Investigators from multiple institutions conducted a randomized controlled trial to assess the efficacy of adenotonsillectomy in children with obstructive sleep apnea (OSA) as part of the Childhood Adenotonsillectomy Trial (CHAT). Children 5 to 9 years old with a score ≥2 on an obstructive apneahypopnea index (AHI) or ≥1 on the obstructive apnea index were enrolled. Study participants were randomized to early adenotonsillectomy (within 1 month after randomization) or to watchful observation. The primary outcome measure was change in attention and executive function based on the Developmental Neuropsychological Assessment score. Secondary outcome measures included polysomnographic, behavioral, symptomatic, and quality of life measures collected at the beginning of the study and at 7 months. Outcomes were compared between the 2 groups; outcomes were also compared in several “high-risk” subgroups.

A total of 464 children were enrolled; outcome data were collected on 397 including 194 participants randomized to early adenotonsillectomy. There was no significant difference between the 2 study groups with regard to change in attention or executive function scores at 7 months post intervention. However, the adenotonsillectomy group demonstrated significantly greater improvement in behavioral, quality of life, polysomnographic, and symptomatology measures than the watchful observation group. Polysomnography normalized in 79% of the adenotonsillectomy group compared to 46% of the watchful waiting group.

Analyses in higher risk subgroups including black children, obese children, and children with AHI scores above the median showed that polysomnography did not normalize as frequently compared to those in the corresponding lower risk group. This was true in both adenotonsillectomy and watchful observation groups. However, the adenotonsillectomy group improved more with regard to polysomnography, behavior, and clinical measures as compared to the watchful observation group in these higher risk subgroups.

The authors conclude that although adenotonsillectomy did not result in significantly greater cognitive improvements compared to watchful observation, it resulted in significant improvements in polysomnography, symptoms, behavior, and quality of life among school-aged children with OSA. Watchful observation may be an alternative for childhood OSA given the absence of significant cognitive improvement and the fact that polysomnography normalized in about half of the children in the watchful observation group.

Commentary by
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Dr Kier has disclosed no financial relationship relevant to this commentary. This commentary does not contain a discussion of an unapproved/investigative use of a commercial product/device.

Research on pediatric OSA has exponentially increased in the past decade. A recent systematic review of the epidemiology of pediatric OSA indicated a prevalence of 4% to 11% based on parent questionnaire and 1% to 4% based on diagnostic studies, with higher prevalence among boys, obese children, and black children.1 Neurocognitive, cardiovascular, metabolic, and quality of life consequences have been associated with pediatric OSA, especially if left untreated. Adenotonsillectomy is considered the first line of treatment. About half a million tonsillectomies in children are performed in the United States annually, many of these for OSA.2 The CHAT is the first multicenter randomized trial comparing adenotonsillectomy and watchful observation for pediatric OSA. CHAT has replicated the findings of a meta-analysis of 14 case series, which showed normalization of polysomnography in about 80% of children following adenotonsillectomy.3

The multicenter CHAT study was well-designed, utilized standardized measurements, and closely followed participants. Since younger children and those with very severe OSA, prolonged desaturations, and ADHD on medication were excluded, the findings cannot be generalized to these groups. In addition, since reevaluation occurred at 7 months, it is possible that improvements in attention and executive function may not be evident in that short time.4

While the CHAT study certainly provides promising evidence that adenotonsillectomy improves behavioral, symptom, quality of life, and polysomnographic measures in at least some children with OSA, it leaves many questions unanswered. Future studies will need to assess the value of adenotonsillectomy in younger children and those with more severe OSA as well as evaluating the impact over a longer follow-up period.

References

Key words: obstructive sleep apnea, adenotonsillectomy, watchful observation