January 2012 Case of the Month

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Clinical History

A 69-year-old woman with no significant past medical history presented with progressive shortness of breath. A chest radiograph (Figure 1) was obtained.

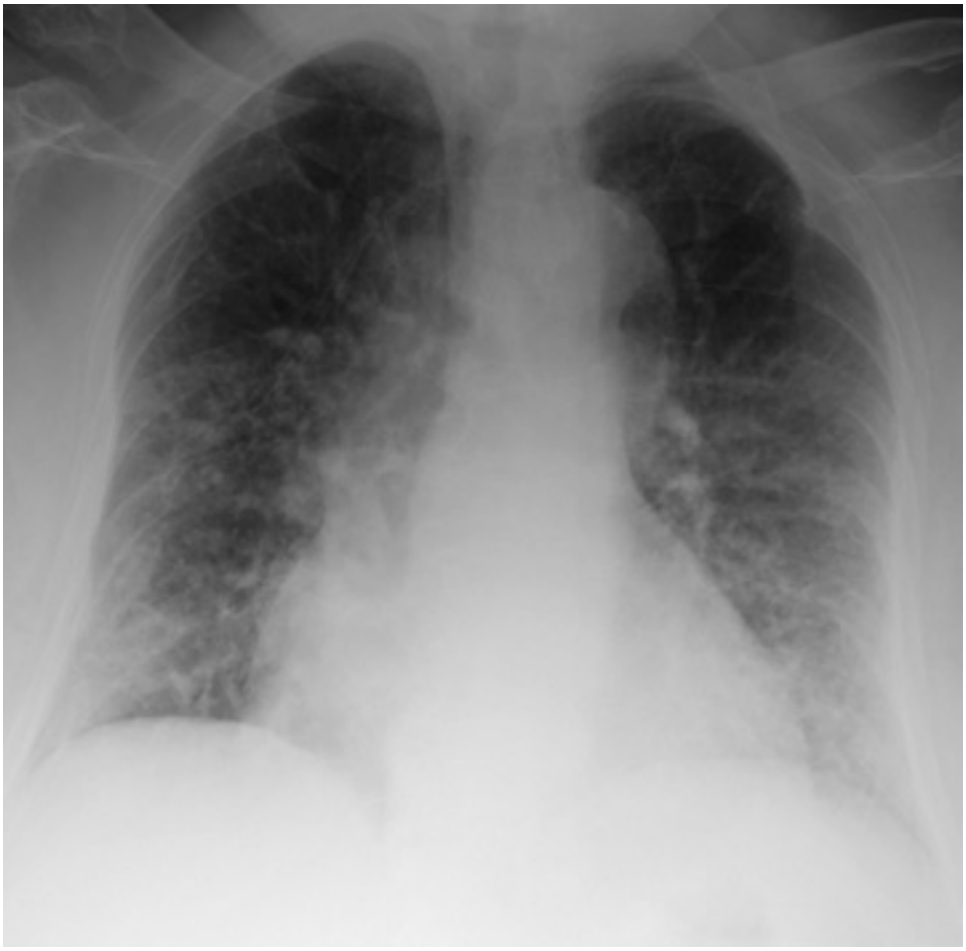


Figure 1. Frontal chest radiograph.

How would you describe the findings on the chest radiograph (Figure 1)?

1. Multifocal consolidation
2. Blunting of the costophrenic angles suggesting pleural effusion
3. Multifocal reticulonodular opacities
4. Bilateral cavitary lung consolidation
5. Miliary nodular opacities

Answer 3. Multifocal reticulonodular opacities

The frontal chest radiograph in figure 1 shows mid and lower lung reticular and nodular opacities. No pleural effusion or consolidation is present. These findings are very non-specific and could be caused by numerous processes.

Thoracic CT (Figure 2) was performed.

