CPAP Adherence during the Perioperative Period

Response to Esquinas and Cistulli. Is prediction of CPAP adherence in obstructive sleep apnea in the perioperative setting feasible? *J Clin Sleep Med* 2013;9:731.

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We thank Drs. Esquinas and Cistulli for their thoughtful comments and careful review of our recent study in the *Journal of Clinical Sleep Medicine*.¹ We believe the most important finding of our study was that the majority of patients referred from the Anesthesia Perioperative Medicine Clinic and subsequently diagnosed with obstructive sleep apnea (OSA) were poorly adherent to auto-PAP therapy during the perioperative period (median adherence of 2.5 h per night). As we pointed out in our discussion, the overall adherence was significantly lower than what we have reported in our clinical practice as well as what has been widely reported in the literature.²⁻⁵ In multivariate linear regression modeling, OSA severity was not a predictor of CPAP adherence. Esquinas and Cistulli note that increasing OSA severity is associated with better CPAP adherence. However, there are conflicting data on the association of OSA severity and the presence of daytime sleepiness with adherence to CPAP therapy. Although disease severity is frequently identified as influential on CPAP adherence, the relationships are relatively weak, and when other factors are included, disease severity and sleepiness are less contributory to CPAP adherence.^{6,7} In another independent cohort of 403 non-presurgical patients seen at our institution, we also found that the severity of OSA and the Epworth Sleepiness Scale were not predictive of CPAP adherence.² In fact, the only predictors of reduced CPAP adherence in that cohort were African American race and non-sleep specialists ordering polysomnograms and CPAP therapy. We agree that male gender may simply be a marker of other important predictors of CPAP adherence, but unfortunately, our data do not allow us to better delineate it. Our regression model shows that a score above 16 on the validated Center for Epidemiologic Studies Depression Scale was independently associated with 65 minutes lower mean CPAP adherence per night during the first 30 days of therapy. Esquinas and Cistulli contend that this association has “dual interpretation in the population tested in this study and is not clearly in the same direction of previous studies.” Although we acknowledge that validated measures of depressive symptoms are not routinely measured

or reported in the context of CPAP adherence, two prior studies have reported an association between lower psychological well-being and reduced CPAP adherence.^{7,8} As we discussed in the limitations, the findings in our inner-city urban cohort may not be applicable to other populations, and as such, further studies are needed to confirm our findings. We agree that our study was limited by lacking information on the extent of postoperative pain and sedative-narcotic use. However, the types of surgery are described in the first paragraph of the results.

Our entire cohort was directly referred from the Anesthesia Perioperative Medicine Clinic to the sleep laboratory for a diagnostic polysomnogram. On average, the patients underwent in-laboratory split-night polysomnograms just 4 days before the scheduled date of surgery. Given the time constraints and the inability of the sleep clinicians to fully evaluate the patients prior to surgery, we implemented a program in which the patients would receive an auto-PAP device upon awakening in the sleep laboratory. In regards to the pressure settings of the auto-PAP devices, we believe that providing a very wide range of pressures (e.g., 4-20 cm H₂O) was not necessary since our patients had all been manually titrated during the polysomnogram. We set the upper limit of the auto-pap pressure just a few cm of H₂O above the optimal pressure with the rationale that in the immediate postoperative period, the patients may need a higher pressure due to the effect of sedatives and narcotics on the upper airway collapsibility. We agree that having additional information on residual AHI and mask leak as estimated by the CPAP units would have been of interest, but unfortunately not all CPAP units had the capability of reporting these variables. We also agree that having postoperative outcomes would have strengthened our study, but as we pointed out in our limitations, given that overall serious postoperative complications due to OSA are rare, our study was neither powered nor designed to ascertain rates of postoperative complications.

Of interest, in a recent randomized controlled trial of patients undergoing elective hip/knee arthroplasty, patients suspected of having moderate or severe OSA were randomized to auto-PAP therapy during the

postoperative period vs. standard of care. Even in this rigorous clinical trial, the median postoperative daily auto-PAP usage was suboptimal at 184.5 minutes per night. Moreover, empiric auto-PAP therapy led to a 1 day increase in median length of stay in those that were adherent to therapy.⁹ This study raises new questions about the role for empiric postoperative auto-PAP therapy. Therefore, we wholeheartedly agree with Esquinas and Cistulli that further research is needed to identify barriers to CPAP adherence in this patient population, or efforts directed towards diagnosis are likely to be wasted. Given the large volume of elective surgeries performed globally, implementation of systematic screening and empiric auto-PAP therapy in patients at risk for OSA would impose a significant cost burden. This underlines the need for further clinical research to determine the most efficient methods to identify presurgical patients that would benefit from CPAP therapy as well as the utility of education programs before surgery that aim to improve perioperative CPAP adherence and patient outcomes.

CITATION

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