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Obstructive sleep apnoea and snoring

Is examination necessary?

This article outlines two cases of snoring and obstructive sleep apnoea (OSA) secondary to parapharyngeal space tumours. Both patients were referred to a specialist sleep clinic where oropharyngeal masses were seen and biopsied. Both underwent surgery and this was curative of both their snoring and their OSA. Parapharyngeal space tumours are an extremely rare cause of OSA and snoring. However, all patients with OSA and snoring should have a full head and neck examination before referral; in rare cases this could enable early detection of a parapharyngeal space tumour.

Keywords: deep lobe parotid pleomorphic adenoma; obstructive sleep apnoea; snoring; sarcoma

Case study 1

Walter, 60 years of age, presented with a 2 year history of worsening snoring, poor sleep quality and daytime somnolence. He was a nonsmoker. His wife revealed she had recently noticed a hyponasal quality to his voice. His body mass index (BMI) was 26. Walter was referred to a sleep clinic where oral cavity examination showed a right sided oropharyngeal mass (*Figure 1*). This was biopsied and confirmed to be a pleomorphic adenoma of the parotid gland. Overnight polysomnography showed an oxygen desaturation index of >31 (severe obstructive sleep apnoea [OSA]). Walter underwent surgical resection and both his snoring and sleep apnoea resolved.

Case study 2

Paul, 39 years of age, presented with a 2 year history of progressively worsening snoring. He was otherwise healthy, did not smoke and had no other complaints. His BMI was normal. Paul was referred to a sleep clinic where he was noted to have a large right sided oropharyngeal mass (*Figure 2*). Biopsy confirmed his mass to be a sarcoma. Overnight polysomnography showed an oxygen desaturation index of >31 (severe OSA). He underwent surgery and postoperative chemoradiotherapy and both his snoring and OSA resolved.



Figure 1. Oropharyngeal mass seen on examination of the oral cavity



Figure 2. Large oropharyngeal mass

Question 1

Describe the abnormalities demonstrated in *Figure 1* and *2*.

Question 2

What are the causes of sleep apnoea?

Question 3

How do these patients usually present?

Question 4

What types of tumours can cause a parapharyngeal space mass?

Question 5

What clinical tools can be helpful in the detection of patients with OSA?

Question 6

How is OSA diagnosed?

Question 7

What are the long term effects of untreated OSA?

Question 8

How should snoring and OSA be managed?

Answer 1

Figure 1 shows the tonsillar fossa which has been pushed medially by an oropharyngeal mass. *Figure 2* shows an anterior view of the neck with right sided fullness of the anterior neck caused by an oropharyngeal mass.

Answer 2

The causes of sleep apnoea can be broadly categorised into: central (intermittent loss of neural drive to respiratory muscles), obstructive (airflow cessation despite continued respiratory drive), and mixed.^{1,2} The most common obstructive reasons for OSA are related to either pharyngeal compression from tonsil enlargement and or nasal obstruction (adenoids, abnormal anatomy, polyps).^{3,4}

Parapharyngeal space tumours (as demonstrated in the two case studies) are an extremely rare obstructive cause of OSA.

Answer 3

The most common presenting symptom of OSA is snoring. Patients will often complain of poor sleep quality, fatigue and daytime sleepiness.^{3,4}

Answer 4

Tumours of the parapharyngeal space are rare and account for about 0.5% of head and neck tumours.^{2,5} There are three main groups of parapharyngeal space tumours:

- salivary tumours (*Case study 1*) – most commonly from the deep lobe of the parotid gland
- neurogenic tumours – most commonly schwannomas
- paragangliomas – most commonly chemodectomas.

Eighty percent of parapharyngeal tumours are benign, 20% are malignant. Benign mixed salivary cell tumours and schwannomas are the most commonly noted benign tumours.⁶

Pleomorphic adenoma is the most common type of salivary gland tumour, accounting for up to 60% of all deep lobe parotid tumours. They are benign and slow growing but are estimated to have a 2–24% potential for malignant degeneration.^{2,5,7}

The combination of snoring and a visible intra-oral mass, as demonstrated in the two case studies, should raise the suspicion of a parapharyngeal space tumour.

Answer 5

The Berlin Questionnaire is useful in predicting the presence of sleep apnoea in patients with concerning symptoms. This 10-point questionnaire is easy to use and applicable to the general practice setting.^{8,9} The Epworth Sleepiness Scale is also a useful tool. This 8-point questionnaire assesses the likelihood that the patient will fall asleep in different situations during the day¹⁰ (see *Resources*).

