Title: Continuous positive airway pressure in patients with obstructive sleep apnea: Independent predictors of adherence

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Body: Background: Although continuous positive airway pressure (CPAP) is an effective treatment for obstructive sleep apnea (OSA), long-term adherence is challenging. In order to increase the rate of adherent patients it is necessary to determine independent adherence predictors. Methods: In a retrospective data analysis we studied 4263 German patients (age = 58.4±11.2 years; 82.4% male) treated with the CPAP device S8 (ResMed, Sydney, Australia). We analysed AHI, mean mask pressure, mean leakage, hours of use per night and efficiency (days of use/ total days). Data of the last 156.7±25.0 treatment days (range 30-180 days) were collected. Logistic regression was used for determining independent predictors of CPAP adherence. Results: Mean therapy duration was 3.5±3.6 years. Independent predictors for poor CPAP adherence (<3h/night) were female gender, leakage and therapy duration: odds ratio (OR) for female gender was 1.63, OR for leakage increment per 0.1l/s was 1.13, and OR for therapy duration decrement (starting from 15 years) per 1 year was 1.15. Furthermore, age, therapy duration, mask pressure and leakage were independent predictors for excellent CPAP adherence (>7h/night): OR for 5-year increment of age was 1.06, OR for therapy duration increment per 1 year was 1.10, OR for mask pressure increment per 1 cmH2O was 1.08, and OR for leakage increment per 0.1l/s was 0.86. Conclusion: Independent predictors for poor CPAP adherence (<3h/night) were female gender, short-term therapy and higher leakage, whereas independent predictors for excellent adherence (>7h/night) were higher age, long-term therapy, increased mask pressure and lower leakage.