



Capitol Sleep Medicine Newsletter

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July 2007

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Volume 2

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Number 7

Pediatric OSA From Tonsils to Obesity

Pediatric sleep disorders are common, affecting approximately 25% to 40% of children and adolescents. Sleep disorders in children can have a significant impact on daytime functioning and development, including learning, growth, behavior, and emotion regulation.¹ Despite the prevalence of sleep problems, childhood sleep disorders are often underrecognized and undiagnosed.² In a questionnaire study of 1784 children, consisting of 803 (45%)

boys and 981 (55%) girls, the prevalence rates of snoring and observed apnea were 24.6% and 3.8%, respectively. Tonsil size peaked in 4- to 8-year-old children.³ The most frequent cause of obstructive sleep apnea (OSA) in children has historically been adenotonsillar hypertrophy, and at least one study has shown that adenotonsillectomy can be curative in up to 70% of these cases.⁴

However, another study of 110 children with a mean age of 6.4 +/- 3.9 years who underwent a polysomnographic evaluation before and after adenotonsillectomy demonstrated that adenotonsillectomy resulted in complete normalization in only 25% of the patients. The authors determined that obesity and apnea / hypopnea index at diagnosis were the major determinant for surgical outcome.⁵

The tide is turning in this country. Over the last 30 years, the prevalence of obesity across all pediatric age groups and ethnicities has increased substantially, with the current prevalence of obesity among adolescents estimated to be approximately 30%. Current evidence suggests that being overweight is modestly associated with OSA among young children, but strongly associated with OSA in older children and adolescents. The subgroup of children who may be especially susceptible include ethnic minorities and those from households with caregivers from low socioeconomic groups. Further, OSA, by exposing children to recurrent intermittent hypoxemia or oxidative stress, may amplify the adverse effects of adiposity on systemic inflammation and metabolic perturbations associated with vascular disease and diabetes. An increased prevalence of



obesity may impact the response to adenotonsillectomy as a primary treatment for childhood OSAS.⁶

Is OSA in children important? OSA has been associated with reduced neurocognitive performance in children. A study evaluating the relationship between hypoxemia, respiratory arousals, and neurocognitive performance in snoring children determined that the disruption of sleep produced by relatively mild changes in oxygen saturation or by increases in

respiratory arousals may have a greater effect on neurocognitive function than previously appreciated.⁷ Further, sleep disordered breathing in childhood may represent a cardiovascular risk factor in adulthood.⁸

The prevalence and severity of obesity in children and adolescent is dramatically increasing worldwide with a corresponding increase in the prevalence of obesity-associated morbidities.⁹ In the US, extreme obesity affects approximately 9 million adults and 2 million children, and is associated with both immediate health problems and later health risk, including premature mortality. In adults, bariatric surgery results in prolonged weight control and improvement in serious obesity comorbidities, namely type 2 diabetes, dyslipidemias, hypertension and obstructive sleep apnea syndrome. A surge in weight loss operations for adolescents has been observed recently, with a threefold increase in case volumes nationwide from 2000 to 2003.¹⁰

It is time for us to do what we can to try to decrease the trend of increasing obesity in children and adolescents in this country.

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