

Increased post-treatment REM/NREM AHI ratio in patients with OSA successfully treated with MAD oral appliance: could it be a new PSG phenotype indicating poor upper airway muscle responsiveness?

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Objective

In the recent few years, major physiological phenotypes were found and used to guide the treatment of patients with OSA. The MAD oral appliance can be used to treat the major phenotype of OSA, an anatomically compromised or collapsible upper airway and also in the past literature, the MAD oral appliance, to some extent, can improve the muscle tone of upper airway in sleep. This observational study is to evaluate the PSG phenotype of upper airway muscle responsiveness in OSA patients treated with MAD oral appliance.

Methods

According to our long-term observation in patients successfully treated with MAD oral appliance, the AHI in both REM and NREM sleep could be reduced well. However, we also noted that in some patients the reduction of AHI in REM sleep is less than in NREM sleep, and the ratio of REM/NREM AHI increased after the MAD oral appliance treatment (OAT). In consideration of muscle atonia is the major characteristic of REM sleep, we suggested that this PSG pattern of increased REM/NREM AHI ratio could indicate the modern physiological phenotype of poor upper airway muscle responsiveness.

Results

30 patients (4 female) were collected, the age was 55.8 ± 15 yrs, pre-OAT AHI 31.5 ± 20.2 /h, NREM AHI 29.8 ± 21.3 /h, REM AHI 35.2 ± 25.3 /h, REM/NREM AHI ratio was 1.3 ± 0.8 , and post-OAT AHI 3.8 ± 2.3 /h, NREM AHI 2.2 ± 1.7 /h, REM AHI 13.8 ± 12.8 /h, REM/NREM AHI ratio was 8.3 ± 6.9 . Follow up duration was 28.7 ± 26 months, and there was no BMI difference for the observation period.

Conclusions

For further treatment of this phenotype patients, we suggest to avoid further titration of mandible advancement, but rather choosing some treatment to increase the muscle responsiveness, such as myofunctional therapy or medication which can improve the pharyngeal muscle tone in sleep.