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Recognising Paediatric Obstructive Sleep Apnoea in Primary Care

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Introduction

Obstructive sleep apnoea (OSA) is part of a spectrum of sleep disordered breathing diseases. This ranges from benign simple snoring, affecting up to 12% of children, to severe upper airways resistance and OSA which affects 1-2% of children.[1] Paediatric OSA can be associated with serious consequences including cor pulmonale, right ventricular hypertrophy and systemic hypertension, if left untreated.[1,2]

The majority of paediatric OSA is caused by adenotonsillar hypertrophy in children with no pre-existing medical conditions; this is known as 'Uncomplicated OSA'. [1] 'Complicated OSA' refers to a subgroup of children with medical conditions predisposing to OSA; (see Table 1) obesity is an important predisposing condition.[3] Traditionally paediatric OSA occurs amongst pre-school children, however there is an emerging peak in middle childhood and adolescence attributed to the rising obesity epidemic.[3] OSA affects boys and girls in equal numbers.[1]

Presentation of the paediatric form of the disease differs from adult OSA, as children are more likely to present with behavioural problems, poor attention and reduced academic performance than daytime sleepiness.[2] It is therefore important to be vigilant for OSA, take an otolaryngology history and specifically ask about snoring and other common symptoms, especially in children who are disruptive or struggling at school. With treatment, prognosis is excellent. GP referrals for paediatric OSA are increasing as awareness of the disease improves, however diagnosis is still delayed with up to 31% of patients waiting 4 years for treatment.[2]

History

Night time symptoms –differentiating OSA from simple snoring

Key questions to ask parents

- Do you ever notice that your child stops breathing or snoring for periods during sleep?
- Do you ever watch over your child due to worry that they are not breathing?
- Do you ever find that your child's breathing gets quieter or that they gasp whilst sleeping?
- Are episodes worsened by cold/flu symptoms?
 - This is due to inflammation and excessive mucus in the airway worsening symptoms.
- Does your child sleep with their neck arched backwards?
 - The child is compensating for airway abnormality.
- Have you ever noticed your child turning blue during sleep?
 - Cyanotic episodes can occur.
- Episodes of bed wetting after being dry at night?

- This is thought to be due to decreased appropriate arousals during sleep and may signify the child has OSA [5]

Daytime symptoms - how is the child progressing?

It is important to ask the following questions in order to complete the sleep history, as parents may not associate day time symptoms with sleep disordered breathing.

- Does the child have any behavioural problems, such as reduced concentration, hyperactivity or irritability?
 - These symptoms affect up to 25% of children with OSA and can mimic attention-deficit/hyperactivity disorder [1]
- Poor school performance?
 - Evidence suggests that children with OSA are significantly more likely to be in the bottom 25th centile for school performance [2]
- Ensure that the patient's (parent and child's) ideas, concerns and expectations are explored; in particular, parental concern about the child's breathing is a key indicator of OSA.[1]

Examination

- Does the child appear to be mouth breathing or have nasal speech– this indicates nasopharyngeal obstruction, which could be due to adenotonsillar enlargement
 - If uncertain, simply placing a metal spoon under the child's nose can confirm mouth breathing with the absence of nasal misting.
- Can you hear a snoring sound when the child is awake? (stertor)
- Inspect nasal cavity with an otoscope.
 - Rhinitis? (clear, thin watery discharge) – Associated with nasal obstruction and adenotonsillar hypertrophy.
 - Nasal polyps? – Causes nasal obstruction.
- Inspect oral cavity.
 - Tonsillar enlargement?
- Inspect the ears.
 - Glue ear? – This may exist alongside adenoid hypertrophy.
- Check the child's BMI and plot height and weight on a centile chart - Paediatric OSA is more common in obese children.[3]

