

The Prospective Power of Drug-Induced Sedation Endoscopy in Predicting Therapeutic Outcome in Obstructive Sleep Apnea Patients Treated with Oral Appliance Therapy in a Fixed Mandibular Protrusion.

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Introduction

There is a high need for the prospective identification of favorable candidates for oral appliance therapy in the treatment of obstructive sleep apnea (OSA). The objective of the study was to evaluate the role of drug-induced sedation endoscopy (DISE) baseline findings in the prediction of treatment outcome in terms of treatment response and deterioration with a mandibular advancement type of oral appliance (OAm).

Design

A prospective observational clinical trial.

Material and Methods

One hundred OSA patients were included in the study (83% male; age, 47.4 ± 11.5 years; body mass index (BMI), 26.9 ± 3.3 kg/m²; apnea/hypopnea-index (AHI) at inclusion, 21.0 ± 11.2 events/hour sleep) whereafter a new baseline (BL) polysomnography (PSG) was obtained. They started OAm therapy in a fixed protrusion of 75% of the maximal mandibular protrusion. A total of 67 out of 100 patients underwent a DISE examination after inclusion as well as a PSG with OAm in that fixed protrusion. Statistical analysis was performed to evaluate the correlation between DISE findings and treatment outcome. Treatment success was defined as a decrease in AHI by PSG of 50% or more with OAm as compared to BL PSG or AHI with OAm < 5/h; whereas deterioration was defined as an increase in AHI with OAm when compared to BL PSG.

Results

Overall, thirty-one patients (46%) were successfully treated with the OAm in the fixed 75% protrusion. Statistical analysis with correction for the confounding factors BMI and AHI at BL, revealed that hypopharyngeal collapse during BL DISE is a negative predictor for success with an odds ratio (OR) of 0.25 (95% confidence interval (CI): 0.08 – 0.78, $p = 0.0165$). In addition, a complete concentric collapse (CCC) at the level of the palate was found to be associated with a higher risk for deterioration with an OR of 4.56 (95% CI 1.21 – 17.16, $p = 0.0250$). In 30 out of the 67 patients, there was no hypopharyngeal or palatal CCC during BL DISE. The success rate in those 30 patients is 60%, which is higher than the success rate of 37% in the 37 patients with hypopharyngeal or palatal CCC.

Conclusion

Drug-induced sedation endoscopy needs to be recommended as a patient selection tool for OAm therapy to treat OSA. The results of this study indicate that hypopharyngeal collapse as observed during baseline drug-induced sedation endoscopy is a negative predictor for treatment success. Moreover, the presence of palatal complete concentric collapse predicts deterioration with OAm therapy.