An Unusual Cause of Sleep Apnea: Laryngeal Schwannoma

Nadir Bir Uyku Apnesi Nedeni: Larenks Schwannomasi

Hande Senem Deveci¹, Tülay Erden Habensoğlu¹, Cem Karataş¹, Ali Okan Gürsel¹, Adnan Somay², Nurver Özbay²

¹Fatih Sultan Mehmet Education and Research Hospital, Department of Otorhinolaryngology, İstanbul; ²Fatih Sultan Mehmet Education and Research Hospital, Department of Pathology, İstanbul

ABSTRACT

Laryngeal schwannomas are slow growing, quite rare benign tumors. Although they are slow growing and histologically benign, they have the potential to cause significant morbidity with laryngeal involvement. In this case report we presented a 28-year-old man with a huge laryngeal schwannoma which causes intensive snoring and obstructive sleep apnea. The tumor was totally excised by transhyoid pharyngotomy approach without any complication. There was no other documented laryngeal schwannoma case has presented with obstructive sleep apnea before.

Key words: laryngeal schwannoma; sleep apnea; transhyoid pharyngotomy

ÖZET


Anahtar kelimeler: larenks schwannoması; uyku apnesi; transhiyoid faringotomi

Introduction

The schwannomas are benign, slow growing, encapsulated neoplasms arising from Schwann cells that comprise the myelin sheaths surrounding peripheral nerves. They occur at any age frequently in women than in men¹. Approximately 45% of these tumors present in the head and neck region but laryngeal schwannomas are quite rare, accounting of approximately 0.1% of all benign laryngeal tumors². Laryngeal schwannomas arise from the internal branch of the superior laryngeal nerve³. Therefore they usually originated from aryepiglottic folds or false vocal cords³.

Symptoms of this lesion are related to the mass effect; they include hoarseness, globus sensation, sore throat, odynophagia, dysphagia, dyspnea, stridor, and dysphonia. Symptoms progress over months to years. Stridor and dyspnea are the late findings⁴. As a result of acute respiratory failure, death was reported only once in the literature⁵.

Obstructive sleep apnea (OSA) occurs due to enlarged tissues such as tonsils, base of tongue or soft palate, pharyngeal space narrowing, decreased muscle tone of the pharyngeal dilator muscles, or head and neck neoplasms⁶.

In this case report we presented a 28-year-old man with a laryngeal schwannoma which causes snoring and sleep apnea, and treated with transhyoid pharyngotomy approach. We described the clinical picture, diagnosis and treatment management of this patient with the aid of his histopathological and radiological images.

Case

A 28-year-old male who was newly-wed admitted to our Ear-Nose-Throat Polyclinic of Fatih Sultan Mehmet Education and Research Hospital (İstanbul, Turkey) with his wife. They complained about the husband’s severe snoring and sleep apneas. He did not have any significant medical history. When the history of the patient was detailed, as well dysphagia and exercise related dyspnea have been occurred. During physical examination a submucosal, well-demarcated laryngeal...
mass posterior to the epiglottis was noted (Fig. 1). The left vocal cord was fixed but the right vocal cord was mobile.

Magnetic Resonance Imaging (MRI) of the lesion revealed hyperintense and inhomogeneous image in contrast-enhanced scans. The lesion was expanded to the left parapharyngeal space. Both pyriform sinuses were obliterated. On the left side the lesion invaded the aryepiglottic fold and expanded to the proximal esophagus (Fig. 2).

After the imaging procedure and preoperative preparations, the patient was ready for the surgery. First of all, under the local anesthesia tracheotomy was performed and then the patient went under general anesthesia. After suspension microlaryngoscopic evaluation, at the hyoid level a 3 cm midline incision was performed. Through transhyoid approach we entered the pharynx. After lateralization of the epiglottis to the right side, the mass was visualized. The mass dissected from surrounding tissues and totally excised. The mass size was larger than the size of the incision, so the tumor was pushed towards pharynx with the help of a finger and removed through mouth.

Macroscopically the surgical specimen consisted of a well encapsulated white-colored tumor mass, measuring $5 \times 4 \times 2.5$ cm. At microscopic examination, the tumor was encapsulated with a fibrous capsule. In the tumor, there were densely cellular and less cellular areas with sheets of spindle cell palisading around amorphous matrix and spindle cells in myxoid stroma respectively. There was no atypia or mitosis (Fig. 3).

At the end of 6-month follow-up the patient was symptom free and we have not encountered any recurrence.

**Figure 1.** Preoperative laryngoscopic image of the patient. Blue arrow indicates the mass.

**Figure 2.** a, b. Coronal (a) and axial (b) MR images. Red arrow indicates the mass.
Verocay was the first to describe the tumors deriving from Schwann cells in 1908. Since then only a few cases of laryngeal schwannomas have been reported in the literature. Symptoms are those associated with any slow-growing tumor of larynx, such as hoarseness and foreign body sensation during swallowing. As the tumor expands, it may cause dyspnea and stridor. The most serious consequence of a large schwannoma reported in the literature was asphyxiation because of a “ball and valve effect”. In our report, the patient presented with snoring and sleep apneas. However, he also had dysphagia and exercise related dyspnea complaints. There was no other documented laryngeal schwannoma case which has presented with obstructive sleep apnea before.

Computed tomography (CT) scans revealed a well-defined, hypodense submucosal mass without any sign of infiltration. Small schwannomas are seen as homogeneously enhancing masses but tumors bigger than 3 cm in size are recognized as masses with slightly heterogeneous contrast enhancement.

At magnetic resonance imaging (MRI), T1-weighted imaging of the mass shows variable intensity with high inhomogeneous enhancement after gadolinium injection, whereas T2-weighted images reveal a hyperintense image. However, CT and MRI scans are not effectively diagnostic. In different being tumor also similar findings are recognized. In our case, MRI of the patient showed hyperintense and inhomogeneous image in contrast-enhanced scans and gave information about the expansion of the tumor.

A definitive diagnosis of schwannoma can only be done histologically although it may be difficult to distinguish schwannoma and neurofibroma on small samples obtained with biopsy. Schwannomas are made up almost entirely of Schwann cells. Histologically, they appear as two types of different areas: Antoni A and Antoni B. Antoni A areas contain spindle-shaped cells with their nuclei aligned in a parallel-rows palisade pattern. The Antoni B type is less cellular and loosely organized, with vacuoles and spindle-shaped nuclei. Also in our case pathologically we recognized these densely cellular palisading areas (Antoni A regions), and less cellular regions with myxoid matrix (Antoni B regions).

When we reviewed the literature, the tumor size of this case was the second biggest laryngeal schwannoma. Although the size of the tumor was very big, the patient admitted to our clinic only with snoring and sleep apnea.

Obstructive sleep apnea is caused by obstruction of the upper airways such as due to tonsillar and adenoid hypertrophy, pharyngeal space narrowing, decreased muscle tone of pharyngeal dilator muscles, or head and neck neoplasms. The patient with OSA is rarely aware of having difficulty in breathing. It is recognized as a problem by others. Also in our case, the snoring and apnea of the patient were realized by his wife and the patient was presented to hospital because of these
Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images.

References