Effective assessment and management of nocturia in the older person

Ann Yates

Nocturia is a common lower urinary tract symptom that mainly affects older people. Nocturia causes excess urination at night and, because of associated night-time rising, can also result in falls and fractures. Nocturia has a range of presentations, therefore it is vital that nurses understand how to assess the condition accurately to provide appropriate treatment. This article examines the effective assessment of nocturia, as well as detailing the various lifestyle treatment options that can be used, such as a targeted reduction of fluid intake, weight loss and altered medication profiles. Medication and surgical options should only be used following a trial of lifestyle interventions.

KEYWORDS:
- Continence
- Falls
- Lower urinary tract symptoms
- Nocturia
- Quality of life
- Urinary incontinence

Nocturia is a widespread condition and one of the most significant lower urinary tract symptoms (LUTS) (Oelke et al, 2017). In the past, nocturia was defined by the International Continence Society as: ‘The interruption of sleep one or more times to void’ (Van Kerrebroeck et al, 2002). However, this was revised in 2017, with the accepted definition being changed to: 'Waking to pass urine during the main sleep period' (Hashim et al, 2019).

This article provides an overview of nocturia and the conditions that contribute to its development, as well as detailing assessment, treatment and management options available to nurses, which will help them to improve the older person’s health status and quality of life.

CLASSIFICATION

Nocturia is classified into the following categories (Prince et al, 2012; Oelke et al, 2017; Yates, 2017):
- Nocturia due to changes in bladder capacity, for example due to bladder calculi (otherwise known as bladder stones), enlarged prostate, neoplasms

Nocturia is a complex, bothersome symptom that is connected with a significant decline in patients' health status. This can negatively affect patients' quality of life, causing sleep deprivation and falls, and increasing morbidity and mortality (Oelke et al, 2017). The prevalence of nocturia is similar in men and women and the condition affects 28–93% of people aged 40 years or older (Oelke et al, 2017). However, prevalence increases with age, with rates of 29–59% seen in men and 28–62% in women in the 70–80-year age group, and rising to 80–90% in those aged 80 years and over, with 30% of these voiding two or more times per night (Kujubu and Aboseif, 2007; Oelke et al, 2017).

This condition affects over 25 million people in the UK and is associated with increased morbidity and mortality (Oelke et al, 2017). It is estimated that 9.9 million people visit their general practitioner (GP) annually due to nocturia (Johnsen et al, 2009). The prevalence of nocturia is similar in men and women and the condition affects 28–93% of people aged 40 years or older (Oelke et al, 2017). However, prevalence increases with age, with rates of 29–59% seen in men and 28–62% in women in the 70–80-year age group, and rising to 80–90% in those aged 80 years and over, with 30% of these voiding two or more times per night (Kujubu and Aboseif, 2007; Oelke et al, 2017).

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The number of voids after falling asleep and report of waking up at least once to pass urine.

- Bladder outflow obstruction, for example enlarged prostate, urethral strictures
- Overactive bladder, detrusor (smooth muscle of the bladder wall) instability (urgency and frequency
- Urinary retention (large residual volumes)
- Urinary tract infection
- Decreased bladder capacity
- Bladder cancer/bladder stones
- Cystitis
- Pelvic dysfunction (prolapse)
- Neurogenic bladder dysfunction, for example, due to Parkinsonism or stroke
- Chronic kidney disease

- Polydipsia (excessive thirst, for example, in diabetes)
- Excessive drinking in the evenings
- Alcoholism

Increased fluid intake

Excess fluid intake or fluid intake at inappropriate time, for example before bedtime

- Increased urine at night in older adults (for example, over 33% of the total urine passed in a 24-hour period) may be due to
  - Oedematous state, for example in congestive cardiac failure, renal disease, daytime fluid retention, swollen legs due to venous insufficiency
  - Obstructive sleep apnoea
  - Excess alcohol/caffeine intake
  - Excess night time fluid intake
  - Medications, for example diuretic therapy

Nocturnal polyuria

Excessive production of urine after the last void before falling asleep

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  - Obstructive sleep apnoea
  - Excess alcohol/caffeine intake
  - Excess night time fluid intake
  - Medications, for example diuretic therapy

