CASE REPORT

Laser Treatment of a Tracheal Inflammatory Myofibroblastic Tumor

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Background: Inflammatory myofibroblastic tumors of the trachea are rare childhood quasi-neoplastic lesions. **Case characteristics:** 7-year-old boy with recurrent episodes of cough, breathing difficulty and wheeze, initially treated as asthma. **Intervention**: CT chest and flexible bronchoscopy revealed a mass lesion of the trachea, which was excised by diode laser through the ventilating bronchoscope. Histopathology confirmed it as the inflammatory myofibroblastic tumor. **Message:** Use of laser ensured complete endotracheal excision of the tumor.

Keywords: *Bronchoscopy, Diode Laser, Inflammatory pseudotumor*.

Inflammatory myofibroblastic tumors (IMT) are quasi-neoplastic rare childhood tumors with a benign clinical course. Since IMT can occur at any anatomical site (both pulmonary and extrapulmonary) with diffuse inflammatory infiltrate in histopathology, IMTs have been named with varying terminologies like plasma cell granuloma, fibrous histiocytoma, xanthogranuloma and inflammatory pseudotumor [1,2]. Pulmonary IMT is predominantly located within the lung parenchyma rather than presenting as endobronchial lesion [3]. We report a child with IMT of the trachea and its endotracheal excision.

CASE REPORT

A 7-year-old male child presented with recurrent episodes of cough and breathing difficulty, and occasional wheeze. The child had been treated as asthma for more than a year, without clinical improvement, and was subsequently, the child was referred to us.

The detailed clinical evaluation revealed that his symptoms were progressive in the last 6 months, with no history of hemoptysis, and no family history of asthma or atopy. His vital signs and laboratory investigations were within normal limits. Chest radiography showed bilateral hyperinflation. Multidetector computed tomography (MDCT) showed a mass lesion with calcification, at the anterolateral aspect of the trachea.

Flexible bronchoscopic examination showed a mass lesion attached to the anterior wall of lower trachea (***Fig.* 1**). The lesion was a smooth-surfaced, sessile about 0.7 cm x 0.5 cm in size causing near total obstruction of trachea. Biopsy was done by rigid bronchoscopy which was suggestive of inflammatory fibromyoma of the trachea.

Under total intravenous anesthesia using ventilating bronchoscope, diode laser excision of the mass was done. Histopathological examination of the specimen showed squamous lining epithelium and spindle cells admixed with inflammatory cell population. Immunohistochemical findings were positive for Vimentin, anaplastic lymphoma kinase (ALK) and Desmin which were consistent with inflammatory myofibroblastic tumor (***Fig.* 1**).

DISCUSSION

Tracheal tumors are easily treatable when diagnosed in the early stages. Due to the low incidence and the variability of clinical presentation, the diagnosis and treatment of tracheal IMT are often delayed. If a child does not respond to asthma management, alternatives like endobronchial mass lesions need to be considered.

Although IMT have been described in virtually every anatomic location, there are only few documented reports with tracheal localization [4]. The index case presented with slowly progressive symptoms mimicking asthma but other studies have reported acute presentation with severe respiratory distress mimicking as foreign body [5].

Based on the location in the pulmonary system, IMTs are divided into two groups as parenchymal and airway IMTs. Most IMTs manifest as a solitary lesions in the lung parenchyma, and only 10% of these develop within the airway. The analysis of bronchoscopically treated IMT of the tracheobronchial tree in the age group of 16-45 years revealed that roughly half of them (43%) were confined to the trachea [6].

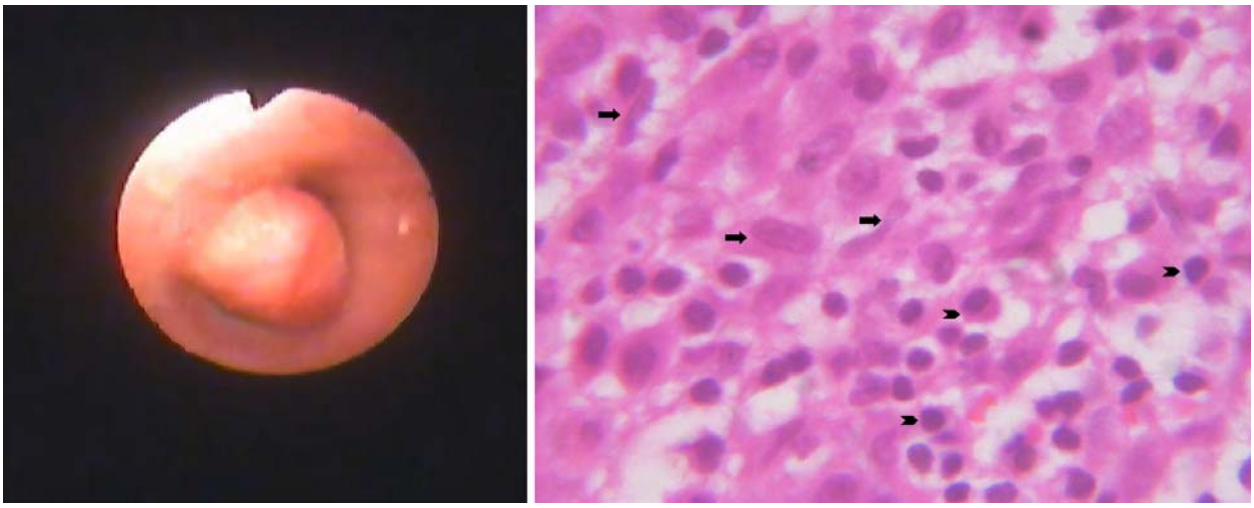

FIG. 1 *Bronchoscopy view and HPE of inflammatory myofibroblastic tumor and photomicrograph showing a lesion composed of elongated spindle cells (arrow) admixed with inflammatory cell population (arrow head) in the background (H&E x 400)***.**

The index case started his symptoms from 6 years of age. Though IMT are reported in adults, these are the most common benign lung tumor in children under 16 years of age [7]. Though initial CT reported as papilloma, which is a common tracheal tumor, excision biopsy confirmed as IMF. Endobronchial excision was made possible by rigid bronchoscopy diode laser. Transportability, cost, penetration depth (0.3-1.0 mm) and effective photocoagulation of the diode laser are the advantageous features. In endobronchial surgery, the advantages of various lasers have repeatedly been debated but in our experience diode laser appears to be more precise and less invasive [8]. The immuno-histochemistry of the specimen was typically reactive to vimentin (99% specific), desmin (69% specific) with ALK-1 expression (highly specific), which were all consistent with IMT (***Fig.* 1**) [9].

As IMF is considered to have low-grade malignant potential, bronchoscopic excision of the tumor with the diode laser appears to have advantages in resource-poor settings [10]. The appropriate surgical intervention will ensure a normal life if such children are referred early.

Contributions: DVS: conception and design of the study; TNS: surgical management and final version; SR: anaesthetic management.
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