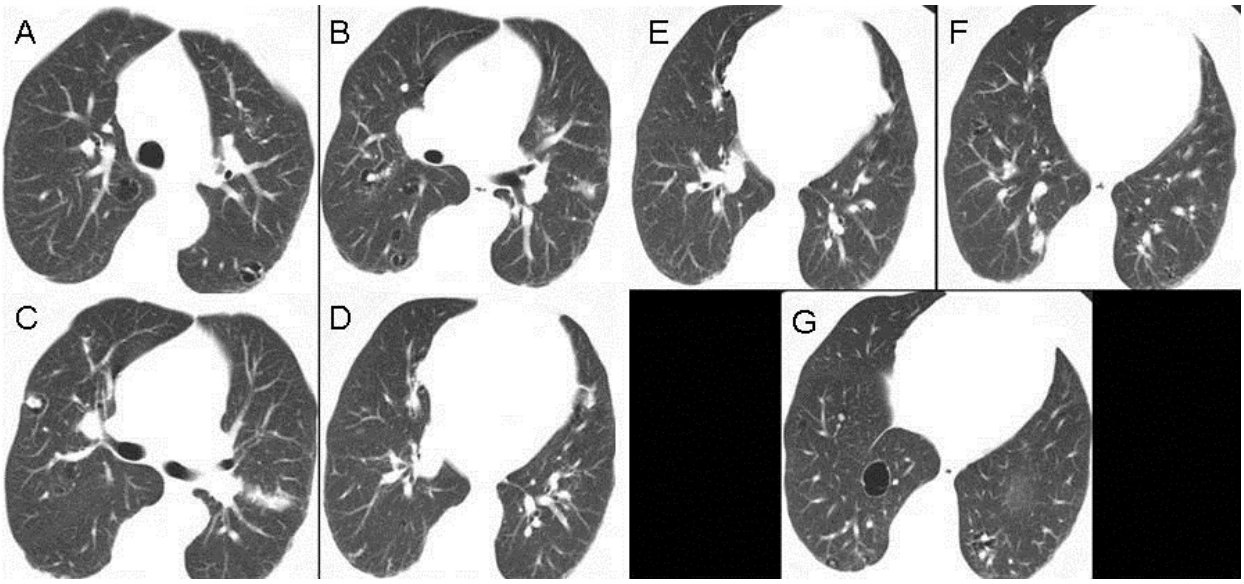
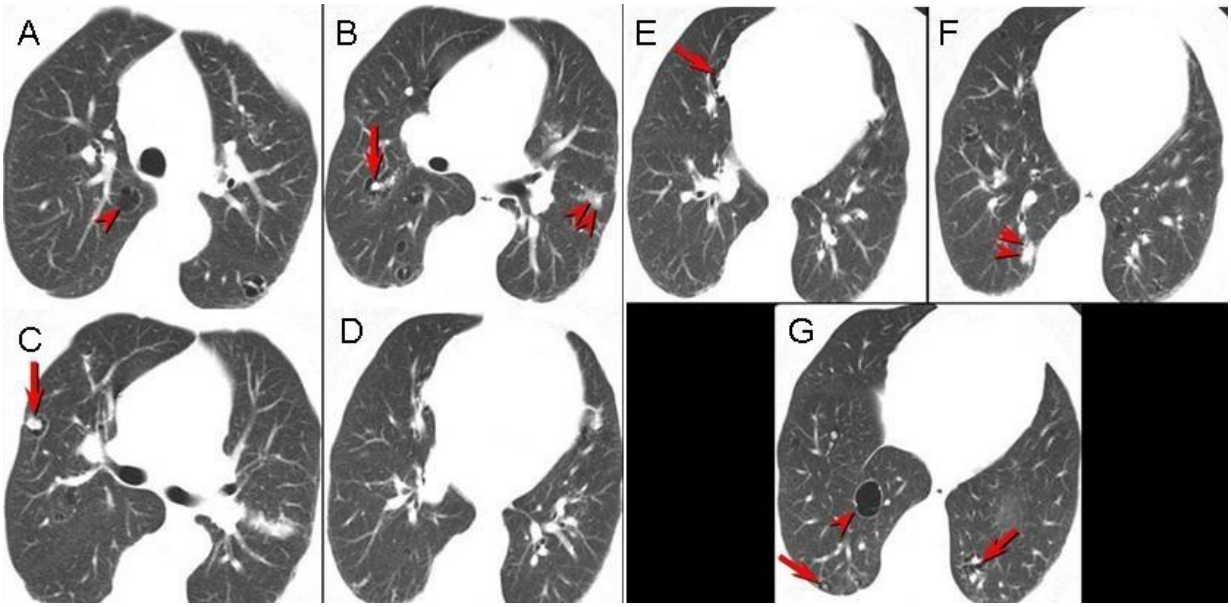


