March 2015 Pulmonary Case of the Month: Sticks and Stones May Break My Bronchi

Syed Amer MBBS
Kenneth Sakata MD
Karen Swanson DO

Department of Pulmonary Medicine
Mayo Clinic Arizona
Scottsdale, AZ

History of Present Illness

A 67-year-old woman presented to the emergency department with a chief complaint of persistent cough of 2 months duration, productive of yellow sputum. Her symptoms progressed to include dyspnea despite an outpatient course of antibiotics, bronchodilators, and corticosteroids. She denied fevers, chills, hemoptysis, or chest pain.

PMH, FH, SH

She was on chronic immunosuppression secondary to a history of liver transplant due to non-alcoholic steatohepatitis and kidney transplant due to calcineurin toxicity. She denied any history of smoking, alcoholism or recreational drug use.

Medications

- Tacrolimus 3.5 mg bid
- Mycophenolate mofetil 720 mg bid
- Fluconazole 100 mg daily

Physical Examination

Vitals: Temperature 37.1°C, respiratory rate 18 breaths/min, heart rate 88 beats/min, blood pressure 130/76 mm Hg, SpO₂ 95% on room air.

General: Elderly female in no apparent distress.

Lungs: Scattered inspiratory and expiratory squeaks and pops bilaterally, louder in the left lower lobe

The rest of her exam was within normal limits

Laboratory

WBC 4.8×10^3 cells/ μ L, Hemoglobin 8.0 g/dL, Hematocrit 23.5, Platelets 122×10^3 cells/ μ L.

Creatinine 1.3, electrolytes, blood urea nitrogen, glucose were within normal limits.

Radiography

Her admission chest x-ray is presented in Figure 1.

Figure 1. Admission chest radiograph.

Which of the following is (are) **appropriate** at this time?

1. Cocci serology
2. Empirically begin antibiotics
3. Thoracic CT scan
4. Sputum culture
5. All of the above

Correct!
5. All of the above

The patient is an immunocompromised host. Despite the admission radiograph being fairly unremarkable, a high index of suspicion for an occult pneumonia must be maintained because of her immune status. A sputum culture, serum histoplasma and coccidioidomycosis serologies were negative, but a respiratory pathogen panel was positive for respiratory syncytial virus (RSV). Her thoracic CT scan is shown in Figure 2.

Figure 2. Representative images from the thoracic CT scan in lung windows (Panels A-C) and soft tissue windows (Panels D-F).

What **abnormality (ities) are seen** in the thoracic CT scan?

1. Diffuse mediastinal lymphadenopathy
2. Multiple calcified hilar lymph nodes
3. Right middle lobe consolidation
4. 1 and 3
5. All of the above

Correct!

2. Multiple calcified hilar lymph nodes

The thoracic CT scan does not show an occult consolidation such as a right middle lobe pneumonia and does not show diffuse lymphadenopathy. However, it does show multiple calcified hilar lymph nodes, some of which appear to be projecting into the bronchi (Figure 3).

Figure 3. Selected images from thoracic CT scan calcified hilar node projecting into bronchus (red arrows).

Which of the following would be **appropriate** at this time?

1. Broncholithectomy
2. Bronchoscopy
3. Left pneumonectomy
4. Mediastinoscopy
5. Pulmonary angiography

Correct!
2. Bronchoscopy

Bronchoscopy was performed to confirm the presence of broncholiths (Figure 4).

Figure 4. Multiple views of the distal left mainstem and LLL subsegmental bronchi showing a large broncholith extending into the bronchi with surrounding granulation.

Broncholithiasis is defined as the presence of calcified or ossified material within the lumen of the bronchus. It is usually formed by erosion and extrusion of a calcified adjacent lymph node into the bronchial lumen. Granulomatous mycobacterial or fungal infections are typical causes. Clinically, broncholiths can present with multiple nonspecific symptoms and signs - cough, fever, hemoptysis, purulent sputum, wheeze, or chest pain.

Untreated symptomatic broncholithiasis may lead to massive hemoptysis, bronchial fistula, bronchiectasis and/or recurrent infections. Treatment may vary from observation, to bronchoscopic removal, or surgery. Bronchoscopic removal is successful in 43% to 87% of cases.

In our patient, cardiothoracic surgery was consulted and she is being considered for a left lower lobectomy.

References

1. Menivale F, Deslee G, Vallerand H, Toubas O, Delepine G, Guillou PJ, Lebargy F. Therapeutic management of broncholithiasis. *Ann Thorac Surg*. 2005; 79(5):1774-6. [\[CrossRef\]](#) [\[PubMed\]](#)
2. Seo JB, Song KS, Lee JS, Goo JM, Kim HY, Song JW, Lee IS, Lim TH. Broncholithiasis: review of the causes with radiologic-pathologic correlation. *Radiographics*. 2002; 22 Spec No:S199-213. [\[CrossRef\]](#) [\[PubMed\]](#)
3. Ryberg AA, Gengler JS, Angelillo VA, Scott WJ. Broncholithiasis: case report and literature review. *Nebr Med J*. 1996; 81(1):14-7. [\[PubMed\]](#)
4. Anwer M, Venkatram S. Broncholithiasis: “incidental finding during bronchoscopy”—case reports and review of the literature. *J Bronchology Interv Pulmonol*. 2011;18(2):181-3. [\[CrossRef\]](#) [\[PubMed\]](#)