JCSM | Journal *of* Clinical Sleep Medicine

LETTERS TO THE EDITOR

Auto-titrating CPAP for the treatment of obstructive sleep apnea in children: a good beginning

Response to Sangal RB. Auto-titrating CPAP for the treatment of obstructive sleep apnea in children: APAP and CPAP pressures were not that close. *J Clin Sleep Med*. 2020;16(10):1823. doi:10.5664/jcsm.8680

Ilya Khaytin, MD, PhD[1]; Ignacio E. Tapia, MD[1,2]; Suzanne E. Beck, MD[1,2]

[1]Sleep Center, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; [2]Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania

In the letter to the editor, Sangal[1] raised several interesting points about our study.[2] We appreciate this interest and would like to address some of the topics that were raised.

Auto-titrating continuous positive airway pressure (autoCPAP) is a frequently used treatment modality in adult sleep medicine, but in pediatric sleep medicine, its usefulness has not been well studied. The goal of this study was to determine whether autoCPAP can be used in children and reasonably agree with the gold standard of a titration study. Our intent was not to demonstrate superiority of autoCPAP to the titration study or to CPAP in children.

We showed that for most children, P_{MEAN} (autoCPAP mean pressure) is lower than P_{PSG} (titration PSG pressure) and that the P_{90} (average device pressure ≤90% of the time) and $P_{PEAKMEAN}$ (autoCPAP peak average pressure) were within 3 cm H_2O of the P_{PSG}.

As discussed in our publication, these are expected findings and highlight that autoCPAP can alter pressures as expected. It is actually remarkable that 2 pediatric autoCPAP studies, Michai et al[3] and ours,[2] demonstrated good agreement between the automatic determined pressures and the gold standard P_{PSG}, despite the wide distribution of ages, body mass index z-score, and medical diagnosis of the patients. We agree that further studies of effectiveness of autoCPAP in children are needed. This is especially true because the proprietary algorithms used by each manufacturer may not be optimized for children. However, the degree of agreement between device-determined pressures and titration pressure is encouraging and would argue against trying to set the pressure limits very tightly to P_{PSG} because that would eliminate the major potential advantage of autoCPAP: the ability to adjust pressures during sleep.

Comparing adherence between autoCPAP and CPAP in children is a very worthy and necessary future step, but it is beyond the scope of our publication. Our study was not designed to compare adherence but rather to test how well autoCPAP-determined pressures agree with titration pressures as a first step to understanding how autoCPAP works in children who are clinically tolerating and using autoCPAP. Therefore, only children who had use data within a 90-day window around a titration study and who used autoCPAP for at least 2 hours per night were included, so that the pressure data were comparable. By design, children who only used autoCPAP outside of the 90-day window were excluded.

We agree that further research is needed to compare adherence to treatment with autoCPAP and traditional CPAP. For example, it is possible that some children can better tolerate CPAP, as has been shown in adults.[4] Also, it is especially important to determine factors that affect adherence to autoCPAP treatment in children so that the intervention can be personalized for each child. However, that would require a prospective, randomized, controlled trial or a large cohort retrospective review and is beyond the scope of our published research. Nevertheless, it is encouraging that, among the children included in our study, during a 90-day period from an arbitrarily selected day of the titration study, average autoCPAP use was 80% ± 25% (standard deviation) of nights with average use of 360 ± 149 minutes (standard deviation) on those nights.

In conclusion, our study shows that children who are using and tolerating autoCPAP have a reasonable agreement between autoCPAP-derived pressures and titration-derived CPAP pressures. We hope our study adds evidence for clinicians as they consider using APAP in select children. In addition, we hope to inspire further research to investigate effectiveness, long-term outcomes, and adherence to autoCPAP therapy in pediatric patients with obstructive sleep apnea.

CITATION

Khaytin I, Tapia IE, Beck SE. Auto-titrating CPAP for the treatment of obstructive sleep apnea in children: a good beginning. *J Clin Sleep Med*. 2020;16(10):1825–1826.

REFERENCES

1. Sangal RB. Auto-titrating CPAP for the treatment of obstructive sleep apnea in children: APAP and CPAP pressures were not that close. *J Clin Sleep Med.* 2020; 16(10):1823.
2. Khaytin I, Tapia IE, Xanthopoulos MS, et al. Auto-titrating CPAP for the treatment of obstructive sleep apnea in children. *J Clin Sleep Med.* 2020; 16(6):871–878.
3. Mihai R, Vandeleur M, Pecoraro S, Davey MJ, Nixon GM. Autotitrating CPAP as a tool for CPAP initiation for children. *J Clin Sleep Med.* 2017;13(5):713–719.

4. Sangal RB, Sudan N. Baseline lighter sleep and lower saturation are associated with improved sleepiness and adherence on continuous rather than autotitrating positive airway pressure. *Clin EEG Neurosci.* 2020;51(3):174–179.

Address correspondence to: Ilya Khaytin, MD, PhD, 225 E Chicago Ave, Box 43, Chicago, IL 60611; Email: ikhaytin@luriechildrens.org

SUBMISSION & CORRESPONDENCE INFORMATION

DISCLOSURE STATEMENT