CASE REPORTS

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Challenges in Managing the Side Effects of Oral Appliance Therapy

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Tinnitus, ringing in the ear, is a common symptom reported by 20% of the population. It can disrupt sleep and result in symptoms related to sleep disruption. Tinnitus is an uncommon side effect of oral appliance therapy (OAT) for obstructive sleep apnea (OSA). This is a report of a patient who experienced recurring tinnitus with OAT.

Keywords: oral appliance therapy, tinnitus, sleep apnea treatment complications

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Tinnitus is the perception of sound in the absence of external acoustic stimulation.[1] Symptoms include ringing, buzzing, roaring, clicking, and hissing sounds. It may occur in one ear or both. Tinnitus is not a disease, but rather a symptom of an underlying condition such as age related hearing loss, exposure to loud noise, Meniere's disease, acoustic neuroma, circulatory system disorder, or TMJ disorder.[2] Complications of tinnitus include sleep interruption, fatigue, depression, memory lapses, anxiety, and irritability.

A large number of patients with tinnitus suffer from sleep disorders. This perceived sound adversely impacts one's quality of sleep. Patients become sleep deprived and exhibit signs of sleep apnea, including daytime sleepiness, fatigue, depression, and diminished quality of life.[1,3]

While some patients report success with CPAP and oral appliance therapy, others report an exacerbation of symptoms, possibly due to CPAP pressure, mask fitting, unequal pressure in the middle ear or TMJ problems.[4]

REPORT OF CASE

A 50-year-old male presented for an OAT in June 2012. He had become intolerant of CPAP after 3 years of treatment.

His past medical history included triple bypass in 2008, thyroidectomy in 1990, and a deviated septum repair in 2006. His medications included Crestor, metoprolol, levothyroxine, pantoprazole, and aspirin. There was no history of smoking or alcohol consumption, and he exercised 3 times a week.

A recent history of weight gain alerted him to check with his cardiologist. Polysomnography was recommended to evaluate OSA. He was diagnosed with mild OSA (AHI = 14.3) and placed on CPAP therapy. However, he became gradually intolerant to this modality due to chronic sinusitis. His pulmonary sleep physician discussed with him the connection between weight gain and sleep deprivation and recommended a mandibular advancement device as a CPAP alternative.

He reported snoring, poor sleep quality, feeling unrefreshed in the morning and weight gain. He did not suffer from depression or cognitive impairment. His Epworth Sleepiness Scale (ESS) was 15. He reported a history of bruxism but no known history of TMJ disorders.

He was fitted with an oral appliance in August 2012 along with an AM Aligner.

At routine follow-up the patient reported diminished snoring, better quality of sleep, and feeling refreshed and energetic. Seven months after the patient received the appliance, he began to experience side effects that resulted in many follow-up visits for management:

March 2013: He stated "I am sensing hair in my inner ear more than usual and hearing ringing in both ears sometimes." He sought the help of his otolaryngologist and was told to pluck the hair out of his ear.

He reported discomfort when using the AM Aligner. He had been biting very hard into the device. The protocol for the aligner was reviewed with him. He was symptom free for 6 weeks.

May 9, 2013: He complained of left TMJ discomfort. Clinical exam revealed tenderness upon palpation of the left medial pterygoid.

The mandibular advancement was decreased, and patient stopped using the appliance for few days; the symptoms disappeared.

May 22, 2013: He was comfortable with the oral appliance; however, he experienced pain when biting into the AM Aligner. A new AM Aligner was made and the protocol reviewed. His ESS was 0.

August 22, 2013: The patient was very comfortable with the appliance and reported no excessive daytime sleepiness.

October 22, 2013: He reported that his quality of sleep was changing and he was feeling tired. The appliance was advanced and patient was advised of the possibility of recurrent tinnitus.

November 6, 2013: He was very comfortable with the appliance, no TMJ discomfort and no EDS. He reported: "…don't feel tired. I am alive again."

January 8, 2014: He was very comfortable with the appliance. No complaints at all.

February 17, 2014: There was tenderness in the left TMJ, and the advancement was decreased.

April 10, 2014: He was asymptomatic, and there was no excessive daytime sleepiness

August 5, 2014: He began experiencing bilateral burning sensation in the ear around 4 to 8.pm. He stopped using his appliance for few days and felt tired and sleepy. The advancement on the appliance was regressed. He was instructed to stop using the AM aligner and to chew gum for 2 minutes after removing the oral appliance each morning. ESS = 3

August 14, 2014: A home sleep study showed residual OSA (AHI = 11.1). The sleep specialist recommended further advancement of the appliance. I communicated to him the side effects the patient had experienced throughout appliance therapy. He recommended CPAP therapy; however, the patient vehemently refused it.

October 23, 2014: Patient was feeling tired. The appliance was advanced and the patient was advised to see his sleep specialist immediately.

December 1, 2014: He followed up with his physician and will continue with the oral appliance; however, he states that TMJ discomfort occurs at 6:00pm and that the appliance helps in resolving his symptoms.

December 8, 2014: Patient was very comfortable. No burning sensation, no tinnitus and no TMJ discomfort. Good quality of sleep and no EDS.

Patient states that he no longer use the AM Aligner. Chewing the gum after he removes the appliance has been very helpful.

This case illustrates the challenges that may be encountered when dealing with side-effects of OAT and the need for supportive follow-up by the dental sleep medicine practitioner. The patient reported subjective improvement with the appliance while the sleep study did not show objective improvement.

Among the many questions that arise in the management of patients with OSA, the following should be considered.

Should treatment success of OAT be based on objective or subjective findings? Does OAT cause or ameliorate tinnitus? Does OAT exacerbate or help resolve TMJ symptoms? Does an AM Aligner contribute to the side effects of OAT?

Further clinical research and prospective studies are required in order to better manage our patients with sleep disordered breathing.

REFERENCES

1. Martinez-Devesa P, Perera R, Theodoulou M, Waddell A. Cognitive behavioural therapy for tinnitus. *Cochrane Database Syst Rev* 2010:CD005233.
2. Vielsmeier V, Strutz J, Kleinjung T, et al. Temporomandibular joint disorder complaints in tinnitus: further hints for a putative tinnitus subtype. *PLoS One* 2012;7:e38887.
3. Eysel-Gosepath K, Selivanova O. [Characterization of sleep disturbance in patients with tinnitus]. *Laryngorhinootologie* 2005;84:323–7.
4. Giannasi LC, Almeida FR, Magini M, et al. Systematic assessment of the impact of oral appliance therapy on the temporomandibular joint during treatment of obstructive sleep apnea: long-term evaluation. *Sleep Breath* 2009;13:375–81.

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