Abnormalities on Nasal Exam Associated with Decreased CPAP Tolerance and Use
Hussen AN, Weaver EM, Kapur V, Watson N, Maronian NC
University of Washington

Introduction: Poor tolerance and inadequate use are the greatest limitations to continuous positive airway pressure (CPAP) therapy for obstructive sleep apnea syndrome. Abnormality on pre-CPAP nasal exam has not been tested as a determinant of CPAP tolerance or use. Understanding this relationship may enable improved treatment for sleep apnea.

Methods: This retrospective cohort study evaluated 306 patients who were prescribed CPAP therapy for sleep apnea at the University of Washington Sleep Disorders Center January 2000 - August 2002. Patient demographics, nasal complaints, findings on nasal exam, polysomnography data, and CPAP data, including CPAP follow up data, were extracted from medical records. Abnormalities on nasal exam included turbinate hypertrophy, septal deviation, or other abnormalities, and were analyzed as a dichotomous variable (abnormality yes/no). CPAP use was dichotomized as any use versus no use at follow up. CPAP tolerance was dichotomized as tolerating well (and using as recommended) versus not tolerating well (and using less than recommended) at follow up. Multivariable logistic regression was used to calculate adjusted odds ratios and 95% confidence intervals (CI). Adjustment variables were left in the model if they impacted odds ratio estimates >10% or were statistically significant (Wald’s test), and they included age, sex, race, smoking status, body mass index, apnea-hypopnea index, CPAP titration method, type of CPAP humidification, and time from CPAP titration to follow up evaluation.

Results: The cohort mean age was 49 ± 12 years with 62% male. Mean apnea-hypopnea index was 56 ± 40 events/hour, and mean CPAP pressure was 13 ± 4 cm H2O. Median time to follow up was 90 days (95%CI 75, 102). 108 (35%) had an abnormal nasal exam. Of the 200 patients with follow up CPAP data available, 145 (73%) were using CPAP, and 68 (34%) were tolerating CPAP well. Patients with an abnormal nasal exam were found to have decreased CPAP use and tolerance. On bivariate analysis, odds ratios for CPAP tolerance were 0.52 (95%CI 0.28, 0.96; p=0.04) and 0.47 (95%CI 0.25, 0.89; p=0.02), respectively, for those with an abnormal exam relative to those without an abnormal exam. On multivariable analysis, the adjusted odds ratio for CPAP tolerance was 0.42 (95%CI 0.20, 0.96; p=0.03) for those with an abnormal exam relative to those without an abnormal exam, adjusting for time to follow up evaluation. On multivariable analysis, the adjusted odds ratio for CPAP use was 0.32 (95%CI 0.15, 0.66; p=0.003) for those with an abnormal exam relative to those without an abnormal exam, adjusting for body mass index, apnea-hypopnea index, and titration method.

Conclusions: These data suggest that nasal exam abnormalities may affect CPAP tolerance and use. This fact should be confirmed with a prospective cohort study. This finding emphasizes the need for special attention to the nasal exam before prescribing CPAP. One should consider treatment of nasal conditions, which may improve CPAP tolerance and use.