Obstructive sleep apnea in children

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■ *Young child wired up and ready to go (to bed, for PSG)*

Obstructive sleep apnea (OSA) is a common sleep disorder in children that is characterised by repeated episodes of prolonged upper airway obstruction during sleep. Although OSA occurs in children of all ages, it is most prevalent in preschool children.

Presentation

OSA should be suspected in children with habitual snoring, disturbed sleep, unexplained behaviour problems, school failure, hyperactivity or inattention. Mouth breathing, nocturnal apneic pauses, noisy breathing, poor growth, enuresis and headaches may also be presenting features. Failure to thrive, pulmonary hypertension and cor pulmonale are occasionally seen. Excessive daytime sleepiness is uncommon in children with OSA. Physical examination is often normal.

Aetiology

OSA is associated with adenotonsillar hypertrophy however it is not caused by large tonsils and adenoids alone. In fact, no relation has been shown between size of adenoids and tonsils and the severity of OSA. OSA appears to be a dynamic process resulting from a combination of structural abnormalities and neuromuscular tone of the upper airway during sleep. Children with airway narrowing due to craniofacial anomalies (e.g. Down syndrome) or those with neuromuscular abnormalities such as hypotonia (e.g. muscular dystrophy) or muscular incoordination (e.g. cerebral palsy) are at increased risk of OSA.

Diagnosis

The majority of children with OSA are habitual snorers but not all snorers have OSA. Neither history nor examination has been shown to reliably identify OSA in children. An overnight polysomnogram (PSG, sleep study) is used to diagnose OSA and can be performed in children of all ages. It involves the simultaneous recording of sleep state, respiration, ECG, muscle activity, gas exchange and snoring. Paediatric sleep studies are done at Princess Margaret Hospital (public) and St John of God Sleep Centre Subiaco (private). Children need to be seen by a Paediatric Sleep Specialist first.

Who should be referred?

Children with features suggestive of OSA should be further evaluated by a specialist. Children with obvious symptoms associated with adenotonsillar hypertrophy (e.g. recurrent tonsillitis, swallowing difficulties) or other ENT problems (e.g. otitis media with effusion, nasal obstruction) with no other medical complications or contraindications to surgery, could be referred directly to an ENT surgeon who will assess whether or not a sleep study is required prior to any surgery.

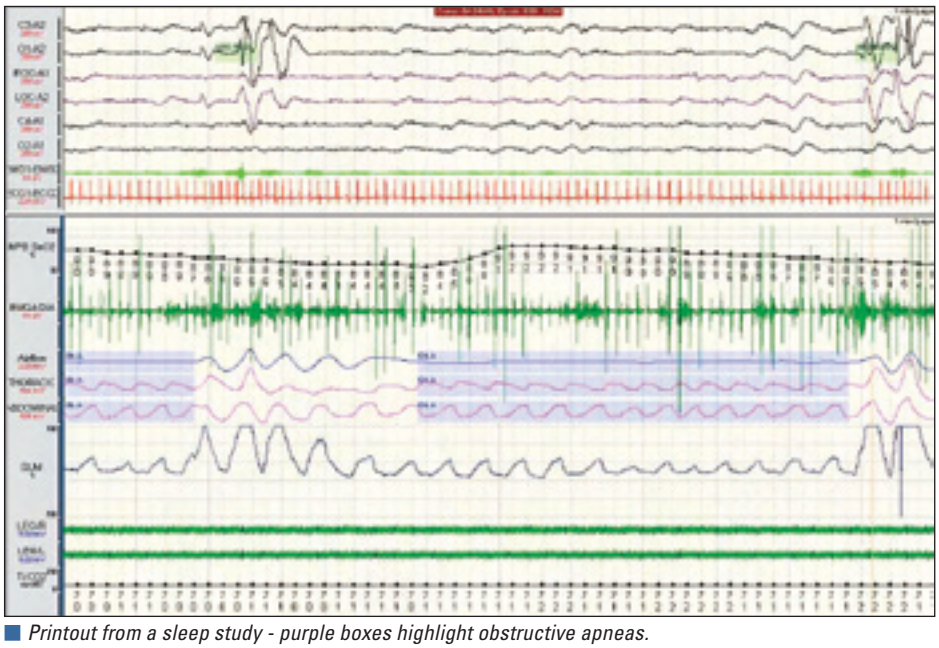
All other children, particularly complex high risk children (age less than 3 years, suspected severe OSA, co-morbid medical diagnosis) and children with co-existing sleep difficulties (e.g. sleep initiation or sleep maintenance problems), should be referred directly to a Paediatric Sleep Specialist.

Management

Adenotonsillectomy is the most common treatment for childhood OSA and is curative in the majority of cases. Children with OSA are at increased risk of post-operative respiratory compromise and may need overnight hospital admission.

In some children, particularly younger children, those at increased surgical risk and children with mild OSA, adenoidectomy may be the preferred initial treatment as it is generally associated with less surgical complications than tonsillectomy.

Continuous positive airway pressure (CPAP) is an option for children with persistent OSA post adenotonsillectomy, for those with specific surgical contraindications or those with minimal adenotonsillar tissue. Less common (and sometimes less successful) treatments for childhood OSA include nasal steroids, weight loss, montelukast, craniofacial surgery, dental devices and in severe cases tracheostomy. Oxygen therapy and uvulopalatoplasty are seldom indicated in children. All children with OSA should be re-evaluated after initial treatment to determine whether additional investigations and/or therapy are required. ■



■ *Printout from a sleep study - purple boxes highlight obstructive apneas.*

Summary

- OSA is a common condition of childhood
- OSA is associated with neurocognitive deficits such as learning difficulties, behavioural problems, reduced attention and hyperactivity
- All children should be screened for snoring. Children who snore may have OSA.
- Neither history nor examination has been shown to reliably identify children with OSA.
- An overnight sleep study is the gold standard for diagnosis of OSA
- Adenotonsillectomy is first line treatment for children with OSA and is curative in most cases
- CPAP is an alternative therapy
- All children need clinical re-evaluation after initial treatment