Case Report

Tracheal schwannoma: Completely resected with therapeutic bronchoscopic techniques

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ABSTRACT

Tracheal schwannomas are rare benign tumors of the trachea. There are only a few reported cases in the literature. Surgeons have generally resected these tumors, whereas bronchoscopists have attempted to remove them bronchoscopically. We report a case of tracheal schwannoma which was completely resected using bronchoscopic techniques.

KEY WORDS: Electrocautery, endobronchial treatment, tracheal neoplasms, tracheal tumor, schwannoma

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INTRODUCTION

Tracheal schwannomas are extremely rare. Since there have been only a few case reports of these, there is no consensus on the correct approach to treatment. There are not many reports of the use of bronchoscopic techniques to resect such tumors, and generally surgical options seem to have been adopted more often, with curative intent. We report a case of tracheal schwannoma, which was completely resected using bronchoscopic techniques.

CASE REPORT

A 24-year-old man presented with dry cough and shortness of breath for 1 year and noisy breathing for 2 months. He had been on several medications for asthma for the past 1 year with no response. On examination, he had a monophonic inspiratory and expiratory wheeze, heard bilaterally.

His spirometry revealed reduction in maximum mid expiratory flow rate (MMEF) with flattening of both inspiratory and expiratory limbs of the flow volume loop, suggestive of a fixed upper airway obstruction [Figure 1a]. His chest x-ray was reported as being normal. Hence, he underwent a computed tomography (CT) of the neck [Figure 2a], which revealed a well-defined, lobulated, mildly enhancing soft tissue density lesion arising from the right lateral and posterior wall of the trachea, projecting into the tracheal lumen and causing luminal narrowing at C7-T1 level.

He was then subjected to a flexible bronchoscopy through a laryngeal mask airway (LMA) under general anesthesia, with an intent of de-bulking the tumor. There was a smooth vascular tumor seen, almost completely occluding the tracheal lumen, arising from its right lateral and posterior walls, with its proximal extent 2 cm from the vocal cords [Figure 3a]. Adrenaline (1 ml of 1 in 10,000) was injected at its base, through a conventional TBNA (trans-bronchial needle aspiration) needle to prevent severe endo-bronchial bleeding. The tumor was then resected using an electrocautery snare as two large pieces. Since the pieces were large, with the help of a head down tilt of the operating table, they were delivered into a foreign body basket and successfully removed along with the LMA [Figure 3c]. There was no residual tumor [Figure 3b]. The location of its pedicle was 9.5 cm from the carina and 3.5 cm from the vocal cords, at the right postero-lateral wall of the trachea.

Post procedure, he became asymptomatic and the spirometry and flow volume loop reverted to normal [Figure 1b]. Histopathological examination revealed fibrovascular

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Quick Response Code:

Website: www.lungindia.com

DOI: 10.4103/0970-2113.156252

tissue lined by respiratory epithelium. The fibrovascular tissue was replaced by a tumor, composed of fascicles of spindle cells arranged in a palisading fashion forming verocay bodies [Figure 4]. Infiltrates of lymphocytes, plasma cells and hemosiderin laden macrophages were seen. There was no evidence of malignancy. Spindle cells were diffusely and strongly positive for S-100 [Inset of Figure 4]. CD34 and epithelial membrane antigen (EMA) were negative. This was consistent with a schwannoma.

Since there was a doubt on the pre-procedure CT of a posterior extra-luminal extension, an MRI (magnetic resonance imaging) was done post bronchoscopy, which showed minimal mucosal thickening along the right lateral and posterior wall of the trachea and minimal hyperintensity in the paratracheal soft tissue at the same level, which were consistent with post-operative changes [Figure 2b]. Since there was no residual tumor, it was decided to keep the patient on bronchoscopic surveillance. At the sixth month review, bronchoscopy revealed no recurrence.

