



Assessment and management of the patient presenting with snoring

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BACKGROUND Snoring is experienced regularly by approximately 30% of male adults, of whom one in seven will have obstructive sleep apnoea syndrome. Women experience snoring and apnoea at a rate of approximately half of that of men.

OBJECTIVE General practitioners have a key role in the management of snoring. Patients whose symptoms of excessive sleepiness and loud habitual snoring more than three times per week, should alert the GP to the presence of apnoeas.

DISCUSSION The co-existence of systemic essential hypertension, especially if more than two drugs are required for its control, or any other cardiovascular disease, would increase suspicion of significant sleep apnoea. Conservative measures such as reduction in weight, alcohol and nasal resistance can be instigated in such patients immediately. Patients who have failed conservative treatment, or have suspected moderate to severe apnoea, need to be referred to a physician trained in sleep disorders for further evaluation and management. Snoring represents a trumpeters introduction to the three spectra of sleep related breathing disorders. These vary from simple snoring to profoundly severe snoring associated with obstructive sleep apnoea syndrome and cardiovascular sequelae, through to orthopnoea, paroxysmal nocturnal dyspnoea and fragmented sleep associated with unstable or decompensated cardiovascular and/or pulmonary disease.

The precise prevalence of snoring is not well studied. This may, in part, be related to:

- the intermittent nature of mild snoring
- the intensity and quality of the sounds of snoring, and
- the different levels of tolerance by bed partners before complaints are made!

However, in a questionnaire study of more than 4000 Finnish middle aged men, 60% were occasional snorers, 29% were habitual snorers, and only 11% were nonsnorers.¹

Despite the uncertainty of snoring prevalence,

24% of otherwise healthy middle aged men and 9% of women have evidence of obstructive sleep apnoea (OSA) defined by greater than or equal to five apnoeas or hypopnoeas per hour's sleep. However, only 4% of men and 2% of women are symptomatic³ (Table 1) and have the syndrome. One may argue that the test is too sensitive. Alternatively, given the strong epidemiological links between OSA and cardiovascular disease,^{4,7} car accidents,⁸ and occupational accidents,⁹ irrespective of OSA symptoms, it could be argued that symptoms are insufficiently sensitive to detect disease.

Table 1. Obstructive sleep apnoea (hypopnoea) syndrome

Apnoea hypopnoea index of >5 plus two or more of the following symptoms:

- loud habitual snoring
- nocturnal choking or dyspnoea
- systemic hypertension
- heart failure
- ischaemic heart disease
- polycythemia
- excessive daytime sleepiness
- neurocognitive deficit
- stroke
- nocturia

Table 4. History which suggests mild OSA

- snoring quietly (not audible in another room)
- snoring occurs <3 nights per week
- snoring occurs only in supine position
- snoring intermittent throughout the night
- no associated apnoeas
- no associated cardiovascular disease
- no associated excessive daytime sleepiness
- no structural upper airway pathology

Table 5. Conservative management of OSA

- weight reduction
- reduction in alcohol
- reduction in nasal resistance such as nasal steroid spray
- reduction in drugs which promote OSA (Table 2)
- avoid sleep deprivation

Table 2. History of factors that may increase snoring

- sleep debt
- alcohol related to volume, type, and days per week
- medications (eg. oral steroids, anticonvulsants, sedatives)
- weight gain
- nasal obstruction - allergic rhinitis, past trauma
- medical conditions (eg. congestive heart failure, fluid retention)

Table 3. Physical examination

- body weight, height and body mass index
- appearance - hypothyroid, acromegalic, Marfanoid, Down's syndrome, plethoric, polycythemic
- shirt collar size or neck circumference (>43 cm indicates high chance of OSA)
- nasal resistance or obstruction
- uvula - Mallampati index (Figure 1)
- maxilla - narrow, high arched, micro
- mandible - retrognathia, micrognathia ('v' shaped face)
- mouth opening size (<2.5 cm indicates high chance of OSA)
- dentition
- cardiopulmonary examination
- signs of chronic liver disease
- abdominal girth (>127 cm indicates a high chance of OSA)
- neurological (eg. postpolio, past stroke, neurodegenerative disorder)

Aetiology

Snoring results from intermittent obstruction at various levels of the upper airway.² At the level of the uvula, collapse may occur due to posterior movement of the uvula. At the tongue base, pharyngeal wall collapse may occur laterally, circumferentially, or simply in the anteroposterior

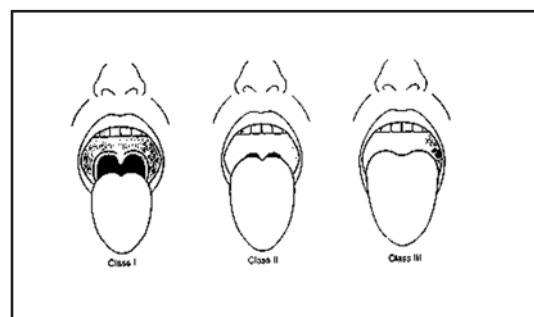


Figure 1. Mallampati classification

direction. This collapse may occur during inspiration, or passively, upon expiration. The epiglottis may also close over the trachea like a trap door or contract circumferentially if cartilage pathology such as chondromalacia is present or the epiglottis is abnormally shaped.

Accordingly, the intensity and tone of snoring will vary depending on the site and mode of airway collapse. Whether sensitive analysis of the sound of snoring can determine the site of upper airway occlusion remains to be determined.

