal tone and haemorrhoids.
- Conduct stress test for urinary incontinence.

Simple neurological examination
- Assess function of lumbosacral spinal cord by testing feet for normal and equal strength.
- Test for sharp and dull sensations around the thighs.
- Test sensation of perianal skin.

(Adapted from Scientific Committee of the First International Consultation on Incontinence 2000, Abrams *et al* 2010)

BOX 4

'Red flags' warranting referral to secondary care for specialist investigation

- Failed or previous continence surgery.
- Complex symptoms, such as a combination of storage and voiding symptoms.
- Suspected neurological disease.
- Voiding difficulties.
- Recurrent lower urinary tract infections.
- Visible haematuria, or microscopic haematuria if aged 50 and over.
- Symptomatic urogenital prolapse.
- Urogenital atrophy.
- Failure of conservative management.
- Persistent bladder or urethral pain.
- Suspected malignant mass arising from the urinary tract.
- Clinically benign pelvic masses.
- Associated faecal incontinence.
- Suspected urogenital fistulae.
- Previous pelvic cancer surgery.
- Previous pelvic radiation therapy.

(National Institute for Health and Care Excellence 2006)

women of any age as a day case. The choice between a rigid or flexible cystoscope and the anaesthetic used will depend on the individual and the preferences of the operator. During this test, a camera is passed via the urethra into the bladder to visualise the inside of the bladder. The presence of bladder calculi or tumours can be assessed and a biopsy of the lining of the bladder can be performed to rule out chronic inflammation of the urothelium, which can occur in patients with recurrent urinary tract infections and cause symptoms of OAB.

Conclusion

Several investigations can be performed to diagnose OAB in women, and many of these can be performed in primary care by appropriately trained healthcare professionals. It is essential to ensure that a thorough physical examination is completed, a clinical history is obtained and urinalysis is performed to rule out underlying infection or other more serious diseases.

Adherence to NICE (2006) guidance will provide a safe structure of recommended assessments and ensure appropriate initial management in primary care before patient referral to secondary care for more complex investigation. The quality of assessment will be enhanced by the participation of the patient and carers. Therefore, the healthcare professional needs to have good interpersonal skills to foster a trusting relationship with patients and carers, encouraging them to express their feelings and views about their problems **NS**

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