

April 2016 Pulmonary Case of the Month

Lewis J. Wesselius, MD
Rodrigo Cartin-Ceba, MD

Department of Pulmonary Medicine
Mayo Clinic Arizona
Scottsdale, AZ

History of Present Illness

The patient is a 75-year-old woman who presented with a chest mass incidentally found on chest x-ray. She was asymptomatic.

Past Medical History, Social History and Family History

She has no significant past medical history and has never smoked. Family history is noncontributory.

Physical Examination

Physical examination was unremarkable.

Radiography

A thoracic CT scan was performed (Figure 1).

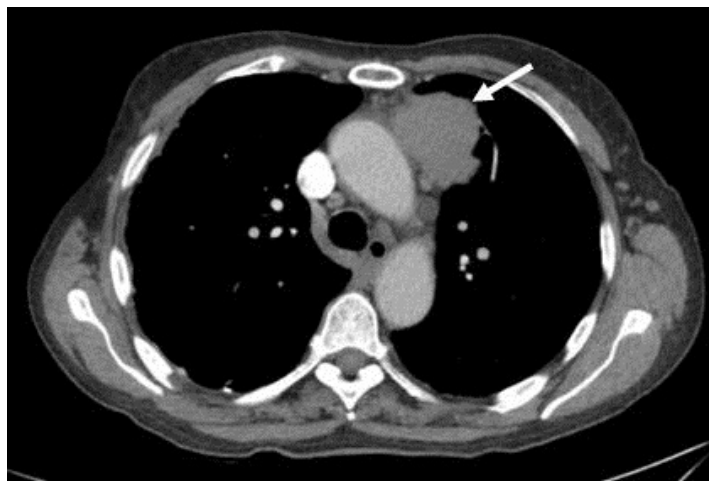


Figure 1. Representative thoracic CT scan in soft tissue windows showing a mass (arrow).

Which of the following are **possible causes of the mass?**

1. Lymphoma
2. Teratoma
3. Thymoma
4. Thyroid carcinoma
5. All of the above

Correct!
5. All of the above

The mass is in the anterior mediastinum, that portion of the mediastinum anterior to the pericardium and below the level of the clavicles. In this case the mass is slightly to the left side. The differential is remembered by the 5 T's of an anterior mediastinal mass:

- Teratoma
- Thymoma
- Thyroid mass or cyst
- Terrible lymphoma
- Thoracic aneurysm

The mass was a thymoma which was resected followed with radiation therapy. She began having cough and dyspnea 1 to 2 months later and a repeat thoracic CT scan was performed (Figure 2).

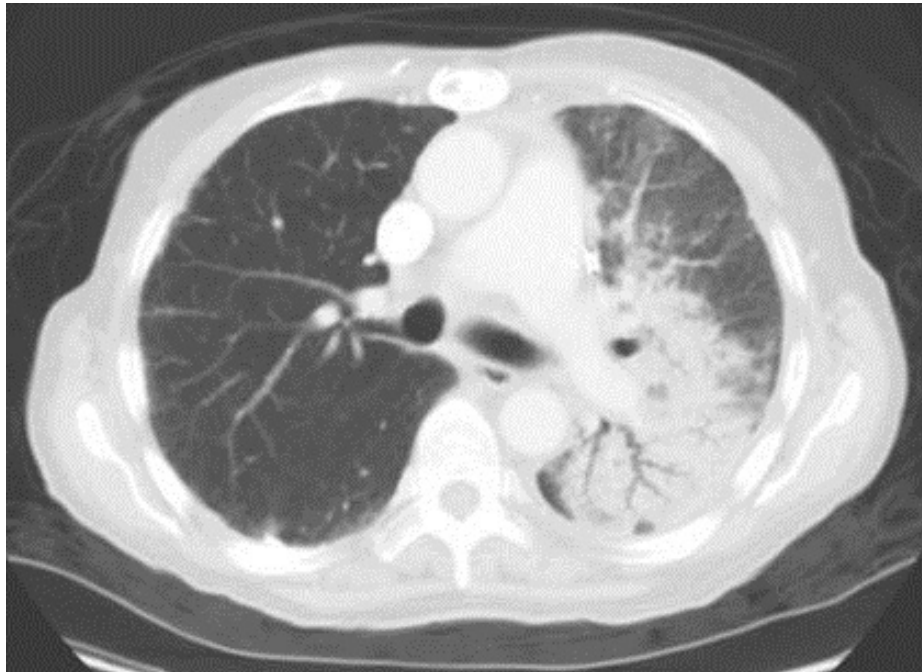


Figure 2. Representative image of the repeat thoracic CT scan in lung windows performed about 4 months after resection of the patient's thymoma.

What is the **most likely diagnosis**?