Global/24-hour polyuria

The total volume of urine passed during a 24-hour period excluding the first void of the morning, but including the first void of following morning. Defined as increased total urine production (>40mL/kg/24 hours), for example exceeding 3L

- Primary polydipsia
- Diabetes mellitus
- Diabetes insipidus
- Renal insufficiency
- Oestrogen deficiency in women

The impact of nocturia on quality of life is comparable to the effects of other conditions, such as gout, hypertension, diabetes and angina. It also affects an individual’s perception of their age (i.e. people with nocturia feel older), as well as contributing to obesity and higher rates of death in patients with coronary heart disease. Nocturia can also lead to relationship disturbances or breakdown and increased admission to care homes (Varilla et al, 2011).

ASSESSMENT OF NOCTURIA IN OLDER PEOPLE

It is vital that healthcare professionals understand the complexities of nocturia and how different types of nocturia present before any treatment options are considered. This should be done by undertaking a thorough holistic assessment as outlined in Table 2. It is important that the nurse enquires as to the patient’s perception of their nocturia, and that the frequency of their night-time voiding is discussed.

Fluid intake and use of charts

One of the most important aspects of nocturia assessment is to monitor the patient’s fluid consumption and record their urinary output via a frequency volume chart (FVC) or bladder diary, as well as understanding what types of fluid they are consuming and when.

The amount and type of fluid an individual consumes during the day should be evaluated, as excessive daytime fluid consumption can be responsible for nocturia (Yates, 2017). Fluid intake at bedtime can also exacerbate nocturia, as can drinking caffeine-based drinks or alcohol. The use of an FVC or bladder diary is extremely useful for nurses when attempting to identify nocturia. The FVC or bladder diary can distinguish between different types of nocturia.
### Table 2: Components of a nocturia assessment

<table>
<thead>
<tr>
<th>Component</th>
<th>Procedures</th>
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| Patient history    | - Take medical history, with particular focus on heart/renal failure, diabetes, sleep apnoea and/or lung disease  
                      - Note any medication, particularly diuretics, such as furosemide or calcium channel blockers such as amlodipine or nifedipine (especially those highlighted in Table 3)  
                      - Complete a full continence assessment and note the patient’s daily fluid consumption before bedtime — including type and volume, and intake |
| Physical examination | - Check blood pressure, waist circumference and body weight  
                      - Complete cardiovascular and neurological assessments  
                      - Conduct a digital rectal examination if appropriate, and rule out any urinary retention |
| Investigations     | - Bladder voiding diary/frequency volume chart  
                      - Post-void residual scan  
                      - Urinalysis if the patient exhibits symptoms of a urinary tract infection or to rule out any abnormalities  
                      - Blood tests (as appropriate; these may include serum electrolytes and creatinine, serum glucose/HbA1c and serum lipid profile, as well as prostate specific antigen (PSA), if clinically relevant) |

### Table 3: Medicines that affect nocturia (Prince, 2012; Yates, 2017)

<table>
<thead>
<tr>
<th>Action</th>
<th>Medicine types</th>
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| Increased urinary output            | - Diuretics  
                      - Selective serotonin reuptake inhibitors (SSRI) antidepressants  
                      - Calcium channel blockers (antihypertensive drugs)  
                      - Lithium  
                      - Tetracyclines (antibiotic) |
| Induce bladder storage              | - Anticholinergics (commonly used in urinary incontinence)  
                      - Cholinesterase inhibitors (used in the treatment of dementia)  
                      - Xanthines (bronchodilators used in asthma)  
                      - Beta-blockers |
| Precipitate insomnia and affects central nervous system | - Stimulants, such as dopamine neurotransmitters, amphetamines  
                      - Anti-hypertensives  
                      - Decongestants  
                      - Psychotropic medications  
                      - Parkinsonian medications  
                      - Phenytoin (anti-seizure drug) |

Even a basic FVC can be used to record the patient’s maximum bladder capacity, voiding times and how these are divided between night and day, voided volumes, and episodes of nocturia, as well as approximating when the patient falls asleep (Figure 1).

