Tracheal Fibroepithelial Polyp Treated with Endobronchial Cryotherapy Combined with Argon Laser: A Case Report and Literature Review

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A 67-year-old male presented with breathlessness and wheezing. On chest computed tomography (CT), a polyp-like tracheal tumor with partial stenosis of the lumen was detected. Routine chest X-ray did not detect the tumor. Diagnosis via flexible bronchoscopy might have potentially induced bleeding and further compromised the airway; therefore, a thoracic surgeon was consulted. The tumor, with an unknown origin and obstructive symptoms, was removed by cryotherapy combined with argon laser via rigid bronchoscopy, rather than by tracheal resection with reconstruction. The tumor was identified as a benign fibroepithelial polyp, which required no further therapy. A follow-up bronchoscopy 3 months later showed no recurrence. (Thorac Med 2016; 31: 288-293)

Key words: trachea, fibroepithelial polyp, cryotherapy, laser therapy, endobronchial

Introduction

Fibroepithelial polyp of the trachea is a rare, benign endobronchial tumor, histologically composed of fibrovascular stroma covered with normal respiratory epithelium. Electrocautery and surgical resection are safe and successful treatment modalities. To our knowledge, this is the first use of cryotherapy combined with argon laser for resection of a tracheal fibroepithelial polyp.

Case Presentation

A 67-year-old male with chronic obstructive pulmonary disease (COPD) presented with progressively worsening shortness of breath. He was a smoker. He denied any history of foreign body aspiration and had no personal or family history of cancer. COPD with acute exacerbation was diagnosed initially, and he had an audible wheeze. Although no significant abnormality was revealed on visualization from the posteroanterior view of the chest (Figure 1A), an upper tracheal tumor was detected...
Tracheal Polyp Treated with Endobronchial Cryotherapy Combined with Argon Laser

Thorac Med 2016. Vol. 31 No. 5

from the lateral view (Figure 1B). The chest CT showed a tracheal tumor, 1.3 × 1.2 × 1.8 cm in size (Figure 2). On bronchoscopy, the tumor appeared smooth, shiny, and hypervascular; it was located 10 cm below the vocal cords in the anterior trachea, with 70% stenosis of the tracheal lumen (Figure 3). Examination of the airway below was not possible because of the obstruction; biopsy could induce bleeding and further limit the airflow. Therefore, surgery was considered. Endobronchial tumor resection was an easier and safer alternative to tracheal resection with reconstruction. Under general anesthesia, we used endobronchial cryotherapy to freeze the tumor stalk for devascularization and used argon laser for hemostasis and resecting the tumor stalk. The tumor was then removed by freezing adhesion. Airway patency was maintained after resection, and the endotracheal tube was removed. There were no complications or side-effects. Pathological examination revealed the specimen to be a 1.4 × 1 × 0.8-cm fibrovascular stroma covered with normal respiratory epithelium (Figure 4A and 4B), suggestive of a fibroepithelial polyp. As the tumor was benign, further surgery and postoperative chemoradiotherapy or radiation therapy were not arranged. Follow-up bronchoscopic examinations 3 months after resection excluded residual or recurrent disease.

Discussion

Tracheobronchial fibroepithelial polyps are rare, benign endobronchial tumors, with only a few reports available for analysis. Ming Li et al. [1] found that fewer than 30 patients with tracheobronchial fibroepithelial polyps have been reported over the past few decades. Among these, fibroepithelial polyps of the trachea were even rarer [2-4].

Tracheobronchial fibroepithelial polyps
have no specific clinical presentations, and have varied symptoms, such as coughing, hemoptysis, dyspnea, asthma, and recurrent pneumonia. Polyp lesions vary in size and number. It is difficult to distinguish fibroepithelial polyps from other diseases based on clinical findings alone, and the role of imaging in the differential diagnosis is limited. Obstruction and atelectasis are the most common radiographic findings, and evaluation should include a CT scan of the
chest. Kang H et al. [5] reported a characteristic lobulating contour of the endobronchial nodule on CT, which may help differentiate fibroepithelial polyps from other endobronchial polypoid nodules. There are no clear diagnostic criteria for the histological exam, although Casalini E et al. [6] defined the histological features of a polypoid lesion as dense, collagenous, hypocellular stroma with some thin-walled, ectatic vessels and a regular respiratory mucosa on the surface, as well as a negative finding of in-situ hybridization with a human papillomavirus probe.

Etiology of these polyps remains unclear. However, chronic inflammatory processes due to chronic smoke inhalation, COPD, asthma, chronic infection, foreign body aspiration, or prolonged mechanical ventilation are believed to be significant. Hence, polyps may be resolved with antibiotics and glucocorticoids.

Non-pharmacological treatment varies according to the location, size, number, and severity of the polyps. The first priority is to remove the tumor and sustain airway patency. Bronchoscopic electrocautery [3-4] and surgical resection [1] have been used safely and successfully to treat tracheobronchial fibroepithelial polyps. Cryotherapy [7-11] and laser therapy [12-13] have also been reported to be successful in cases with tracheobronchial benign tumors, including tracheal papilloma, granulation tissue, lipoma, hamartoma, leiomyoma, fibroleiomyoma, and amyloidosis, but not with fibroepithelial polyps. Bronchoscopic modalities are less invasive than surgical resection, and when used appropriately, they result in similar rates of airway patency and symptomatic relief. The hot techniques (electrocautery and laser resection) can destroy tissue rapidly with immediate effect but cannot be used in a high-FIO₂ environment because of the risk for fire. The cryotherapy can freeze tissue for adhesion and specimen removal. Our experience confirms the safety and efficacy of endobronchial cryotherapy combined with argon laser in treating fibroepithelial polyps.

Local recurrence is uncommon. Yasushi Murakami et al. [2] reported a case of recurrence that was detected by surveillance bronchoscopy 6 months after tumor resection. In our case, bronchoscopy revealed no recurrence 3 months after tumor resection. Close clinical follow-up will continue.

Clinicians should choose the correct imaging modality for diagnosis of tracheobronchial tumors. In addition to electrocautery and surgical resection, endobronchial cryotherapy combined with argon laser is safe and effective for treatment of fibroepithelial polyps. Although local recurrence is uncommon, regular follow-up is recommended to check for relapse.

Reference

6. Casalini E, Cavazza A. Bronchial fibroepithelial polyp: a clinico-radiologic, bronchoscopic, histopathological and in-situ hybridisation study of 15 cases of a poorly


氣管纖維上皮息肉經支氣鏡內冷凍療法及合併氬雷射治療:
病例報告和文獻綜述

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氣管纖維上皮息肉是一罕見但良性的腫瘤，過去都以電燒或手術切除腫瘤，在這篇文章裡，我們呈現一位 67 歲男性罹患氣管纖維上皮息肉，接受支氣管鏡下使用冷凍療法合併氬雷射切除腫瘤，術後追蹤 3 個月仍無復發。( 胸腔醫學 2016; 31: 288-293)

關鍵詞：氣管、纖維上皮息肉、冷凍療法、雷射治療、支氣管內