Figure 2. Thoracic CT lung. Lung windows.

Characterize the thoracic CT findings. Which of the following is the ***LEAST*** likely diagnostic consideration for the thoracic CT findings?

1. Viral pneumonia
2. Benign metastasizing leiomyomas
3. Sjögren syndrome
4. Pulmonary amyloidosis
5. Metastatic angiosarcoma

Answer: 1. Viral pneumonia



The thoracic CT in Figure 2 shows multiple thin-walled cysts (arrowheads), irregular nodules (double arrowheads), and cysts with mural nodules (arrows). One of the larger opacities with a “nodule-in-cyst” morphology is located in the right middle lobe adjacent to the right cardiac border (arrowhead in Panel E). Soft tissue windows (second movie on previous page) show that the pulmonary nodular opacities are non-calcified.

While the other diagnoses listed are quite rare, viral pneumonias typically cause airway thickening, centrilobular nodules, areas of consolidation, and multifocal ground-glass opacity, not nodules and cystic pulmonary lesions with mural nodules. However, the other lesions listed may present with such an appearance.)

The patient then underwent 2-[^{18}F]-Fluoro-2-Deoxy-D-Glucose positron emission computed tomography-CT (FDG-PET CT) to evaluate the pulmonary nodules (Figure 3).

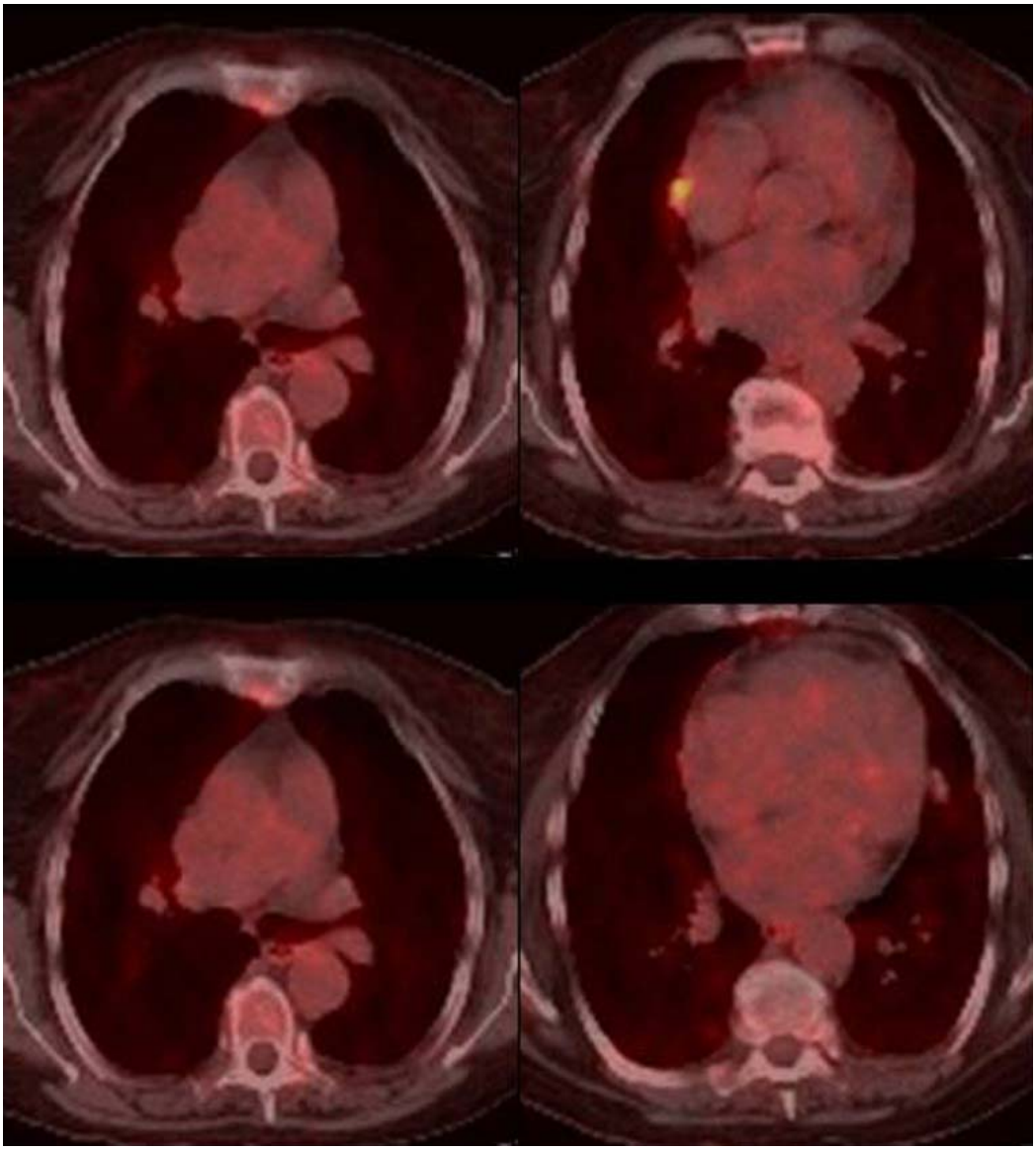


Figure 3. 2-[^{18}F]-Fluoro-2-Deoxy-D-Glucose positron emission computed tomography-CT fused images.

Which of the following statements is correct?

1. The FDG-PET scan findings allow the confident exclusion of thoracic malignancy
2. The FDG-PET scan findings strongly suggest intrathoracic spread of infection
3. The FDG-PET findings are non-specific, and multiple differential diagnostic possibilities must be considered
4. The FDG-PET scan is non-diagnostic due to technical considerations resulting from lack of patient fasting prior to injection of the radiotracer
5. The FDG-PET scan results are diagnostic of two separate diagnoses likely account for the thoracic findings

Answer 3. The FDG-PET findings are non-specific, and multiple differential diagnostic possibilities must be considered

