

CASE REPORT

Hot tonsillectomy for paediatric obstructive sleep apnoea

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SUMMARY

Obstructive sleep apnoea is a common presentation in paediatric ear, nose and tongue (ENT) outpatients. The use of sleep studies is controversial however once a diagnosis has been made, frequently treatment is surgery. Should these patients be operated on as urgent cases? A 5-year-old boy was admitted under the paediatric team with difficulty breathing and desaturations to 77%. The patient had previously been seen by ENT as an outpatient with an 8-month history of obstructive sleep apnoea and was listed for an adenotonsillectomy with the standard waiting time. During this admission he had an emergency adenotonsillectomy. The patient improved immediately with no large desaturations in recovery and normal observations throughout his stay. It is never ideal to do a paediatric emergency operation and we have reviewed the evidence base to answer the question: Should these patients be treated urgently when seen in outpatients?

BACKGROUND

Obstructive sleep apnoea (OSA) can cause delayed growth and development in children. Symptoms can also be exacerbated by the commonly caught upper respiratory tract infections in the same age group, therefore should adenotonsillectomies be performed urgently after diagnosis of this condition?

CASE PRESENTATION

A 5-year-old boy was admitted acutely under the paediatric team with an upper respiratory tract infection causing exacerbation of pre-existing OSA symptoms, 3 months after having been seen by ear, nose and tongue (ENT) outpatients and listed for an adenotonsillectomy.

He presented with dyspnoea, stertor and an oxygen requirement with desaturations to 77%. Over the past 6 months he had had six courses of antibiotics for chest infections although he did not report of sore throat. For the 2 months prior he had become short of breath on exercise, reporting of a blocked nose, night sweats and daytime somnolence.

The patient had had a previous admission 4 months earlier for a similar presentation and was diagnosed with pneumonia. Investigations for tuberculosis and HIV were both negative. The child was born by caesarian section at 39 weeks and was an inpatient for a few days due to meconium aspiration. He had normal developmental milestones and was up-to-date with immunisations. A medical

history of vitamin D deficiency and scoliosis were noted. He was subjected to a child protection plan in 2008 for domestic violence, emotional abuse and neglect. He had only 36% attendance rate at school due to poor health and 20 accident and emergency (A&E) department attendances within 3 years. His mother also had a mental health diagnosis.

On his first admission, he had been referred to ENT outpatients where an 8-month history of recurrent tonsillitis and poor sleep history were recorded. On examination, he had grade 4 tonsils, nasal congestion, purulent rhinorrhoea and bilateral cervical lymphadenopathy. He was referred for an adenotonsillectomy routinely without the need for a sleep study. On examining the patient's records retrospectively the patient was also seen by ENT department in 2010 after A&E department referred him with the same symptoms. Here a sleep study was arranged but the patient was lost to follow-up due to non-attendance.

On joint review of this case with the admitting general paediatricians, it was felt that in light of his severe obstructive apnoea, increased work of breathing and impending fatigue that emergency adenotonsillectomy was indicated. He had an emergency adenotonsillectomy the following morning. Suction diathermy and curette were used for the adenoidectomy and bipolar dissection for the tonsillectomy. Even immediately in recovery the patient's desaturations had resolved with 96% the lowest recorded value even when sleeping. He was discharged within 2 days once he started eating and drinking well and no further desaturating episodes were recorded.

INVESTIGATIONS

During this admission he had flexible nasendoscopy which showed grade 4 adenoids occluding the post-nasal space and mucopus in the nasal cavities. A sleep study carried out as an inpatient study showed 20 desaturations and a low of 74%.

TREATMENT

The patient had an emergency adenotonsillectomy while as an inpatient. Suction diathermy and curette were used for the adenoidectomy and bipolar dissection for the tonsillectomy.

OUTCOME AND FOLLOW-UP

Immediately in recovery the patient's desaturations had resolved, 96% was the lowest recorded value even when sleeping. He was discharged within



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2 days once he started eating and drinking well and no further desaturation episodes were recorded.

DISCUSSION

OSA is part of spectrum of sleeping disorders from snoring to obstructive symptoms. OSA in the paediatric population is known to cause physical and mental developmental delay as shown by Capdevila *et al*¹ and Katz and D'Ambrosio.² There have also been case studies reported by Khirani *et al*,³ Mucklow⁴ and Cohen *et al*,⁵ where it has caused serious morbidity and an emergency adenotonsillectomy had been life-saving. There are however no studies addressing how quickly we treat our patients with OSA to prevent these life-endangering complications. Similarly there are no case reports of emergency tonsillectomy for worsening OSA due to the common cold.

The usefulness of the role of polysomnography is unclear from the studies but it is the most objective improvement of symptoms currently and has been shown to improve with treatment by Mitchell.⁶ There are a range of secondary subjective improvements that can be measured such as quality of life scores, these too improve with treatment as shown by Volsky *et al*.⁷ Improvement can be immediate as shown in Nixon *et al*'s⁸ study. However, there are some cases where surgical treatment does not improve symptoms as in Ye *et al*'s⁹ study but these are rarer, and normally in the patient with severe OSA and obesity. At this stage it is impossible to predict results pretreatment.

Our case poses the following question; should our patient have been placed on the routine 18-week waiting list or should patients with OSA be treated urgently on an expedient basis? We have found no trials to show evidence of the need for urgent listing but observation case studies and the known complications of OSA imply that we should treat them as soon as possible. Nixon *et al*⁸ suggest using the polysomnography results to prioritise patients.

Gozal and Kheirandish-Gozal¹⁰ and Lim and McKean¹¹ ask whether adenotonsillectomies are an efficient and cost-effective treatment of the problem. However Mitchell⁶ found dramatic improvement in the majority of healthy children. Meta-analysis by Brietzke and Gallagher¹² concluded that in healthy individuals, it was a successful treatment. Its update in 2009 by Friedman *et al*¹³ showed that although it did not cure most cases of OSA it did improve the apnoea-hypopnoea index. In conclusion, there are lots of literature including level 5 evidence to alert clinicians to the risks to patients' peritonsillectomy and post-tonsillectomy summarised for instance in Robb *et al*'s¹⁴ Cochrane review. There is however no evidence of the detrimental effects that a delay in treatment can cause patients, especially our higher risk patients who may wait months to years for a bed in a specialist hospital. More research is needed to determine acceptable waiting times for patients with high-risk and low-risk tonsillectomy.

Learning points

- ▶ Obstructive sleep apnoea can cause a range of serious medical problems.
- ▶ Tonsillectomy+/- adenoidectomy will help improve most patients' objective and subjective symptoms.
- ▶ There is evidence for appropriate length of time between diagnosis and treatment.
- ▶ We would advise that these patients be treated as urgent cases compared with other indications for tonsillectomy.

Contributors PC led the project and contributed by writing the case and participating in the literature search. SDM contributed by helping to write the case and edited the article. MG contributed by data collection and helping in literature review. JM contributed by supervising the project.

Competing interests None.

Patient consent Obtained.

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