

# Soothing Routines Quell Kids' Fears of CPAP

BY FRAN LOWRY  
Contributing Writer

SAN JUAN, P.R. — Continuous positive airway pressure can be effective for obstructive sleep apnea in children, but parents must be persistent to ensure children's acceptance of the treatment, Dr. Ann C. Halbower said at a meeting sponsored by the American College of Chest Physicians.

Obstructive sleep apnea (OSA) is present in 2%-3% of children, and peaks at 3-6 years of age—which is also the peak age for adenotonsillar hypertrophy. The presentation depends on the age of the child: In the infant, it might present as sudden infant death syndrome (SIDS). Toddlers with OSA will have hyperactivity, school-age children will have failure to thrive and poor school performance, and adolescents may present with obesity and excessive daytime sleepiness.

Adenotonsillectomy is the first-line therapy for children with OSA. When that is not successful, continuous positive airway pressure (CPAP) can promote more ordered breathing during sleep and relieve OSA.

CPAP can be problematic in children, however. "It's very hard to take. Little kids don't like it, but there are things parents and physicians can do to help make CPAP more palatable," said Dr. Halbower, who serves as medical director of the pediatric sleep disorders program at Johns

Hopkins University, Baltimore. Dr. Halbower recommended introducing the device slowly to minimize the fear factor. Put on the mask while the child is awake and doing an activity that is fun and pleasurable, she said.

The worst thing you can do is put the mask on while the child is asleep. "If they wake up and find themselves wearing the mask, they'll panic," Dr. Halbower said.

Another trick that can be used to make CPAP part of the child's normal bedtime routine, along with brushing the teeth and a bedtime story. Other children who use CPAP are wonderful ambassadors for the device and can help relieve anxiety with a show-and-tell. Videos are good for this as well.

Despite these efforts, some children will do everything to resist attempts to put on the mask. Many parents will remove the mask in response to their child's distress.

That is a big mistake, Dr. Halbower said, because it just strengthens the child's escape and avoidance behavior. Eventually, the parent gives up.

Behavioral training can help parents block or prevent their child's avoidance behavior by using brief verbal prompting, redirection to a specific task, and if necessary, physically blocking escape while gently guiding the child to remain in the situation.

The child's attempt to remove the mask must be physically interrupted and the mask replaced immediately every time



When adenotonsillectomy proves unsuccessful for obstructive sleep apnea, continuous positive airway pressure can promote ordered breathing during sleep.

the child removes it. She said these behavioral techniques are used in her clinic under the guidance of Keith Slifer, Ph.D., a behavioral psychologist. [The techniques] "have proved very successful," Dr. Halbower said.

Parents should also plan for safety in children who cannot remove the mask during emergencies, Dr. Halbower cautioned.

Use a nasal mask instead of a full-face mask, or have an emergency pull string

that can disengage the mask to prevent apnoea or asphyxiation if the child vomits.

It is important for parents to establish a consistent bedtime routine that lasts about 30 minutes, Dr. Halbower explained. Such a routine includes soothing activities, and it always ends with the child putting on the CPAP mask, lying down, and going to sleep.

"Persistence and patience are key," she said. ■

## Adenotonsillectomy Improves Both Sleep and Behavior

BY HEIDI SPLETE  
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CHICAGO — Adenotonsillectomy improved both sleep and behavior in a pair of studies presented at the Combined Otolaryngology Spring Meetings.

Children with either obstructive sleep apnea syndrome (OSAS) or mild sleep disordered breathing (SDB) demonstrated significantly improved scores on behavior measurements after adenotonsillectomy, compared with presurgery scores, which suggests that symptom severity does not affect improvement, said Dr. Ron B. Mitchell, a pediatric laryngologist at Virginia Commonwealth University in Richmond.

Of 40 children aged 3-18 years, 23 had OSAS and 17 had SDB; demographics were similar between the two groups. The mean apnea-hypopnea index prior to surgery was 25 among the children with OSAS and 3 among those with SDB.

At a follow-up evaluation an average of 3 months after an adenotonsillectomy, children in both the OSAS and SDB groups showed significant improvements, compared with

presurgery scores on the Behavior Symptom Index, a global measure of behavior. Differences in postsurgery scores between the two groups were not significant, however.

In addition, scores on the Behavior Assessment System for Children subscales of depression, hyperactivity, atypicality, and somatization were significantly improved after surgery, compared with presurgery scores for children in both groups, and the scores did not differ significantly between the groups.

All children had been measured with polysomnography and had undergone comprehensive behavior assessments prior to surgery. Children with comorbidities were excluded. The study was limited by the absence of a control group, the short follow-up period, and the selection bias inherent in the use of a population at a specialized clinic for sleep problems.

"Without a control group, all we can say is that adenotonsillectomy and improved behavior were associated, not necessarily correlated," said Dr. Mitchell.

However, the study suggests that SDB is associated with a significant amount of behavioral morbidity regardless of the severity of the condition, and that these problems improve after adenotonsillectomy regardless of whether the child has only mild SDB or OSAS, he said.

In a second study of children with SDB, the 71 for whom follow-up data were available

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showed significant improvement in both sleep and behavior based on the pediatric sleep questionnaire (PSQ) and the Conners' Parent Rating Scale-Revised (CPRS-RS).

In addition, Dr. Julie Wei and her colleagues at the University of Kansas in Kansas City examined whether children whose scores were worse prior to surgery show greater benefit after surgery.

"We wanted to explore whether the improvements were

a function of the baseline scores," said Dr. Wei.

The prospective study included children aged 3-17 years, with a mean age of 6.5 years, who were evaluated using the PSQ and CPRS-RS.

Six months after the surgery, the average scores on the questionnaires improved significantly, compared with scores prior to surgery, especially among the children with the worst scores. "There was almost a 20-point reduction among the children who were worse to begin with," Dr. Wei said.

The CPRS-RS evaluated the children's behavior in four categories: opposition, cognitive/inattention, hyperactivity, and the Conners' ADHD index. A score of 60 in any category would place a child at risk for problems in that category, Dr. Wei said. Before surgery, the mean scores in these categories were 59.4, 59.5, 62, and 59.9, respectively; after surgery, the mean scores were 51, 51.2, 52.4, and 50.6, respectively.

The children were clinically evaluated for SDB based on the 22-item pediatric sleep subscale of the 74-item PSQ, rather than

polysomnography. The subscale has been shown to accurately predict SDB.

Although polysomnography is the approved measure of SDB, it is not available in all areas, and is used rarely. "Less than 5% of children have polysomnography prior to surgery," Dr. Wei said.

The PSQ questionnaire can be a useful screening tool to determine candidacy for surgery as an adjunct to a history and physical exam, especially in areas where polysomnography is not available, Dr. Wei said.

The results of this study suggest that treatment of children who are diagnosed clinically using the pediatric sleep subscale show improved behavior and sleep even if their diagnosis is not confirmed by polysomnography, she said. The study was limited by the lack of a control group, the lack of data on behavior at school, and the use of a convenient sample of children with sleep problems. The evidence supported findings from previous research, including a study in which children with ADHD who underwent adenotonsillectomies no longer met ADHD criteria 1 year later (*Pediatrics* 2006;117:e769-e778). ■