Bronchial Fibroepithelial Polyp: A Case Report and Review of the Literature

Ming Li, Guoliang Zhang, Aimei Peng and Changhui Wang

Abstract

Fibroepithelial polyps of the bronchus are uncommon. We herein report a rare case of a recurrent bronchial fibroepithelial polyp. A 61-year-old man was admitted to the hospital due to recurrent pneumonia. Chest computed tomography showed consolidation and atelectasis in the right lower lobe. Bronchoscopy revealed a mobile polypoid tumor protruding from the right lower lobe bronchus. We performed endobronchial resection, and a pathological examination revealed a fibroepithelial polyp. However, surveillance bronchoscopy performed six months after tumor resection detected a relapse. We herein report a case of a recurrent bronchial fibroepithelial polyp and also review the relevant literature.

Key words: recurrent pneumonia, fibroepithelial polyp, endobronchial resection


Introduction

Fibroepithelial polyps are a common type of tumor in the skin or genitourinary tract. However, fibroepithelial polyps of the bronchus are rare, and therefore making a proper diagnosis and selecting the appropriate treatment of such polyps is rather difficult. The following is a case of a recurrent bronchial fibroepithelial polyp and a review of the pertinent literature on this topic.

Case Report

A 61-year-old man was admitted to the hospital with a moderate fever and nonproductive cough lasting for one week. He denied any current history of chills, expectoration, hemoptysis, chest pain, dyspnea, hoarseness, weakness or weight loss. Approximately one year previously, he had contracted right lower lobe pneumonia and continued to have a chronic cough that persisted even after treatment. He reported that he had type 2 diabetes, coronary artery disease and hypertension, for which valsartan and aspirin were prescribed. The patient’s history of aspiration, drowning or trauma was negative. He denied any occupational history or exposure to tuberculosis or birds. He had smoked one pack of cigarettes per day for 30 years.

A physical examination showed a temperature of 37.8°C, a heart rate of 110 beats/min, a respiratory rate of 20 breaths/min and a blood pressure of 150/90 mmHg. A pulmonary examination revealed decreased tactile fremitus, dullness and decreased breath sounds in the right lower lobe. No rales were audible throughout either lung field. The findings of cardiac and other related examinations were unremarkable.

Admission laboratory results showed an elevated WBC count (10,400/μL) with a normal differential count, a C reactive protein level of 108 mg/L, a PaO2 of 70 mmHg, a PaCO2 of 32 mmHg and a pH of 7.45. Serum tests for HIV, the D-dimer level and the liver and renal functions were normal. The forced vital capacity (FVC) was 2.16 L (62.8% of the predicted value) and the forced expiratory volume in one second (FEV1) was 1.97 L (72.8% of the predicted value).

Chest computerized tomography (CT) showed consolidation and atelectasis in the right lower lobe and an obstruction of the right intermediate bronchus at the level of the right pulmonary artery (Fig. 1). Multiplanar and three-dimensional (3D) imaging of the central airway demonstrated the presence of a spherical foreign body in the right intermediate bronchus.
Bronchoscopy revealed a mobile, pedunculated and pinkish polypoid tumor protruding from the right lower lobe bronchus without any evidence of bronchial wall invasion. As it was difficult to penetrate the bronchus, bronchoscopic high-frequency electrosurgical snare resection was performed (Fig. 2A).

A pathological examination showed the specimen to be a 25×15×15 mm ellipsoid covered with normal ciliated pseudostatified columnar epithelia and stratified squamous epithelia. The polyp consisted of fibrovascular stroma with scattered lymphocytes, plasma cells and erythrocytes (Fig. 3). A diagnosis of fibroepithelial polyp was made after the above pathological examination was performed.

The patient was asymptomatic after bronchoscopy; however, surveillance bronchoscopy performed six months after tumor resection demonstrated the presence of a recurrent polyp in the orifice of the right dorsal segment (Fig. 3B). We again performed endobronchial resection, and a pathological examination revealed the presence of a fibroepithelial polyp. Thereafter, the patient was treated with low-dose glucocorticoids and azithromycin for three months. However, no recurrence was found during a follow-up period of two years after the second bronchoscopy.

