STRONG CHILDREN'S RESEARCH CENTER

Summer 2019 Research Scholar

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ABSTRACT

Title: *Predictors of Auto-Titrating CPAP Adherence in Children with OSA*

Objective: Obstructive sleep apnea (OSA) results from episodic airway closure during sleep causing neurocognitive, cardiovascular and metabolic abnormalities. Continuous positive airway pressure (CPAP) is the preferred management for adults whereas in children, CPAP is generally reserved for patients with residual sleep apnea or are not candidates for surgical management. Autotitrating CPAP (APAP) is effective treatment for adults but is unproven in children. Adults who experience the greatest reduction in daytime symptoms are most adherent to CPAP. The objective of this study was to determine factors that predict CPAP adherence in children managed with APAP.

Methods: APAP was offered to all patients in order to facilitate acclimation to positive airway pressure prior to an in-lab titration study. This was a retrospective chart review from 1/7/14-3/29/19 that looked at 186 children ≥ 10 years old using APAP. Each patient underwent baseline polysomnography. Studies were scored using the American Academy of Sleep Medicine Manual for the Scoring of Sleep. The Cleveland Adolescent Sleepiness Questionnaire (CASQ) was used to measure sleepiness. APAP adherence was measured via compliance download obtained at or around the time of in-lab titration and analyzed for percentage of attempted nights used, percentage of nights with > 4 hours usage and median nightly usage (hours) as well as the APAP identified ideal pressure and residual apnea-hypopnea index (AHI). SPSS-24 was used for statistical analysis.

Results: Our sample (113 males) was mean age 11.12±5.08 years, BMIz 1.66±1.39, obstructive AHI 17.00±18.90, and pre-treatment CASQ 37.85±10.78. Females were significantly more likely to attempt nightly APAP usage (78.07%±24.81% girls; 68.41%±29.05% boys, $p < 0.05$) The percentage of nights used for > 4 hours (55.11±36.8) and median nightly usage (5.72±2.83) were not different based on gender (p=ns). Pre-treatment severity of sleep apnea, degree of obesity and severity of sleepiness did not predict APAP adherence nor did the ideal APAP pressure. APAP usage resulted in statistically significant improvements in sleepiness from 37.85±10.78 to 33.12±10.09 ($p<0.05$). Likewise, APAP significantly reduced the in-lab AHI from 17.00±18.85 to 4.07±4.98 events/hour as measured by the APAP device ($p<0.05$). Low residual AHI correlated with better APAP usage by all measures ($p<0.05$).

Conclusion: Autotitrating CPAP improved sleepiness as measured by CASQ and was likewise effective at improving the severity of sleep apnea as measured by AHI. Patients with the most improvement in AHI tended to be the most consistent users of APAP.