

COMMENTARY

Phenotypes to Predict Response to Mandibular Advancement Device Therapy

Commentary on Op de Beeck et al. Phenotypic labelling using drug-induced sleep endoscopy improves patient selection for mandibular advancement device outcome: a prospective study. *J Clin Sleep Med*. 2019;15(8):1089–1099.

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Different treatment modalities for obstructive sleep apnea (OSA) will be needed in the future, because of the increasing prevalence and nonadherence to the standard treatment, positive airway pressure therapy (PAP). Despite conservative therapy options such as weight loss and sleep positional training and surgical options such as hypoglossal nerve stimulation, mandibular advancement devices (MAD) are more frequently used in mild and moderate OSA.¹ In the German guidelines for sleep-disordered breathing, PAP therapy and MAD are first line treatment options for patients with an apnea-hypopnea index (AHI) ≤ 30 events/h.² Effects can be seen on the soft palate due to the palatoglossus coupling by protruding the lower jaw and reopening the upper airway.³ In recent years, it has been shown that drug-induced sleep endoscopy (DISE) helps to increase the clinical outcome and select patients carefully for hypoglossal nerve stimulation. Standardized protocols for DISE have been developed.⁴

In this issue of *Journal of Clinical Sleep Medicine*, Op de Beeck et al report a new phenotypic labelling of patients with OSA during DISE, and favorable obstruction patterns for MAD response have been developed for the first time.⁵ The tremendous work of the authors will help us in the future to select patients more precisely for different treatment options. Another important point from this work that I would like to highlight is that a complete concentric collapse at the level of the soft palate—as we have already seen for hypoglossal nerve stimulation—tends to show a more negative response to MAD treatment. Also, a complete lateral collapse at the oropharyngeal level seems to reveal the same poor clinical outcomes. This raises the question of whether any of these concentric and lateral collapses in the upper part of the pharynx may be based on another pathophysiology mechanism that favors these collapse patterns. Loop gain, arousal threshold or ineffectiveness of the upper airway dilator muscles could be a target; and, according to Eckert et al, labeling patients by phenotype will probably help in the future to select the best treatment option for patients with OSA.⁶

DISE could be a tool in the extended diagnostics of patients with OSA. It clearly shows which kind of obstruction patterns and anatomical levels are involved during the respiratory events. Therefore, a standardization of the DISE procedure is indispensable, which is clearly described in previous works⁴ and

the supplemental materials of the authors.⁵ The next step would be to perform a prospective randomized trial for patients using MAD with and without phenotypic labeling by DISE. The hypothesis would be that the phenotypic labelled patients would show a superior clinical outcome to patients without DISE.

We need more studies that accurately identify patients who will benefit from different OSA treatment options. Due to the high prevalence of sleep apnea and the associated health costs, it will be essential in the future not to send patients through an odyssey of different treatments. It is important to avoid trial and error methods in order to significantly increase patient satisfaction. The study by Op de Beeck et al will be a puzzle piece of the whole. According to the study by Op de Beeck et al, the best candidate for MAD therapy would be a patient with a mild to moderate sleep apnea, showing a tongue base collapse during DISE by excluding concentric or lateral patterns at the oropharyngeal or velum level.

Taken together, findings by Op de Beeck and colleagues add a certain level of excitement that DISE may help to improve the outcomes of MAD therapy with the potential to reduce nonresponder rates. However, implementation of the described phenotypes should be done in clinical routine to guide patient selection for MAD therapy outcome.

CITATION

Heiser C. Phenotypes to predict response to mandibular advancement device therapy. *J Clin Sleep Med*. 2019;15(8):1073–1074.

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