The role of the GP

What role should the general practitioner have in the management of the snorer? Patients who have had an appropriate history (Table 2) and examination (Table 3), and are deemed to have 'simple

Table 6. History which suggests moderate to severe OSA

- excessive fatigue or tiredness (eg. any motor vehicle or occupational accident)
- ischaemic heart disease (especially nocturnal angina and infarcts)
- rapid weight gain
- heart failure (especially if orthopnoea or paroxysmal nocturnal dyspnoea)
- upper airway structural abnormalities
- patients deemed 'difficult to intubate' by anaesthetists

snoring' (Table 4), are likely to respond to conservative management under the care of the GP (Table 5).

General practitioners need to consider referring patients who fail conservative treatments, or have a high index of suspicion of moderate to severe OSA (Table 6) in whom more aggressive treatment is required (Table 7) to a sleep disorders specialist.

Patients with moderate to severe OSA need ongoing GP management as they begin long term treatment with devices such as continuous positive airway pressure (CPAP), mandibular advancement splints or corrective surgery (Table 7). It is important to be aware of the common side effects and the simple corrective measures available (Table 8). Compliance with positive airway devices should be monitored and documented.

Once a patient is diagnosed with sleep apnoea, it is often worthwhile screening family members for similar predisposing risk factors such as facial structure and lifestyle habits. This can enable the preventive measures to be instigated or early treatment to be initiated before the development of cardiovascular disease.

Specialist assessment

General practitioners keen to have a greater involvement in the management of sleep disorders can consider their involvement with sleep disorders specialists and continuing medical education in a specialised sleep centre, perhaps on a regular part time basis. This would allow their primary practice address to be an outreach centre for a central sleep centre. Given the high prevalence of apnoea, approximately twice that of asthma (~11%),¹⁰ such a model

Table 7. Nonlifestyle treatment options

- Oral appliances
 - mandibular advancement (eg. fixed or adjustable)
 - maxillary expansion
 - tongue retaining
- Positive airway pressure via nasal, oral or oronasal masks
 - constant
 - bilevel
 - variable (auto-adjusting)
- Surgery
 - nasal (septum, turbinates, polyps)
 - tonsillectomy and adenoidectomy
 - soft palate/uvullectomy
 - genioglossal advancement
 - tracheostomy
 - bariatric (gastric banding)

may be the most effective in managing such a large health care burden.

Referral to a sleep specialist will result in an assessment of the patient in terms of overall cardiovascular and neurocognitive impairment risk factors which usually involve a diagnostic sleep study.

As part of the specialist assessment there will also be an attempt to match the likelihood of symptoms attributable to OSA. Often this entails a treatment trial.

The degree to which detailed upper airway examination, either directly (nasopharyngoscopy), indirectly with radiology (lateral cephalogram, CT scan or MRI) or physiologically (pressure catheters), assists in the assessment of sleep related collapse of the airway remains to be confirmed. In studies to date, multiple areas of collapse are usually observed and levels of collapse change following intervention (eg. postuvullectomy). Therefore, detailed upper airway examination is generally reserved for patients who do not respond to simple therapeutic manoeuvres.

Alternative diagnoses to OSA will also be investigated, such as central sleep apnoea with Cheyne-Stokes respiration, narcolepsy, circadian rhythm disturbances, sleep debt, periodic limb movement disorders, sleep related movement disorders, insomnia or other medical disorders associated with disrupted sleep (eg. chronic pain, gastro-oesophageal reflux, asthma).

Table 8. Complications of nonlifestyle treatments

- Oral appliances
 - dry mouth - lemon drink, reconsider drugs with side effects (anticholinergics, inhaled steroids, diuretics)
 - temporomandibular joint pain: may require refitting
 - tooth pain or decay: see dentist
- Positive airway pressure
 - dry mouth - rhinitis
 - humidification
 - chin strap
 - bilevel or autotitrating device
 - nasal steroids, nasal ipratropium bromide
 - mask leaks: consider alternative mask (oral, facial, nasal pillows)
 - noise of machine: consider newer quieter machine
- Surgery
 - uvulopalatopharyngoplasty (UPPP) - up to 5% may develop speech changes, swallowing difficulty, aspiration and cough. Usually self limiting, but may take over 12 months to resolve. Patients frequently lose weight following UPPP, which may be just as effective in the prevention of snoring.

Finally the sleep specialist will direct the patient toward the most effective therapeutic option; be it lifestyle changes, dental, surgical or positive airway pressure, and if appropriate involve the services of associated specialists such as a dentist, ENT surgeon, or gastric surgeon.

Those responsible for managing the patient with sleep apnoea should conduct regular reviews to ensure the original symptoms have been treated effectively without side effects (Table 8).

SUMMARY OF IMPORTANT POINTS

- Reduction in weight, alcohol and nasal resistance can be instigated in patients immediately.
- Patients with diagnosed sleep apnoea often need long term treatment with CPAP or mouth splints.
- It is often possible to identify other family members who are at risk of developing apnoea and instigate preventive measures early.
- Patients who have failed conservative treatment, or have suspected moderate to severe apnoea, need to be referred to a physician trained in sleep disorders for further evaluation and management.

Conclusion

Snoring should be taken seriously if it disturbs other peoples' sleep, is associated with cardiovascular disease or neurocognitive impairment. As with smoking, the treatment of snoring, and the resultant restoration of normal sleep architecture improves health and reduces community health care costs.

Conflict of interest: none declared.

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