Referral

Refer any child with a history of regular night time snoring when well in conjunction with adenotonsillar hypertrophy plus any of the symptoms of OSA to an ENT surgeon for further investigation.[6] Children with suspected complicated OSA should be referred to paediatrics first. Currently there is no role for "watchful waiting" by the GP in symptomatic children as adenotonsillectomy has been shown to improve symptoms.[2] Preliminary investigation involves home pulse oximetry, where a soft cuff is fitted to the child's toe or finger prior to bedtime. A positive result is a strong predictor that the child has OSA however a negative test does not exclude.[2] Specialist centres may perform a more detailed sleep study (polysomnography), used to assess severity and decide post-operative care.[2]

Treatment & Prognosis

In the overwhelming majority of uncomplicated OSA, adenotonsillectomy resolves symptoms, leading to improvement in sleep and quality of life, as well as resolution of behavioural symptoms.[2] For the few children that adenotonsillectomy fails, or if it is contra-indicated they should be referred for Continuous Positive Airway Pressure (CPAP).[2] Nasal steroid sprays may be trialled in atopic children, however if there is a strong suspicion of OSA the child should also be referred; rhinitis may be secondary to adenoidal hypertrophy.[5] It is important to emphasise that nasal steroids must be continued following surgery in children with evidence of allergic rhinitis in order to prevent re-accumulation of adenoid and tonsillar tissue.[2]

For children with a high BMI and evidence of OSA there is an even more urgent necessity for improvement of their airway at night and adenotonsillectomy has been shown to achieve this.[2] Weight loss lifestyle advice should also be offered for long term management, specifically informing parents what a healthy diet consists of and advice to exercise for a minimum of 1 hour per day.[3] Consider referral to a healthy lifestyle programme for further support.

Conclusion

GPs should be vigilant for paediatric OSA as it is common and may affect up to 1 in 30 children. OSA in children may present with behavioural problems and poor attention, which parents may not necessarily link to a sleep disorder, it is therefore important that the GP elicits a sleep history. Obesity is a risk factor and is thought to be responsible for rising levels of paediatric OSA. Any child with a history of snoring and any of the daytime or night-time symptoms of OSA should be referred; with treatment the prognosis is excellent.

Information for patients

- *Patient resource – OSA in children*. British Lung Foundation. 2015.
https://cdn.shopify.com/s/files/1/0221/4446/files/OCO1_OSA_in_Children_V1.3.pdf?5835085375965184423

Useful reading/ References

1. G M Nixon, R T Brouillette. Review series: 8 – Paediatric Obstructive Sleep Apnoea. *Thorax*. 2005;60:6 511-516.
2. Royal College of Paediatrics and Child Health, Working Party on Sleep Physiology and Respiratory Control Disorders in Childhood. *Standards for Services for Children with Disorders of Sleep*. London, RCPCH, 2009.
3. Raanen Arens, Hiren Muzamder. Childhood obesity and obstructive sleep apnoea syndrome. *Journal of applied physiology*. 108: 436-444, 2010.
4. Hill CM, Hogan AM, Karmiloff-Smith A. To sleep, perchance to enrich learning? *Arch Dis Child*. 2007;92:637-43.
5. Stephen Powell, Haytham Kubba. Paediatric obstructive sleep apnoea. *BMJ*. 2010;340:c1918.
6. Robb P, Bew S, Kubba H, Murphy N, Primhak R, Rollin A-M, et al. Tonsillectomy and adenoidectomy in children with sleep related breathing disorders: consensus statement of a UK multidisciplinary working party. *Clin Otolaryngol*. 2009;34:61-3.

Table 1 – Causes of OSA

	Condition	Frequency of Sleep-disordered breathing [2]
Uncomplicated causes	Enlarged tonsils Enlarged adenoids	
Complicated causes	Obesity	60%
	Craniofacial abnormalities – narrowing of upper airway <ul style="list-style-type: none"> • Cleft palate • Apert syndrome • Treacher Collins syndrome • Crouzon syndrome • Retrognathia (abnormal jaw positioning) 	Up to 100% (depending on severity)
	Down’s syndrome	70-100%
	Neuromuscular Disease – decreased tone in upper airway <ul style="list-style-type: none"> • Cerebral palsy 	42%
	Achondroplasia	42%
	Prader-willi	25-75%
	Sickle cell disease	10-41%