Nocturnal Pulse Oximetry Is Better than Snoring Sound Analysis for Screening Severe Pediatric Obstructive Sleep Apnea

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Abstract

Abstract: Introduction: Efficacious screening of severe obstructive sleep apnea (OSA) is important for children with sleep-disordered breathing before time-consuming nocturnal polysomnography. However, the predictive performance of clinical variables, nocturnal unattended pulse oximetry, and snoring sound analysis to screen for severe pediatric OSA has not been comprehensively investigated. Methods: Forty-two consecutive children (11 [26%] girls and 31 [74%] boys; median age, 9 years; median body-mass index of 19.0 kg/m2) with loud snoring were prospectively recruited to undergo standard polysomnography, nocturnal pulse oximetry, and snoring sound analysis. Results: Binary logistic regression models showed that oxygen desaturation index [?] 3% ($>$ 5.9 events/h), adenoidal-nasopharyngeal ratio ($>$ 0.782), snoring sound energy of 801-1000 Hz ($>$ 22.1 dB), and tonsil size ($>$ 3) significantly predicted severe OSA, in descending order of odds ratio. Multivariate analysis showed that oxygen desaturation index [?] 3%, adenoidal-nasopharyngeal ratio, and tonsil size independently predicted severe OSA, and that their combination best predicted severe OSA (sensitivity = 91%; specificity = 84%; area under the curve = 0.92; p $<$ 0.001). Conclusions: Our results suggested that pulse oximetry is better than snoring sound analysis to screen for severe OSA in children with loud snoring. A combination of oxygen desaturation index [?] 3%, adenoidal-nasopharyngeal ratio, and tonsil size can be used to efficiently screen for severe pediatric OSA.

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