Answer 6

Overnight polysomnography is the gold standard for diagnosing OSA and measures multiple parameters including brain activity and pulse oximetry.¹¹

Answer 7

Untreated OSA is considered to be a risk factor for the development of conditions such as hypertension, cardiac failure, arrhythmia, pulmonary hypertension and insulin resistance.^{1,3,12} Daytime somnolence that occurs with OSA leads directly to poor daytime performance and accidents. Road traffic accidents secondary to OSA have prompted driving standards agencies worldwide

to issue guidance on driving with OSA. Austroads is responsible for the development of the relevant standards in Australia (see *Resources*).

Answer 8

The ideal management for snoring and OSA involves treating the underlying cause. If no definitive cause is identified, management should begin with conservative measures such as lifestyle changes and a weight loss program. If these are unsuccessful noninvasive methods such as mandibular advancement devices, snoring bands and continuous positive airway pressure (CPAP) should be tried.^{4,11,12} Finally, the patient may be referred to an ear, nose and throat surgeon for procedures that may include a tonsillectomy, palatal surgery, and facial and oral surgery.^{13–15} However, the majority of patients do not require surgery and CPAP plays a key role in their management.

Summary

In patients presenting with symptoms suggestive of OSA, it is essential to exclude any physical cause and perform a comprehensive ear, nose and throat examination before referral for sleep study and management. In rare cases, this simple step could enable early detection of parapharyngeal space tumours.

Resources

- Berlin Questionnaire: www.northwestspecialtyhospital.com/images/SleepCenter/Forms/NWSH%20Berlin%20questionnaire%202009.pdf
- Epworth Sleepiness Scale: <http://epworthsleepinessscale.com>
- Austroads: www.austroads.com.au.

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References

1. Stradling J, Davies R. Sleep – 1: obstructive sleep apnoea/hypoapnoea syndrome: definitions, epidemiology, and natural history. *Thorax* 2004;59:73–8.
2. Abdullah B, Liam C. Pharyngeal space lipoma causing sleep apnoea. *Br J Radiol* 1997;70:1063–5.
3. Malhotra A, White DP. Obstructive sleep apnoea. *Lancet* 2002;360:237–45.
4. Epstein LJ, Kristo D, Strollo PJ Jr, et al. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. *J Clin Sleep Med* 2009;5:263–76.
5. Pang KP, Goh CHK, Tan HM. Parapharyngeal space tumours: an 18 year review. *J Laryngol Otol* 2002;3:170–5.
6. Moraitis D, Papakosta K, Karkanevatos A, Coast GJ, Jackson SR. Pleomorphic adenoma causing acute airway obstruction. *J Laryngol Otol* 2000;114:634–6.
7. Giddings C, Bray D. Pleomorphic adenoma and severe obstructive sleep apnoea. *J Laryngol Otol* 2005;119:226–8.
8. Netzer NC, Stoohs AR, Netzer CM, Clark K, Strohl KP. Using the Berlin Questionnaire to identify patients at risk for the sleep apnea syndrome. *Ann Intern Med* 1999;131:485–91.
9. Sharma SK, Vasudev C, Sinha S, Banga A, Pandey RM, Handa KK. Validation of the modified Berlin Questionnaire to identify patients at risk for the obstructive sleep apnoea syndrome. *Indian J Med Res* 2006;124:281–90.
10. Johns MW. Reliability and factor analysis of the Epworth Sleepiness Scale. *Sleep* 1992;15:376–81.
11. Scottish Intercollegiate Guidelines network. No 73 – Management of obstructive sleep apnoea/hypoapnoea syndrome in adults. 2003.
12. Smith I, Lasserson TJ, Wright JJ. Drug therapy for obstructive sleep apnoea in adults (review). *The Cochrane Collaboration*, 2009.
13. Riley RW, Powell NB, Guilleminault C. Obstructive sleep apnoea syndrome: a review of 306 consecutively treated surgical patients. *Otolaryngol Head Neck Surg* 1993;108:117–25.
14. Fujita S. UPPP for sleep apnoea and snoring. *Ear Nose Throat J* 1984;63:227–35.
15. Chisholm E, Kotecha B. Oropharyngeal surgery for obstructive sleep apnoea in CPAP failures. *Eur Arch Otorhinolaryngol* 2007;264:51–5.

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