Resident's Corner

Sleep is Silent, Not Symphonic

Anthony Burgess was right when he said: "Laugh and the world laughs with you, snore and you sleep alone." Sleep is meant to be silent, not symphonic.

The scientific investigation of sleep began in the 1930s when Hans Berger, who discovered electroencephalography (EEG), noticed spontaneous brain activity in sleeping patients. Nearly five decades later (1978) the American Board of Sleep Medicine (ABSM) began certifying medical practitioners in sleep disorder medicine and interpretation of polysomnograms. This tailwind of interest in sleep medicine has led to the exploration of pediatric and adolescent sleep disorders such as sudden infant death syndrome (SIDS) and obstructive sleep apnea and sparked attention to behavioral and learning difficulties in children.

Pediatric sleep disordered breathing (SDB) is an umbrella term that includes breathing disturbances such as habitual snoring, obstructive sleep apnea (OSA), and nocturnal hypoventilation. The prevalence of SDB varies widely among studies depending on the diagnostic criteria used. According to Dosier et al., approximately 25 percent of typically-developing, preschool-aged children have sleep related problems, whereas the prevalence of sleep disorders in children with neurodevelopmental disorders can be as high as 80 percent. The prevalence of OSA specifically is between one percent to five percent with onset between two to eight years of age.

As clinicians, we have an opportunity to catch early warning signs of sleep disturbances in children through clinical dentofacial examination. Common clinical findings associated with SDB include obesity, adenotonsillar hypertrophy, macroglossia, retrognathia, and high-arched palate. In addition, children with disorders such as Down Syndrome, Prader-Willi syndrome, and Pierre-Robin sequence have craniofacial abnormalities that predispose them to SDB.

Beyond clinical evaluation, questions such as: "Does your child grind his/her teeth at night?," "Is your child snoring during sleep?," "Does your child occasionally wet the bed?" help highlight potential risk factors for SDB and should be included during review of the dental/medical health history. Adjunctive screening tools such as BEARS (B=Bedtime Issues, E=Excessive Daytime Sleepiness, A=Awakenings During the Night, R=Regularity and Duration of Sleep, S=Snoring) are also helpful for practitioners and parents to identify children with sleep problems.

As dentists, we are not in a position to diagnose sleep disorders. Instead, we play an important role in recognizing high-risk patients and referring them for proper evaluation. Step one is to refer patients to a sleep specialist to have a sleep study. The study will include a polysomnogram, which measures apneas or hypopneas to determine the apnea-hypopnea index (AHI). An AHI between 1 and 5 per hour is generally considered mild OSA, whereas an AHI ≥ 5 per hour is considered to be in the moderate-to-severe range. Adenotonsillectomy (AT) is considered the treatment of choice in children once moderate-to-severe AHI is documented on initial polysomnography. According to a meta-analysis by Brietzke et al, 'uncomplicated' pediatric patients with OSA who underwent AT experienced a success rate of 83 percent ($P < 0.001$) measured by normalization in their polysomnogram and symptom alleviation. Patients who were obese or had craniofacial abnormalities, however, experienced persistence of symptoms.

Other treatment options besides AT include continuous positive airway pressure (CPAP), nasal steroids, rapid palatal expansion (RPE) and myofunctional therapy (MT). In the realm of dentistry, RPE and MT are options we can offer to our patients, so I'll highlight those briefly. RPE devices can be used in children to help with maxillary transverse deficiency, making it possible to broaden the maxillary arch and widen the nasal vault. According to a meta-analysis by Vale et al., RPE had a significant effect on normalizing AHI in children and adolescents under 18 years with OSA. Myofunctional therapy involves isotonic and isometric exercises that target the lip, tongue, and oropharyngeal structures. According to a systematic review by Camacho et al, MT provides a reduction in AHI of approximately 62 percent in children and improves subjective sleepiness as demonstrated by a reduction in Epworth Sleepiness Scale (ESS) score.

Overall, sleep disturbances in children are common and can be managed early on through proper identification and referral to sleep specialists, surgical interventions, and non-surgical treatments including oral appliances and MT. The small steps we take to identify children with SDB may help save lives and improve the quality of sleep for our patients.

ABOUT THE AUTHOR

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