Discussion

There are numerous causes of recurrent pneumonia. In patients who present with repeated pneumonia and atelectasis in the same location in the lungs within one year accompanied by bronchial obstruction on 3D-CT, the presence of a foreign body or bronchial tumor should therefore be first considered.

Tumors occurring in the tracheobronchial tree are distinctly unusual, accounting for only 0.1-0.4% of malignant diseases (1). Most tumors of the tracheobronchial tree are malignant. Benign tracheobronchial tumors are rare, and bronchial fibroepithelial polyps are even rarer. Our review of the literature showed that the morbidity of this type of polyp remains unclear. Approximately 22 patients with tracheobronchial fibroepithelial polyps have been reported over the past few decades, for whom only 12 case reports are available for analysis (2-13) (Table). To the best of our knowledge, these reports did not find any evidence of recurrence, and our case is possibly the first report of a recurrent bronchial fibroepithelial polyp.

Although the pathogenesis of fibroepithelial polyps remains unresolved, chronic inflammatory processes may play a key role. Several chronic inflammatory etiologic factors, such as chronic smoke inhalation, chronic inflammation in patients with asthma and chronic obstructive pulmonary disease (COPD), repeated airway infections, foreign body aspiration and prolonged mechanical ventilation may be potential causes. Yamagishi et al. described a case of polyps that were resolved with antibiotic treatment (14). Consequently, our patient was treated with low-dose glucocorticoids and azithromycin for three months.

The complications associated with tracheobronchial fibroepithelial polyps vary widely. In one series of patients with biopsy-proven fibroepithelial polyps, the clinical presentations were characterized by nonspecific complaints. Tracheobronchial fibroepithelial polyps are usually asymptomatic, although they may result in coughing, hemoptysis,
dyspnea or pseudoasthmatic wheezing in some cases (9).

One of the central changes is airway stenosis, thus leading to recurrent respiratory infections, atelectasis and bronchiectasis. The most common associated diseases or reasons for admission are recurrent pneumonia, refractory asthma, dyspnea and hemoptysis (4, 11).

There is no consensus in the literature regarding the diagnosis or treatment of fibroepithelial polyps. According to the literature, a diagnosis of bronchial tumors should be considered in all smokers with recurrent pneumonia or refractory asthma. In addition to physical examinations and routine laboratory studies, the initial evaluation should include CT of the chest. Obstruction and atelectasis are the most common radiographic findings. Multiplanar and 3D imaging of the central airways is often useful for demonstrating polypoid lesions in the trachea or bronchus. Bronchoscopy usually shows 3 to 100 mm mobile and pedunculated polypoid masses protruding from the bronchial wall (nonspecific, mostly seen above the segmental bronchus) (2, 3, 5, 8, 11).

It is usually difficult to distinguish fibroepithelial polyps

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**Table.** Reported Cases of Tracheobronchial Fibroepithelial Polyps

