Alternobaric Vertigo in a Patient on Positive Airway Pressure Therapy

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Continuous positive airway pressure (CPAP) is a safe therapy for the management of obstructive sleep apnea (OSA). Complications such as sinus infection, bronchitis, ear pain, nasal congestion, and dryness of mucous membranes secondary to CPAP use have been reported. To follow, we describe a rare case of alternobaric vertigo secondary to CPAP therapy. To date, there has been only one reported case of hearing loss

and vertigo during CPAP treatment with complete resolution of symptoms after cessation of PAP. However, re-challenging the patient with CPAP at gradual increments was never reported.

Keywords: Alternobaric vertigo, CPAP, OSA

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REPORT OF CASE

A 64-year-old Caucasian male with significant history of Parkinson disease and hypertension was diagnosed with moderate OSA, requiring CPAP at 12 cm H₂O. During the initial night of PAP therapy, the patient complained of vertigo of short duration, which, associated with nausea and vomiting, caused him to wake up. Within a few minutes of discontinuing CPAP therapy, the patient experienced complete resolution of symptoms. He denied any history of similar symptoms in the past, including hearing loss and tinnitus, and his medical history was negative for allergic rhinitis or any recent incidence of upper airway respiratory infection. Physical examination revealed normal vital signs along with a body mass index of 31 kg/m². Otologic examination showed normal tympanic membranes. Other than resting tremor, the physical exam was unremarkable, and magnetic resonance imaging of the inner auditory canals was normal. When CPAP at 12 cm H₂O was re-commenced with the patient, vertigo once again returned, this time with greater duration. In an attempt to desensitize the effect of CPAP it was started at a lower pressure of 6 cm H₂O, followed by slow increments of 1 cm H₂O pressure at weekly intervals until the recommended pressure was reached without sequelae.

DISCUSSION

Alternobaric vertigo is a frequently experienced sensation witnessed in the areas of aviation and diving. It occurs from the expansion of trapped air within the middle ear space due to the inability of the Eustachian tubes to equalize the middle ear pressure with ambient pressure. The positive middle ear pressure results in the sudden movement of the stapes at the oval window causing excess vestibular stimulation. The onset of vertigo is rapid and can have duration of between several seconds to a number of minutes. Symptoms resolve when the pressures in both ears reach ambient levels.³ Precipitant factors for alternobaric vertigo include history of allergic rhinitis or recent upper airway infection, both of which conditions can affect the patency of the Eustachian tube.

The pathophysiology of alternobaric vertigo in PAP therapy is similar to the cases evidenced in aviation and diving. Vertigo occurs after interruption of PAP where the increased air pressure in the middle ear does not equalize to the ambient air, resulting in the presenting symptoms as described in the case above.

New-onset vertigo during initiation of PAP therapy should raise the suspicion of alternobaric vertigo. Starting PAP at lower pressures, with slow increments up to the desired pressure, was seen to be effective in relieving symptoms of vertigo secondary to PAP therapy.

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