In the example detailed in Figure 1, the patient has a maximum bladder capacity of 400mls, passes urine six times during the day and four times at night, with the total amount voided at night (1,100mls) amounting to over 33% of the total volume passed in 24-hour period (2,700mls). Thus, the nurse can postulate that the patient is experiencing nocturnal polyuria. This could be due to this patient’s oedematous state, which in turn may be caused by:

- Congestive cardiac failure  
- Renal disease  
- Daytime fluid retention  
- Swollen legs due to venous insufficiency  
- Obstructive sleep apnoea  
- Alcohol/caffeine input  
- Excess night-time fluid intake  
- Medication, such as diuretic therapy.

If an individual has already been assessed and provided with products such as continence pads, the voided volume can still be calculated by weighing a dry pad and then weighing a used wet pad (following local infection control guidance). For example, 1 gram = 1 ml, i.e. dry pad weight = 10 grams, wet pad weight = 290 volume, voided urine passed into the pad = 280mls (Yates, 2017).

**Medication**

There are numerous medications that can affect nocturia, for example increasing the patient’s urinary output, inducing bladder storage issues, affecting sleep patterns or causing insomnia, or affecting the central nervous system (CNS). A summary of medications and their effects is shown in Table 3.
Physical examination
Before any treatment options are considered, comprehensive examination similar to that performed for the assessment of urinary incontinence should be undertaken. This should include (Yates, 2017):
- Examination of the cardiovascular and pulmonary systems: focusing on fluid overload and congestive cardiac failure
- Palpation of the abdomen: assessing for suprapubic masses and tenderness, and checking for bladder distension due to an abnormally high post void residual urine (a bladder scan is the preferred option for checking residual urine)
- Rectal examination: concentrating on faecal impaction, prostate size and pelvic floor. The bowel is said to be compliant, as the anal resting pressure (which is measured in centimetres of water) is low and does not increase when there is an increase in rectal content and it is full of faeces. This can impact on faecal loading and impaction within the rectum. The bowel compliance has no impact on the bowel closure mechanism. However, the pelvic floor and both internal and external sphincter muscles contribute to this closure mechanism. The internal anal sphincter is able to maintain tonic contraction for long periods of time, while external sphincter under voluntary control is fatigable. Damage to all parts can contribute to urinary/bowel problems (Emmanuel, 2004)
- Examination of lower extremities: assessing for the presence of pitting oedema (following pressure applied to a small area of skin, the indentation remains even following release of the pressure; due to excess fluid in the tissues)
- Neurological examination: looking for signs of either mental dysfunction, e.g. dementia, or physical nerve damage, which can cause functional dysfunction, e.g. cerebrovascular accident, multiple sclerosis.

Assessment of urinary function should also be completed to identify:
- Symptoms of obstruction, such as from an enlarged prostate, prolapse, urethral strictures or constipation
- Voiding hesitancy
- Weak urine stream, or incomplete emptying, or intermittency, i.e. when someone starts to void but it keeps stopping/starting for perhaps one of the reasons above. So instead of a good powerful flow it takes longer to empty bladder
- Urinary frequency, urgency or urinary incontinence (Johnson, 2017).

TREATMENT
Treatment for nocturia can involve non-pharmacological modalities, including behavioural therapies and lifestyle changes (Box 1); pharmacological interventions (Box 2); or surgical options. Surgical options are usually restricted to prostate surgery. However, nocturia is usually non-responsive to this type of surgery (Doorn and Bosch, 2012). Treatment options should start with lifestyle and behavioural changes, which should be attempted for up to
three months before other treatments are tried (Oelke et al, 2017).

CONCLUSION

Nocturia is a common multifaceted condition that commonly affects older people. It requires a comprehensive assessment and bespoke treatment options for each individual. It is vital that an FVC is completed and the patient's medication reviewed as part of any assessment for nocturia. Treatment options should start with lifestyle and behavioural changes, which should be attempted before other treatments such as pharmacological interventions or surgery. Patients who do not respond to lifestyle interventions should be considered for specialist assessment.

KEY POINTS

- Nocturia is a common condition particularly among older people.
- Nocturia can have a significant negative effect on the individual's quality of life and health status.
- Nocturia may signify the presence of an undiagnosed medical condition.
- A completed fluid volume chart is essential to understanding which type of nocturia is affecting the patient.
- Non-pharmacological, behavioural and lifestyle changes should be recommended initially.

REFERENCES


