

# Nocturia, enuresis and snoring: an unusual combination in an adult?

## Introduction

Obstructive sleep apnoea hypopnoea syndrome is a relatively common condition. Its incidence is rising because of the increased prevalence of obesity. This article discusses a patient with significant symptoms of nocturia presenting with symptoms of obstructive sleep apnoea hypopnoea syndrome. Nocturia, with its many causes, is an unusual symptom and could be a presenting feature in patients with obstructive sleep apnoea hypopnoea syndrome, which is not well recognized.

## Discussion

Obstructive sleep apnoea hypopnoea syndrome is characterized by increased daytime sleepiness caused by partial or complete upper airway collapse leading to recurrent arousals and disturbed sleep. Obesity is a major risk factor.

Obstructive sleep apnoea hypopnoea syndrome is a relatively common problem, with an estimated incidence of 4% in middle-aged men and 2% in women aged 30–65 years (Young et al, 1993). It also carries significant morbidity and health burden with associated cardiovascular risks such as hypertension and metabolic syndrome. Its incidence is likely to rise as a result of the increased prevalence of obesity. Clinically patients present with disturbed snoring, witnessed apnoeas, daytime sleepiness, tiredness with un-refreshed sleep, memory impairment, irritability and headaches.

Nocturia is defined as voluntary wakening to urinate in the night. Although it is a common symptom of urological conditions such as benign prostatic hypertrophy and unstable bladder, it is also associated with medical conditions such as obstructive

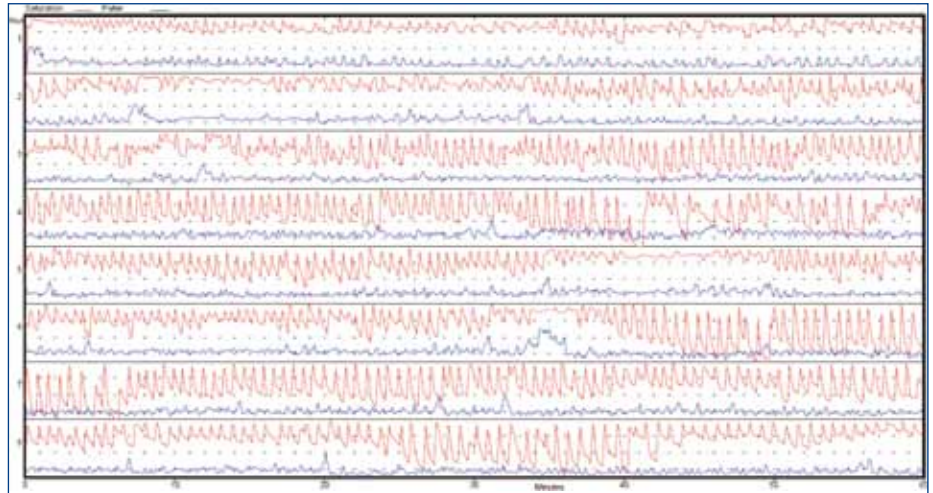
sleep apnoea. In one study pathological nocturia (two or more urination events in the night) was seen in as many as 48% of patients with obstructive sleep apnoea and women were affected the most (Hajduk et al, 2003). The frequency of nocturia also seems to correlate with the severity of obstructive sleep apnoea hypopnoea syndrome (Hajduk et al, 2003; Guilleminault et al, 2004). Diabetes mellitus, diabetes insipidus and diuretic use may also cause nocturia and polyuria. Although very common in childhood obstructive sleep apnoea hypopnoea syndrome, enuresis is an unusual symptom in adults with obstructive

sleep apnoea hypopnoea syndrome and is rarely reported.

The pathophysiology of nocturia in obstructive sleep apnoea hypopnoea syndrome is not clearly defined, although several potential mechanisms have been postulated including raised levels of atrial natriuretic peptide secondary to hypoxia (Lin et al, 1993) and apnoea leading to negative intrathoracic and positive intra-abdominal pressure causing urge to micturate (Arai et al, 1999).

Continuous positive airway pressure is the mainstay of treatment with patients with symptomatic sleep apnoea.

**Figure 1. Pulse and oxygen saturation during the 8 hours of the study. There are significant desaturations with pulse fluctuations consistent with obstructive sleep apnoea hypopnoea syndrome.**



## Case Report

A 41-year-old man was seen in a respiratory clinic with symptoms of snoring, sleepiness during the day, enuresis and nocturia. He was waking up a minimum of 6–7 times to micturate every night. He had a past medical history of hypertension. His medication included lisinopril, omeprazole and simvastatin. He denied significant alcohol intake. On examination he was obese with a body mass index of 32 kg/m<sup>2</sup>, his blood pressure was raised at 170/120 mmHg. Chest examination revealed clear lung fields and otherwise unremarkable general examination. His collar size was 45 cm. His blood tests suggested normal renal, thyroid, calcium and blood sugar profiles. The mid-stream urine did not show any evidence of urinary tract infection. He had an elevated score of 15/24 on the Epworth Sleepiness scale (a questionnaire tool to assess daytime sleepiness).

He subsequently had an overnight oximetry, which showed 4% oxygenation desaturation index of 80.6 per hour (Figure 1). This is consistent with severe obstructive sleep apnoea hypopnoea syndrome. He was commenced on continuous positive airway pressure with substantial improvement in his sleep apnoea symptoms, including nocturic frequency, and his enuresis is completely resolved.

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Continuous positive airway pressure also reduces the reported nocturia events (Kiely et al, 1999; Guilleminault et al, 2004; Fitzgerald et al, 2006; Margel et al, 2006) and the effect is instantaneous (Margel et al, 2006). Enuresis also seems to resolve in patients treated with continuous positive airway pressure (Kramer et al, 1998). However, many of these are intervention studies and randomized controlled studies are needed to evaluate the effect of continuous positive airway pressure in reducing enuresis and nocturia events.

## Conclusions

Nocturia and enuresis are distressing symptoms of obstructive sleep apnoea likely to also contribute to disturbed sleep

during the night. Patients may present to various subspecialities and increased awareness of the association between obstructive sleep apnoea hypopnoea syndrome and nocturia is essential in recognizing this group of patients early to provide appropriate treatment. **BJHM**

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