

Obstructive sleep apnoea — getting to the heart of the matter?

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Should we be devoting energy and resources to reversing obstructive sleep apnoea in patients without symptoms?

Over the past four decades, obstructive sleep apnoea (OSA) has emerged as a prevalent, clinically important disorder. Snoring, which is often a hallmark of OSA, is seemingly ubiquitous in middle-aged men. Over 80% of Australian middle-aged men snore for more than 10% of the night.¹ Snoring is also common in women. Although it is undoubtedly an important social nuisance, it remains unclear whether snoring alone (in the absence of sleep apnoea) carries with it any serious health risk. Twenty-five per cent of middle-aged men and 10% of women have OSA, defined as >5 obstructed breathing events per hour of sleep.² The prevalence in women rises sharply after menopause. Other risk factors are obesity, older age and a family history of OSA. Population-based studies in China and India indicate that its prevalence is at least as high as that reported in Western countries. A complex interplay between regulation of breathing during sleep, facial anatomy and obesity predicts the development of OSA.² In contrast to the uncertainty of the effects of simple snoring, OSA clearly has significant health consequences.

Many patients with OSA experience excessive daytime sleepiness and impaired cognitive function, increasing the potential for traffic crashes, work accidents and reduced productivity at work.³ Over 50% of Australian truck drivers have mild OSA or worse.⁴ Moreover, Access Economics has estimated that the cost

of sleep disorders to the Australian community is over \$7 billion, and much of this cost relates to OSA.⁵ Increasing awareness of OSA has been followed by an appropriate increase in clinical investigations of sleepy patients with suspected OSA. This is further driven by the availability of cost-effective treatments, notably continuous positive airway pressure (CPAP) and mandibular advancement splints.

Recent studies have suggested that OSA is associated with an increased risk of cardiovascular disease.⁶ Publicity about this research has led to an increasing tendency for people who are not sleepy or who have minimal symptoms to be referred for assessment and treatment of OSA. However, in contrast to the sleepy patient, for whom CPAP usage is reinforced by reduction in sleepiness, asymptomatic patients have more variable compliance.⁷

Should we be devoting substantial clinical energy and resources to reversing OSA in such patients to prevent cardiovascular disease and death?

Certainly, data from cross-sectional and prospective population studies and sleep clinic studies indicate that OSA is associated with a higher prevalence of cardiovascular and cerebrovascular disease and insulin resistance.⁶ Untreated male patients with severe OSA have significantly greater risks of fatal and non-fatal cardiovascular events than healthy controls (odds ratios, 2.87 and 3.17, respectively).⁸

However, cross-sectional and observational studies have unmeasured confounders, such as visceral obesity.⁶ In addition, observational studies can be affected by treatment bias. Patients who refuse to use CPAP and seemingly have higher cardiovascular risk than those who comply with CPAP treatment⁸ may be the same people who refuse to stop smoking or take lipid-lowering or blood pressure-lowering medication. In contrast, there is good evidence from randomised controlled trials that CPAP lowers blood pressure (mean decrease in systolic and diastolic blood pressure of 2.46 and 1.83 mmHg, respectively), but most studies are relatively short (less than 8 weeks), and treatment effects are hard to demonstrate in patients who are not sleepy.⁹ The remaining short-term CPAP trials that have focused on other intermediate markers of cardiovascular disease (lipids, glucose control, high-sensitivity C-reactive protein) have been inconclusive. For example, a recent short-term randomised trial failed to show any improvement in insulin sensitivity in patients with type 2 diabetes and OSA.¹⁰

No data are available from long-term, well powered, randomised controlled trials assessing the effect of CPAP on hard cardiovascular endpoints, such as myocardial infarction and stroke, in patients with OSA. Medical research is well populated by “positive” results from cross-sectional, observational or short-term intervention studies, but their results have not been reproduced in rigorous, long-term, large-scale clinical trials. To remedy this lack of information, several long-term trials of CPAP treatment in OSA are being planned or have commenced, including one initiated by Australian investigators (Sleep Apnea CardioVascular Endpoints Study [<http://www.savetrial.org>]). These trials will determine whether treatment of OSA decreases the incidence of new cardiovascular events.

In the interim, how should we manage patients with a diagnosis of repetitive OSA who present with complaints of snoring but have minimal or no daytime sleepiness? First, it is important to establish whether such patients are genuinely asymptomatic or simply underreport symptoms that are obvious to their families or work colleagues.¹¹ Second, the disorders of these patients typically are characterised by higher rates of central adiposity, glucose intolerance and other vascular risk factors.⁶ Given that middle-aged men often neglect to monitor such risk factors, referral for snoring may provide an excellent opportunity for a general health assessment and to institute an intervention, such as advice to exercise and lose weight. Moreover, it would be reasonable to prescribe a trial of CPAP for a patient with asymptomatic OSA and hypertension refractory to maximal medical therapy and to monitor the blood pressure response over 24 hours. Finally, it would be reasonable also to inform asymptomatic patients with severe OSA and coexisting cardiovascular disease of the possible association between OSA and a risk of future vascular events.

However, it would be inappropriate to coerce these patients into accepting a treatment that might falsely make them feel secure about future risk and might result in neglect of proven risk factors. Future research, ideally, will enable clinicians to get to the “heart of the matter” when discussing cardiovascular risk management and sleep apnoea with these patients.

Competing interests

Ronald Grunstein, or his department, has provided paid consulting or contract research services to ResMed, Respiroics, DiagnoselT and Cypress Bioscience, companies involved in the diagnosis and treatment of sleep apnoea.

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