DISCUSSION

Primary tracheal tumors are rare and comprise only 1% of all neoplasms. Among these only a quarter are benign.[1]

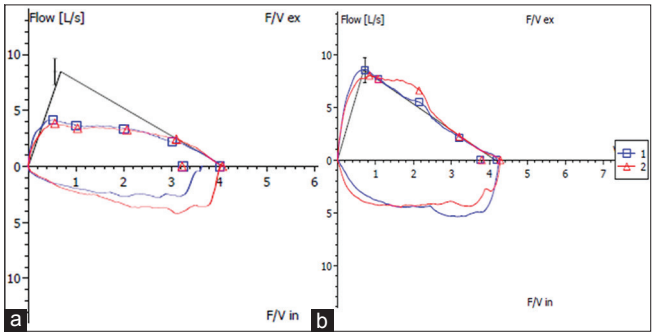

Figure 1: Flow volume loop. (a) Pre-operative; (b) Post-operative

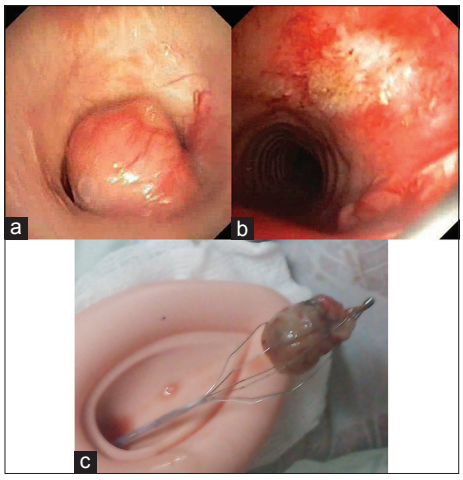

Figure 3: (a) Bronchoscopy showing tumor completely occluding the trachea. (b) Post-bronchoscopic resection showing a completely patent trachea. (c) Picture of the tumor removed within a foreign body basket along with the laryngeal mask airway (LMA)

Schwannoma is an uncommon benign tracheal tumor,[1] and thus tracheal schwannomas are extremely rare. Till date, there are around 35 reported cases of tracheal schwannomas.

Since schwannomas are slow growing tumors of the trachea, they produce symptoms only when they are large enough to cause obstructive symptoms. Since they present with cough and breathlessness, they are often mistreated for years as asthma[2] or COPD, until one suspects an endotracheal lesion due to unresponsiveness to inhaled medications or by the appearance of the flow volume loop or when the symptoms progress to stridor, like it did in our subject.

Bronchoscopic biopsy will yield the diagnosis, but when the tumor is large, as in this case, it is better done under general anesthesia, to reduce complications and mortality. This also gives the opportunity to do therapeutic debulking, which by itself is curative as noted in the literature,[3-6] provided there is no significant extraluminal component. The literature seems to suggest that when these patients have been managed surgically,[7-12] the primary approach has been surgical removal with limited resection of the trachea with preservation of the lung, except in a case of carinal schwannoma,[7] when the patient had to undergo a carinal pneumonectomy, since one lung had been significantly damaged due to post obstructive collapse. Among the cases which have been dealt with bronchoscopically,[3-6] there have been no recurrence reported during the follow up period, ranging from one to five years. It may be desirable to keep these patients on bronchoscopic surveillance, at least yearly to tackle recurrence if at all they occur.

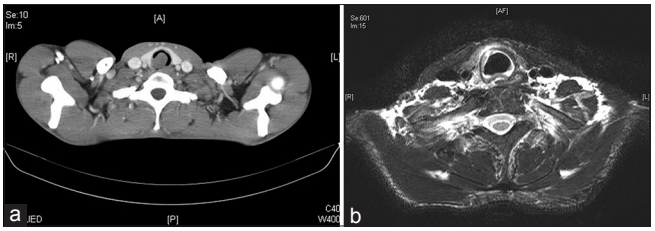

Figure 2: (a) Pre-operative computed tomography (b) Post-operative magnetic resonance imaging

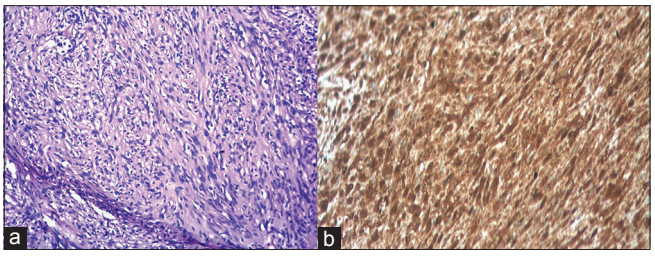

Figure 4: (a) Tumor with palisading arrangement of spindle cells is seen, H and E (hematoxylin and eosin), 20× magnification. (b) Tumor cells staining for S-100, immunohistochemistry, 10× magnification

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How to cite this article: Isaac BT, Christopher DJ, Thangakunam B, Gupta M. Tracheal schwannoma: Completely resected with therapeutic bronchoscopic techniques. Lung India 2015;32:271-3.

Source of Support: Nil, **Conflict of Interest:** None declared.