

A Cutting Edge Therapy: Tonsillectomy for the Treatment of Probable Sleep Apnea Associated Chronic Migraine

Roni Sharon^{1,2,*}, Krithi Nathan² and Paul G. Mathew^{3,4}

¹Department of Neurology, Sheba Medical Center, Ramat Gan, Israel

²Department of Medicine, University of Tel Aviv, Tel Aviv, Israel

³Department of Neurology, Brigham and Women's Hospital, Boston, Massachusetts, US

⁴Department of Neurology, Harvard Vanguard Medical Associates, Braintree, Massachusetts, US

Abstract

Objective: Case report of chronic migraine with comorbid sleep apnea that regressed to low-frequency migraine after tonsillectomy

Background: According to the International Classification of Headache Disorders III (ICHD-3), sleep apnea can be a cause of headache or a trigger for the chronification of migraine. Large tonsils that obstruct airways contribute to tonsillolith formation, halitosis, periodic tonsillitis and occasionally cause sleep apnea. Adequate treatment of sleep apnea can result in the improvement of migraine frequency and intensity, and reduce the risk of cardiovascular and cerebrovascular comorbidities.

Results: The patient is a 24 years old woman with a past medical history of obesity and asthma, with a chief complaint of ICHD-3 chronic migraine without aura. She experienced a frequency of 15-20 headache days per month, frequently with morning headaches and 3-5 sleep interruptions per night. She noted a history of snoring, feeling poorly rested and having daytime drowsiness. After tonsillectomy, the patient experienced significant improvement of her migraines and her sleep apnea associated symptoms, including spontaneous arousals, feeling poorly rested and daytime drowsiness.

Conclusions: In patients complaining of chronic migraine and sleep dysfunction, visualizing the posterior pharynx should be incorporated into the physical examination. Tonsillectomy is a well-tolerated, same day surgical procedure, which can be an effective treatment for reducing airway resistance in patients diagnosed obstructive sleep apnea, and can improve the frequency and intensity of comorbid migraine.

Keywords: Tonsillectomy • Chronification • Pharynx • ICHD-3

Introduction

Headache disorders, including migraine are a prevalent cause of disability worldwide, as indicated by several population based Global Burden of Diseases (GBD), injuries, and risk factors studies, affecting over 3 billion individuals worldwide. The World Health Organization ranks headache disorders as one of the 10 most disabling conditions regardless of gender, creating a need for more effective treatments. Sleep parasomnias can be a major trigger or even a cause of chronic morning headache, and can contribute to transformation from episodic to chronic migraine [1].

Obstructive Sleep Apnea (OSA) is a highly prevalent sleep disorder, affecting over 1 billion individuals worldwide and twenty to ninety percent of patients who are referred for sleep studies. It causes cycles of disrupted or ceased breathing during sleep due to the partial obstruction of respiratory passages. Comorbidities of OSA include underlying cardiac arrhythmias, depression, and hypertension. Several polysomnographic studies indicate a strong association between OSA-derived sleep disturbances and bilateral headache development [2].

According to the literature, tonsillithiasis and acute tonsillitis with peritonsillar abscesses can contribute to snoring, dyspnea, and Sleep Disordered Breathing (SDB) due to upper airway obstruction.

*Address to correspondence: Roni Sharon, Department of Neurology, Sheba Medical Center, Ramat Gan, Israel, Tel: 972 52 3433900; E-mail: ronisharon@gmail.com

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Tonsillectomy involving surgical removal of the PT is commonly performed as a treatment for these conditions in the pediatric population. This is less so in the adult population, despite low postoperative hemorrhage or infection rates of 1%-7%. Currently, this procedure is only performed to treat recurring or chronic tonsillitis in adults, limiting the potential benefit of surgery for treating other indications like sleep disorders. There is a positive correlation between tonsil grade and the Apnea-Hypopnea Index (AHI) in homogenous adult cohort studies worldwide as well; suggesting tonsil size plays a significant role in an adult OSA diagnosis. A meta-analysis of 17 studies demonstrated a decrease in AHI by 65.2% and reduction in Epworth Sleepiness Scale reading from 11.6 ± 3.7 to 6.1 ± 3.9 when treating OSA among adult patients with tonsil grade 2-4 who suffer from mild to moderate OSA¹⁹ [3].

Description

A 23-year-old woman with a past medical history of obesity and asthma presented with a 9 years history of headaches, which have been worsening in frequency and intensity over time. She denied any trauma, illness, or other events that may have triggered her headaches at the time of onset. She estimated having 15-20 headache days per month, with attack duration potentially lasting multiple days. The headaches originated around the right temple, and when severe, were holocranial with an 8/10 throbbing intensity. The pain scale was described as 1-3/10 indicating mild pain with no change in function, 4-6/10 indicating moderate pain with some disability, and 7-10/10 indicating severe pain with near total disability. Her migraines involved photophobia, phonophobia, nausea, cutaneous allodynia, and vomiting [4]. She reported that position change, physical activity, coughing, sneezing worsened a headache, but did not trigger one. She denied visual, sensory, motor and language aura and also noted that headache frequency and intensity increased around the time of menses. Regarding sleep, she reported sleeping 9-10 hours per night, but was waking up 3-5 times per night, woke up feeling poorly rested, and feeling drowsy throughout the day on a regular basis. The patient also noted a history of heavy snoring and tonsilloolith production. Her neurologic examination was unremarkable, but enlarged tonsils that were approximately 2.5 cm in diameter were noted. She was diagnosed with chronic migraine without aura and sleep dysfunction suggestive of sleep apnea. Given that her large tonsils may have been contributing to airway resistance and probable sleep apnea, an otolaryngology referral was generated, rather than a sleep medicine consultation.

Discussion

In cases with a high index of suspicion of sleep apnea in a patient with chronic headaches that tend to occur upon awakening and large tonsils on physical examination, a referral for tonsillectomy evaluation should be considered. A surgical reduction of airway resistance

through a relatively safe, same day surgical procedure like a tonsillectomy can be an effective treatment option for adults with mild to moderate OSA (AHI 5-30). In the current case report, the patient experienced post-surgery resolution of her sleep interruptions and significant improvement of her daytime drowsiness. In addition, her headache frequency improved from 15-20 headache days per month down to 5 days per month [5]. Although such dramatic results may not be universally reproducible, tonsillectomy may be worth pursuing considering potential improvement of sleep, headaches, and tonsilloolith formation as was the case for this patient. Similar efficacy of tonsillectomy has been noted in adult cohort studies, and may be preferred since natural involution of tonsil tissue is expected, lessening the chance of regrowth¹², but additional controlled studies are necessary in order to make a more definitive choice for one surgical option over another in adults.

Conclusion

In patients complaining of chronic migraine, particularly upon awakening and sleep dysfunction, visualizing the posterior pharynx should be incorporated into the physical examination. Tonsillectomy is a generally well tolerated, same day surgical procedure, which can be an effective treatment for reducing airway resistance in patients with or without clinical obstructive sleep apnea, and can improve the frequency and intensity of co-morbid migraine.

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