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CASE REPORT

Tuberculosis Antibody and Tuberculin Positive Tests Initially Misdiagnosed as Active Tuberculosis in a Broncholithiasis Patient with Recurrent Hemoptysis and Fever Proven by Lung Lobectomy

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SUMMARY

Background: **To report a case of broncholithiasis with recurrent hemoptysis and fever initially misdiagnosed as active tuberculosis.**
Methods: **The chest contrast-enhanced CT scan, electronic bronchoscope, and ultrathin bronchoscope were performed leading to the diagnosis of broncholithiasis, open lung lobectomy was done after thoracic surgery consultation.**
Results: **The chest contrast-enhanced CT scan showed a high-density intratracheal shadow and calcified lymph nodes. Ultrathin bronchoscopy manifested calcified lesions located at the distal portion of the right lower lobe bronchus. Histopathology of lobectomy showed lithiasis in the right lower lobe tracheobronchial tree.**
Conclusions: **We should pay attention to calcified intratracheal lesions and make differential diagnosis with tuberculosis, especially when accompanied with calcified lymph nodes and fever.**
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KEY WORDS

broncholithiasis, lithiasis, hemoptysis, tuberculosis

CASE PRESENTATION

Tuberculosis has played an important role in emergent hemostasis for decades in China, especially in young patients accompanied by infectious symptoms and positive tuberculosis antibody and/or tuberculin test [1-3]. In this article, we report a case of broncholithiasis with recurrent hemoptysis and fever initially misdiagnosed as active tuberculosis because of similar symptoms and positive tuberculosis antibody and tuberculin test.

A 36-year-old woman was admitted to the hospital due to recurrent hemoptysis and fever. Her medical history revealed recurrent hemoptysis attacks and fever four times in the past year. She received chest CT scan, tuberculosis antibody and tuberculin tests in another hospital. The chest CT scan report magnified calcified lymph nodes, but the