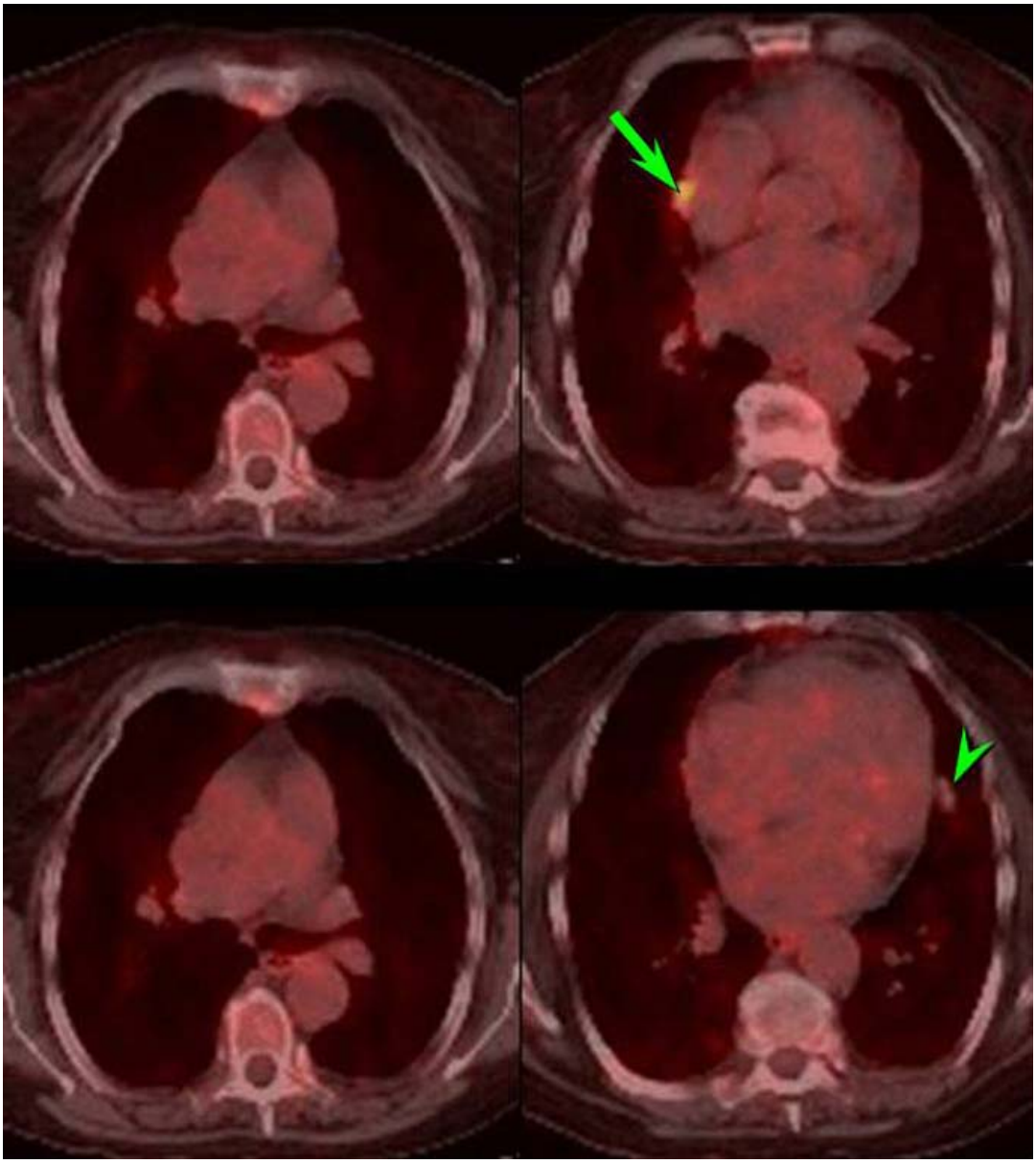


Figure 3. 2-[^{18}F]-Fluoro-2-Deoxy-D-Glucose positron emission computed tomography-CT fused images show increased tracer utilization in one of the larger nodules within the cystic lesion adjacent to the right cardiac border (arrow). The lingular nodule (arrowhead) shows little evidence of glucose utilization.

The FDG-PET findings are non-specific and could occur in the setting of malignancy, infection, or a number of proliferative lesions. The discrepant pulmonary nodular tracer uptake could suggest the possibility of two separate diagnoses, but the scan results are certainly not diagnostic of such).

The patient subsequently underwent percutaneous transthoracic lung biopsy of one of the nodules in the right lower lobe, and a diagnosis was obtained (figure 4).

