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## Reduced neurocognition in children who snore.

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Obstructive sleep apnea syndrome (OSAS) has been associated with reduced neurocognitive performance in children, but the underlying etiology is unclear. The aim of this study was to evaluate the relationship between hypoxemia, respiratory arousals, and neurocognitive performance in snoring children referred for adenotonsillectomy. Thirteen snoring children who were referred for evaluation regarding the need for adenotonsillectomy to a children's hospital otolaryngology/respiratory department underwent detailed neurocognitive and polysomnographic (PSG) evaluation. PSGs were evaluated for respiratory abnormalities and compared with 13 nonsnoring control children of similar age who were studied in the same manner. The snoring children had an obstructive respiratory disturbance index within normal range (mean obstructive apnea/hypopnea index, 0.6/hr). Despite this, several domains of neurocognitive function were reduced in the snoring group. These included mean verbal IQ scores (snorers 92.6 vs. nonsnorers 110.2,  $P < 0.001$ ), mean global IQ scores (snorers 96.7 vs. nonsnorers 110.2,  $P < 0.005$ ), mean selective attention scores (snorers 46.4 vs. nonsnorers 11.8,  $P < 0.001$ ), mean sustained attention scores (snorers 8.0 vs. nonsnorers 2.2,  $P = 0.001$ ), and mean memory index (snorers 95.2 vs. nonsnorers 112.1,  $P = 0.001$ ). There was a direct relationship between number of mild oxygen desaturations of  $\geq 3\%$ , obstructive hypopneas with  $\geq 3\%$  oxygen desaturations, and respiratory arousals and severity of neurocognitive deficits, with the greatest effect being on memory scores. The disruption of sleep in snoring children produced by relatively mild changes in oxygen saturation or by increases in respiratory arousals may have a greater effect on neurocognitive function than hitherto appreciated. A possible explanation for these neurocognitive deficits may be the combination of the chronicity of sleep disruption secondary to snoring which is occurring at a time of rapid neurological development in the first decade of life. Future studies need to confirm the reversal of these relatively mild neurocognitive decrements post adenotonsillectomy. Copyright 2004 Wiley-Liss, Inc.

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