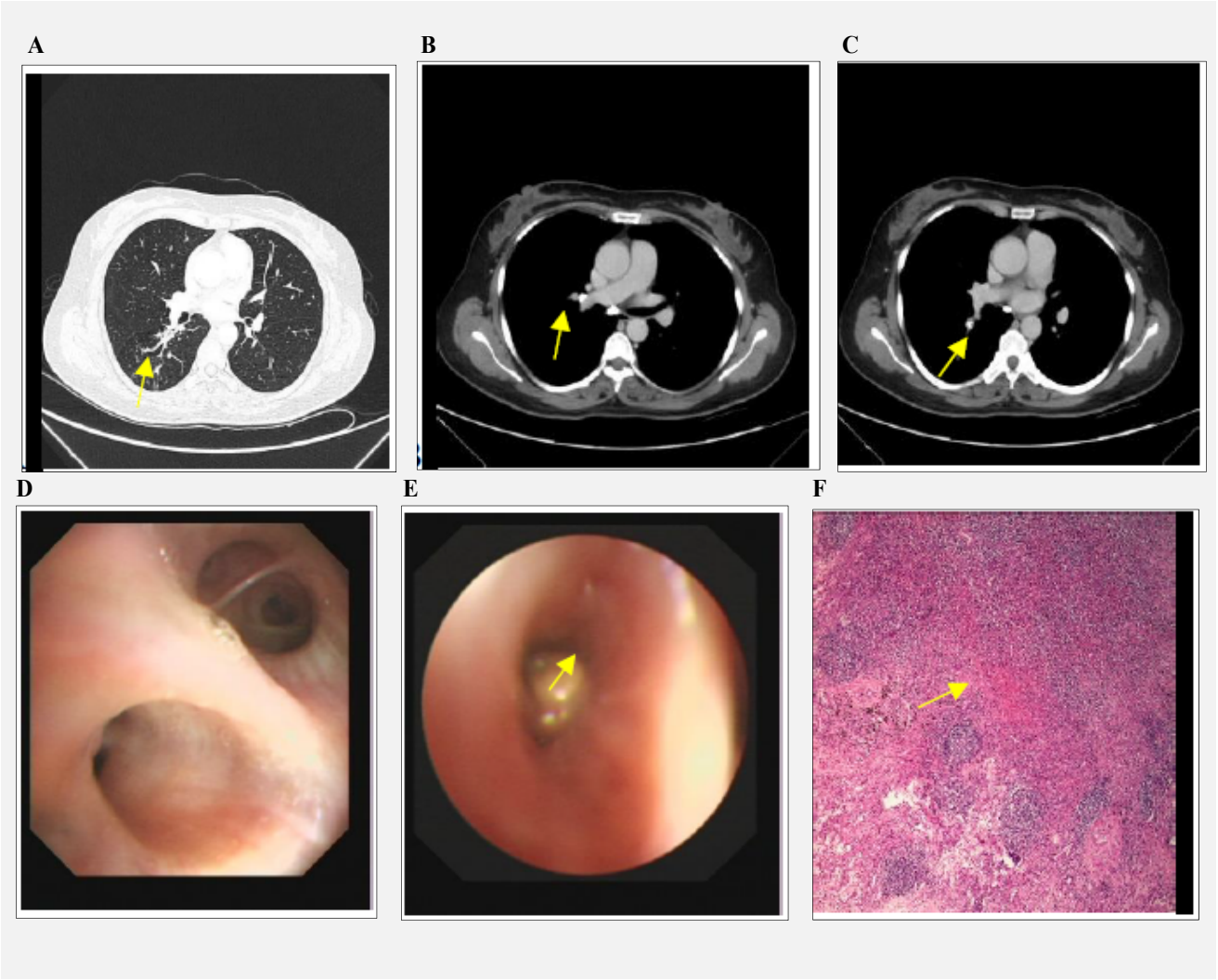

Figure 1. Patient imaging and histological results.

The chest contrast-enhanced CT scan showed a high-density intratracheal shadow and calcified lymph nodes located at the right lower paratracheal, right hilar and subcarinal areas (Figure 1A - C). Electronic bronchoscope showed normal manifestation (Figure 1D), ultrathin bronchoscope magnified white, solid, calcified and sharp-edged lithiasis located at the distal portion of the right lower lobe bronchus leading to the diagnosis of broncholithiasis (Figure 1E).
Histopathology of lobectomy showed multiple white, solid, calcified, and sharp-edged lithiasis in the right lower lobe tracheobronchial tree (Figure 1F).

patient lost the CT slice. The tuberculosis antibody was positive, and the diameter of tuberculin test was 13 mm (< 5 mm was used as the negative biological reference). She was diagnosed with active tuberculosis and received anti-tuberculosis treatment for a month. Because the patient had recurrent hemoptysis attacks and fever a month later, she was admitted to our department. The chest contrast-enhanced CT scan and electronic bronchoscope were performed. The chest contrast-enhanced CT scan showed a high-density intratracheal shadow and calcified lymph nodes located at the right lower paratracheal, right hilar (Figure 1A - C). Electronic bronchoscope showed normal manifestation (Figure 1D), but the chest contrast-enhanced CT scan showed a lesion at the right lower lobe bronchus, so we changed to the ultrathin bronchoscope to examine the lesions. Ultrathin bronchoscopy manifested white, solid, calcified and sharp-edged lithiasis located at the distal portion of the right lower lobe bronchus leading to the diagnosis of broncholithiasis (Figure 1E). Then thoracic surgery consultation was performed. Because she had recurrent hemoptysis and infection, and the chest CT scan showed multiple lithiasis, open lung lobectomy was recommended. Histopathology of lobectomy showed multiple white, solid, calcified and sharp-edged lithiasis in the right lower lobe tracheobronchial tree (Figure 1F). Three months after the operation, the patient recovered well and is still in follow-up.

DISCUSSION

Broncholithiasis is a rare disease which is characterized by the presence of calculi in the tracheobronchial tree [4,5]. There are typical manifestations in flexible bronchoscopy and the chest CT scan, including calcified lymph node eroding bronchial wall, lithiasis located at the lobe bronchus or an opening into the bronchial lumen [6-8]. The clinical manifestations vary from asymptomatic to a life-threatening massive hemoptysis [9-11].

The etiology of broncholithiasis may include granulomatous lymphadenitis caused by mycobacterial infections, silicosis, malignancy, and granulomatous fungal infections, etc. [11,12]. In our case, the patient had positive tuberculosis antibody and the diameter of the tuberculin test was 13 mm, indicating the patient had a prior tuberculosis infection, but the relationship between broncholithiasis and tuberculosis infection was unclear.

