Night-To-Night Consistency of At-Home Nocturnal Pulse Oximetry Testing for Obstructive Sleep Apnea in Children.

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Rationale

At-home nocturnal pulse oximetry has a high positive predictive value (PPV) for polysomnographically-diagnosed obstructive sleep apnea (OSA) but no studies have been published testing the night-to-night consistency of at-home nocturnal pulse oximetry for the evaluation of suspected OSA in children. We therefore determined the night-to-night consistency of nocturnal pulse oximetry as a diagnostic test for OSA in children.

Methods

We prospectively studied 148 children (96 male) aged 4.9 ± 2.4 (1.2-11.8) years, referred for suspected OSA. To evaluate night-to-night consistency, we compared an oximetry analysis method, the McGill Oximetry Score (MOS), from two consecutive at-home nocturnal pulse oximetry recordings.

Results

Pulse oximetry metrics were similar on the two nights. The MOS on the two nights showed excellent night-to-night consistency when analyzed as positive for OSA versus inconclusive, 143/148 (Spearman's correlation coefficient = 0.90). A more detailed analysis using four categories (MOS 1, 2, 3, and 4) of OSA severity showed very good night-to-night agreement, 133/148 (Spearman's correlation coefficient = 0.91). Variability was increased in children younger than 4 years of age compared to older children.

Conclusions

Night-to-night consistency of nocturnal pulse oximetry as a diagnostic test for OSA showed excellent agreement. Night-to-night consistency of pulse oximetry, as analyzed by the MOS, for diagnosis and severity evaluation further validates this abbreviated testing method for pediatric OSA. Polysomnography (PSG) is required to rule in or rule out OSA in children if a single night oximetry testing is inconclusive.