Obstructive Sleep Apnea in Children

More than a Bad Night’s Sleep

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Obstructive sleep apnea (OSA) is being seen in an increasing number of children. Because OSA can have serious sequelae, physicians who treat children are encouraged to screen for snoring and for OSA, if it is suspected. This article presents the case of a 4-year-old boy who was found to have OSA prior to a dental surgery. It discusses the signs and symptoms of OSA and explains why OSA is not an insignificant diagnosis. It also describes treatment approaches and stresses the importance of follow up.

A 4-year-old boy comes to see you in the clinic for a preoperative exam. He is scheduled to have a sedated dental procedure in an outpatient surgery center in five days. His mother reports that he does not have pain with chewing or cold intolerance while drinking, and that he has been free of fever, local jaw swelling and acute illness. She also reports that he has always been healthy and has not had previous hospitalizations or surgeries. In fact, his mother reports that no one in the family has ever had surgery.

During your review-of-systems inquiry, you discover that the boy is a nightly snorer. His mother confirms that he gasps for breath intermittently throughout the night and that occasionally his breathing pauses. She believes that he still rests well because he does not seem overly tired during the day and no longer needs a nap. She reports that he never complains of headaches and that he does not seem to have exercise intolerance, as compared with his playmates. On physical exam, the boy is found to be 105 cm tall and weigh 22 kg. His body mass index (BMI) is calculated at 20 (>95%). His exam is remarkable for dental caries and 2-3+ tonsils but otherwise is normal.

Given the findings elucidated during the exam and review of systems, you should be concerned about obstructive sleep apnea (OSA) and consider delaying dental surgery until the child can be evaluated for OSA.

**Background**

Obstructive sleep apnea is defined as episodes of complete or partial upper-airway obstruction during sleep and is caused by increased resistance in the upper airway. It is estimated that OSA occurs in 1% to 3% of healthy, nonobese children and perhaps in as many as one-quarter of obese children. It occurs with greatest frequency in children between 2 years and 10 years of age, coinciding with the timing of maximum adenotonsillar lymphatic tissue growth.

Many factors can contribute to increased upper-airway resistance. Generally, etiologies fall into three nonmutually exclusive categories: 1) internal (space-occupying), 2) external (compressing problems) and 3) intrinsic (decreased tone). In healthy children, adenoid and tonsillar tissue are the most common cause of OSA. In obese children, external compression by adipose tissue can be the source of the problem. It can be difficult to identify decreased tone, although it should be considered in a child with a neuromuscular condition. In a developmentally normal child, decreased tone is diagnosed after other causes are ruled out.

The number of children whose OSA is caused by obesity has increased as childhood obesity rates have risen. Signs suggestive of OSA include a report of consistent snoring (minimum of three nights per week), night-time sweating, restless sleep, sleeping in unusual positions, parasomnias, mouth-breathing, morning headaches, secondary enuresis, excessive daytime sleepiness or hyperactivity mimicking attention-deficit hyperactivity disorder. Serious sequelae of OSA in children include failure to thrive, behavioral and cognitive problems, hypertension and myocardial reshaping.

Some have theorized that OSA is a proinflammatory condition contributing to insulin resistance and metabolic syndrome. OSA alone, and more so in conjunction with obesity, can affect exercise tolerance. Children with OSA are at increased risk for peri- and postoperative complications including atelectasis and...
Clinical Care

The American Academy of Pediatrics recommends that primary care providers screen all children for snoring. The physical examination of a child with suspected OSA should include assessment of BMI; craniofacial abnormalities; palate structure; tone, teeth and bite alignment; and, of course, tonsillar size. Poor nasal airflow can suggest adenoid hypertrophy or allergic rhinitis caused by nasal congestion.

If the findings are suggestive of OSA, a polysomnograph (PSG) should be obtained in order to determine if the child has OSA and, if so, assess its severity. Even if the main cause appears to be enlarged tonsils and adenoids, the PSG may be useful, as it can help elucidate the severity of the upper airway obstruction and help predict the outcome of a surgical intervention. The information it provides also may help you temper the parents’ expectations for complete resolution after surgery. It is important to follow up with children who have lower probability that surgery will completely resolve their sleep-disordered breathing.

Weight loss is important for children who are obese and have OSA. CPAP, which is the gold standard treatment for adults, has a role in pediatrics as well; however, compliance may be a problem.

Conclusion

In the case described, delaying dental surgery in order to complete an evaluation for OSA is certainly warranted. You might refer the child to a sleep medicine specialist for evaluation with a PSG and EKG. Given the patient’s obesity and mild tonsillar hypertrophy, a referral to an otolaryngologist alone might illicit the internal etiology but fail to reveal any contributions from external compression or intrinsic decrease in tone. Adenotonsillectomy alone has an OSA curative range of 34% to 69%, depending on the severity.

If dental surgery cannot be delayed and a comprehensive evaluation cannot be completed prior to surgery, the anesthesiologist must be made aware of your concerns of probable OSA in order to best determine a safe plan for your patient’s recovery.

With our current childhood obesity rates, OSA is a growing concern. Those providing medical care to children need to be aware of its signs and symptoms and recognize that it may have consequences that go beyond a poor night’s sleep.

Yosef Wexler recently completed his pediatric residency at the University of Minnesota. He is currently completing a sleep medicine fellowship at Hennepin County Medical Center.

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