1. Atypical pneumonia
2. Community acquired pneumonia
3. Cryptogenic organizing pneumonia
4. Metastatic thymoma
5. Radiation pneumonitis

Correct!
5. Radiation pneumonitis

The thoracic CT scan shows dense consolidation near the radiation port consistent with radiation pneumonitis. Although changes in the lung are usually confined to the port, changes in the remainder of the lung may also on occasion be seen. Complaints with radiation pneumonitis usually include cough and dyspnea sometimes with low grade fever, chest discomfort or pleuritic pain. She underwent bronchoscopy with transbronchial biopsies which was reported to show only “organizing pneumonitis.” Cultures were negative. She was felt to most likely have radiation pneumonitis. She was treated with oral corticosteroids for one month with resolution of her symptoms and the corticosteroids were tapered.

However, her symptoms recurred about a month after tapering the steroids and she was referred to the Mayo Clinic for evaluation. At that time her oxygen saturation was 96% with a few crackles on the right lung field noted. Laboratory evaluation was unremarkable except for an elevated C-reactive protein.

A repeat thoracic CT scan was obtained (Figure 3).

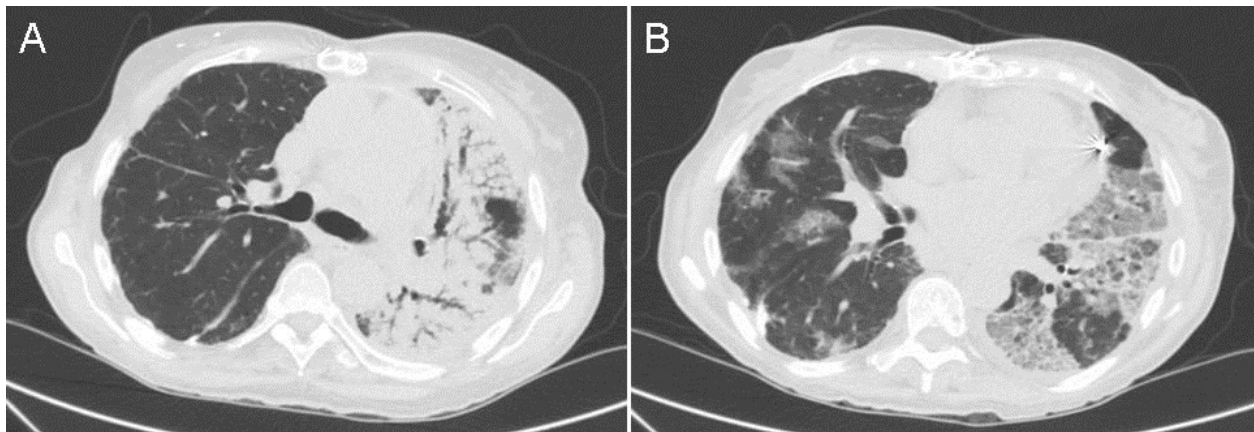


Figure 3. Representative images from the repeat thoracic CT scan in lung windows.

Which of the following **should be done next?**

1. Bronchoscopy with transbronchial biopsies
2. Empiric antibiotics for community-acquired pneumonia
3. Repeat the course of corticosteroids
4. Thoracic CT PET scan
5. Video-assisted thoracoscopy (VATS)

Correct!

1. Bronchoscopy with transbronchial biopsies

The patient's course and repeat thoracic CT scan are unusual for radiation pneumonitis. Patients usually do not present with recurrent symptoms after full resolution. In addition, there is now significant consolidation outside of the radiation port to the thymus, including the opposite lung. VATS seems over aggressive at this point since the diagnosis might be established by bronchoscopy. The patient's physician was uncomfortable repeating the course of corticosteroids or empiric antibiotics without an established diagnosis. It is unclear how a PET scan could have helped.

Bronchoscopy was performed with bronchoalveolar lavage (BAL) and transbronchial lung biopsies obtained from left lower lobe. BAL cell count differential demonstrated 12% eosinophils. The transbronchial biopsies were read as "subacute injury with organization. Extravascular eosinophils suggestive of eosinophilic pneumonia".

Eosinophilic pneumonia has been reported most often in association with radiation therapy for breast cancer (1,2). Patients demonstrate alveolar infiltrates that develop outside of the radiation port within 12 months of radiation therapy, without other identifiable cause of eosinophilic pneumonia. Patients typically respond well to corticosteroids.

Our patient was again treated with corticosteroids and responded well.

References

1. Solomon J, Schwarz M. Drug-, toxin-, and radiation therapy-induced eosinophilic pneumonia. *Semin Respir Crit Care Med*. 2006 Apr;27(2):192-7. [\[CrossRef\]](#) [\[PubMed\]](#)
2. Cottin V, Frognier R, Monnot H, Levy A, DeVuyst P, Cordier JF; Groupe d'Etudes et de Recherche sur les Maladies "Orphelines" Pulmonaires. Chronic eosinophilic pneumonia after radiation therapy for breast cancer. *Eur Respir J*. 2004 Jan;23(1):9-13. [\[CrossRef\]](#) [\[PubMed\]](#)