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Sex</th>
<th>Reasons for admitted</th>
<th>Image</th>
<th>Size (mm)</th>
<th>Location</th>
<th>Therapy</th>
<th>Ref. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>38</td>
<td>M</td>
<td>Recurrent pneumonia</td>
<td>Infiltrate in the right middle lobe and the superior segment of the right lower lobe</td>
<td>9×6×3</td>
<td>Right upper lobe</td>
<td>Surgical resection</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>65</td>
<td>F</td>
<td>Pneumonia and asthma</td>
<td>Infiltrate with atelectasis of the left lower lobe</td>
<td>10×10</td>
<td>Left lower lobe</td>
<td>Endobronchial resection</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>55</td>
<td>M</td>
<td>Recurrent pneumonia</td>
<td>Obstruction of the main bronchus, atelectasis in the right middle lobe</td>
<td>100×20</td>
<td>Trachea</td>
<td>Surgical resection</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>81</td>
<td>M</td>
<td>Dyspnea</td>
<td>Chest x-ray showing no active lung lesion</td>
<td>15×15×10</td>
<td>Posterior segment of right upper lobe</td>
<td>Endobronchial resection</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>37</td>
<td>F</td>
<td>Recurrent pneumonia</td>
<td>NM</td>
<td>10×15×10</td>
<td>NM</td>
<td>Endobronchial resection</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>32</td>
<td>M</td>
<td>Asthma and recurrent pneumonia</td>
<td>Obstruction of the left mainstem bronchus</td>
<td>30*</td>
<td>Left main bronchus</td>
<td>Surgical resection</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>55</td>
<td>M</td>
<td>Dyspnea</td>
<td>A vegetative lesion in the posterior region of the trachea</td>
<td>20*</td>
<td>Trachea</td>
<td>Endobronchial resection</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>69</td>
<td>M</td>
<td>Obstructive ventilatory impairment</td>
<td>A tumor in distal tracheal segment</td>
<td>NM</td>
<td>Trachea</td>
<td>Endobronchial resection</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>37</td>
<td>F</td>
<td>Recurrent pneumonia</td>
<td>Infiltrative shadow in the right lower lobe</td>
<td>NM</td>
<td>Right dorsal segment</td>
<td>Endobronchial resection</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>38</td>
<td>M</td>
<td>Asthma and recurrent pneumonia</td>
<td>A soft tissue filling the bronchus in the basal segment of the left lobe</td>
<td>29×13×10</td>
<td>Left lower lobe</td>
<td>Surgical resection</td>
<td>11</td>
</tr>
<tr>
<td>11</td>
<td>77</td>
<td>M</td>
<td>Intermittent hemoptysis</td>
<td>A polypoid lesion at the left lower lobe</td>
<td>17*</td>
<td>At the left upper lobe/lower lobe bifurcation</td>
<td>Endobronchial resection</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>47</td>
<td>M</td>
<td>Dyspnea and sputum</td>
<td>A polypoid nodule abutting the anterior wall of the left main bronchus</td>
<td>12×10</td>
<td>Left main bronchus</td>
<td>Endobronchial resection</td>
<td>13</td>
</tr>
</tbody>
</table>

M: male, F: female, mm: millimeter, NM: not mentioned, Ref.: reference
* : The length of the diameter

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Figure 3. Hematoxylin and Eosin staining (original magnification ×200) of the transbronchial biopsy specimens demonstrated the polyp to be lined with a normal respiratory epithelium and contained a fibrovascular stroma with lymphocytes, plasma cells and erythrocytes.
from other diseases based on clinical findings alone. In addition, the analysis of high-resolution CT scans cannot discriminate between fibroepithelial polyps and other tumors. As polyps are covered with normal mucosa, the results of cytological examinations of brushing samples or bronchial washing fluid are often negative. Performing biopsies is also difficult due to the movement of tough polyps. Even when bronchoscopic biopsy findings prove the tissue to be benign, the polyp should be removed for diagnosis for fear of missing a malignancy. Pathologic examinations demonstrate that fibroepithelial polyps consist of a connective tissue core covered by normal respiratory epithelium. They do not exhibit the squamous epithelial overgrowth of papillomas nor the varied patterns of bronchial adenomas (15).

Treatment varies according to the size, activity and hardness of the lesion and the presence of adjacent vessels. Small lesions provoking few symptoms can be treated with corticosteroids and antibiotics. Invasive treatment options include bronchoscopic resection of the lesion or lobectomy. In most cases, large lesions that provoke more symptoms require bronchoscopic treatment such as forceps biopsy, electrocautery, argon plasma coagulation or endobronchial laser therapy. Although surgery is rarely necessary, it is nevertheless an option when performing bronchoscopic resection is difficult or the pathological findings are controversial (2).

The survival of patients with tracheobronchial fibroepithelial polyps depends on the severity of airway obstruction. Dincer et al. reported the case of a man who was followed for 40 years due to recurrent pulmonary infections (5). Most patients exhibit good clinical courses after undergoing resection, and no recurrence or metastasis has been reported. However, relapse in the lower right dorsal segment occurred in our patient six months after treatment. No recurrence was detected after three months of glucocorticoid and azithromycin treatment.

**Conclusion**

In conclusion, clinicians should always consider the possibility of tracheobronchial tumors in the differential diagnosis of recurrent pneumonia and refractory asthma. Multiplanar and 3D imaging of the central airways is often useful for diagnosis and treatment. Endobronchial resection is the treatment of choice. Most patients exhibit good clinical courses after undergoing resection; however, providing regular follow-up is strongly recommended to detect relapse. The administration of corticosteroids and antibiotics may prevent recurrence.

The authors state that they have no Conflict of Interest (COI).

**References**