Bronchoscopy and the chest CT scan are the most important diagnostic tools in the diagnosis of broncholithiasis [13]. In our case, the chest CT scan showed a high density intratracheal shadow and calcified lymph nodes located at the right lower paratracheal, while electronic bronchoscopy showed normal manifestation, but ultrathin bronchoscopy manifested lithiasis in the right lower lobe bronchus leading to the diagnosis of broncholithiasis. That was because the lithiasis was in the distal portion of the bronchus. So, if the chest CT scan shows a high-density intratracheal shadow, while the electronic bronchoscope shows negative, ultrathin bronchoscopy can provide a new manifestation.

The treatments for broncholithiasis were up to the fate of broncholiths, if the patient was asymptomatic, we could choose a follow-up method, if the patient had clinical manifestations, bronchoscopic removal or surgical resection were the most important therapeutic methods [14,15]. The patient in our case, had recurrent hemoptysis and infection, we could not remove the lithiasis through an ultrathin bronchoscope, so open lung lobectomy was recommended.

CONCLUSION

Broncholithiasis is a rare cause of recurrent hemoptysis. The diagnosis of broncholithiasis should be kept in mind in patients who have hemoptysis and calcified intratracheal lesions and differential diagnosis with tuberculosis, especially when accompanied with calcified lymph nodes and fever, should be done.

Declaration of Interest:
There are no commercial or other associations that may pose a conflict of interest in this article.

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References:

1. Zhang H, Li L, Xiao H, Sun XW, Wang Z, Zhang CL. Silicotuberculosis with oesophagobronchial fistulas and broncholithiasis: a case report. J Int Med Res. 2018;46:612-8 (PMID: 28703631).
2. Grange JM, Kardjito T, Setiabudi I. A study of acute-phase reactant proteins in Indonesian patients with pulmonary tuberculosis. Tubercle.1984;65:23-39 (PMID: 6428016).
3. Kusano N. [The serodiagnosis of tuberculosis by enzyme-linked immunosorbent assay with tuberculin purified protein derivative]. Kekkaku. 1990;65:42-7 (PMID: 2313962).
4. Jin YX, Jiang GN, Jiang L, Ding JA. Diagnosis and Treatment Evaluation of 48 Cases of Broncholithiasis. Thorac Cardiovasc Surg. 2016;64:450-5 (PMID: 25463358).
5. Kidd HM, Christopherson E. Broncholithiasis and bronchoesophageal fistula. Can Med Assoc J. 1951;64:142-6 (PMID: 14792489).
6. Woods AP, Kweku J. Images in Anesthesiology: Broncholithiasis: Images and Insight. Anesthesiology. 2015;123:1448 (PMID: 26111106).
7. Nishine H, Kurimoto N, Okamoto M, Inoue T, Mineshita M, Miyazawa T. Broncholithiasis Assessed by Bronchoscopic Saline Solution Injection. Intern Med. 2015;54:1527-30 (PMID: 26073244).
8. Anwer M, Venkatram S. Broncholithiasis: "incidental finding during bronchoscopy"-case reports and review of the literature. J Bronchology Interv Pulmonol. 2011;18:181-3 (PMID: 23169093).
9. Dakkak M, Siddiqi F, Cury JD. Broncholithiasis presenting as bronchiectasis and recurrent pneumonias. BMJ Case Rep. 2015; 2015 (PMID: 26106172).
10. De S, De S. Broncholithiasis. Lung India. 2008;25:152-4 (PMID: 21264082).
11. Attia S, Boussoffara L, Fkih L, Belhabib D, Fenniche S, Megdiche ML. [Broncholithiasis]. Rev Mal Respir. 2006;23:348-52 (PMID: 17127911).
12. Seo JB, Song KS, Lee JS, et al. Broncholithiasis: review of the causes with radiologic-pathologic correlation. Radiographics. 2002;22:199-213 (PMID: 12376611).
13. Meyer M, O'Regan A. Images in clinical medicine. Broncholithiasis. N Engl J Med. 2003;348:318 (PMID: 12540645).
14. Menivale F, Deslee G, Vallerand H, et al. Therapeutic management of broncholithiasis. Ann Thorac Surg. 2005;79:1774-6 (PMID: 15854981).
15. Minami H, Sano I, Matsuo S, Oikawa M, Takagi K. Broncholithiasis managed by surgical resection. Gen Thorac Cardiovasc Surg. 2007;55:138-42 (PMID: 17447514).