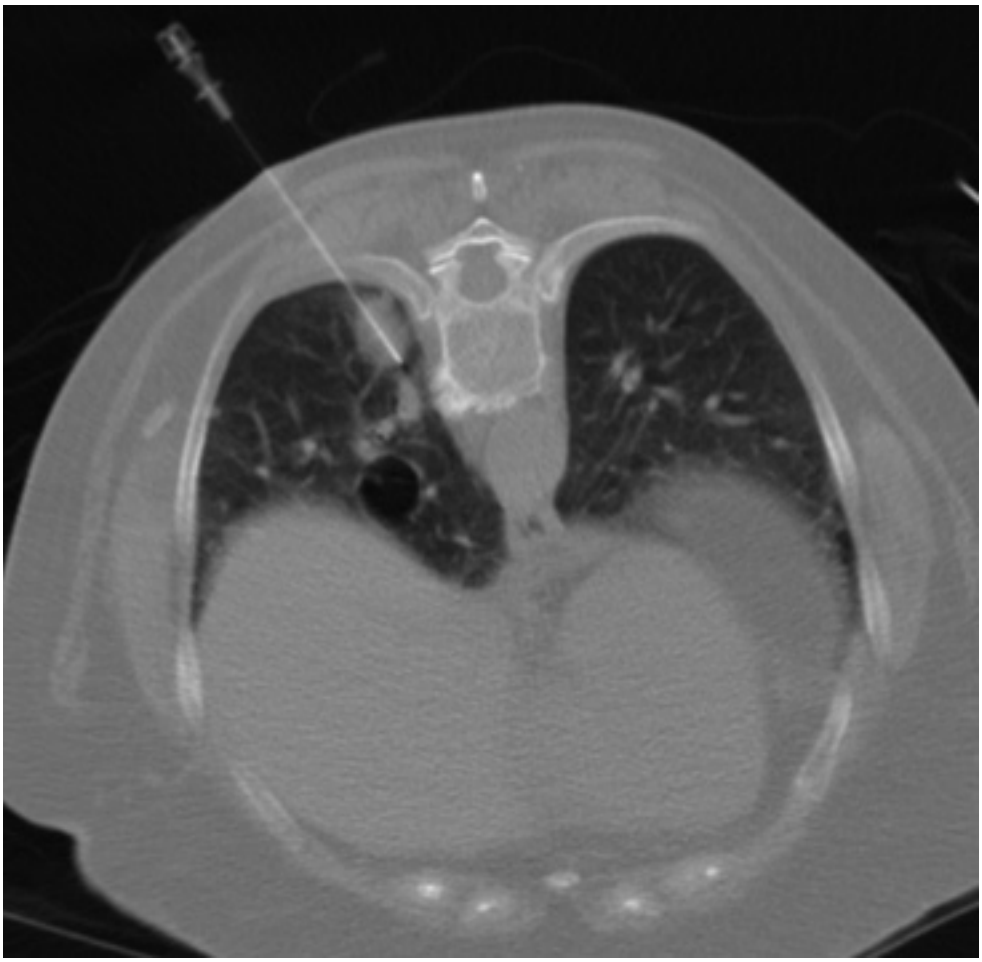


Figure 4. Prone CT image obtained during percutaneous transthoracic lung biopsy shows the biopsy needle placed within a right lower lobe nodule

Diagnosis: Pulmonary amyloidosis with lambda light chains

Differential Diagnosis: The differential diagnosis of multiple nodules in the lung parenchyma is extensive, primarily including pulmonary malignancy and disseminated infections, in addition to numerous other considerations. The differential diagnosis of numerous cystic pulmonary lesions is somewhat narrower, and includes emphysema, bronchiectasis, Langerhans Cell histiocytosis, lymphangioleiomyomatosis, lymphocytic interstitial pneumonia (particularly in Sjögren syndrome), post-infectious pneumatoceles, follicular bronchiolitis, and Birt-Hogg-Dube syndrome. Rarely amyloidosis may present with a cystic appearance in the lung parenchyma. Occasionally pulmonary metastatic disease may present with numerous thin-walled

cysts, particularly angiosarcomas. When a nodule-in-cyst appearance is present, metastatic disease, particularly cavitating squamous cell carcinoma, should be considered, but rarely pulmonary amyloidosis and benign metastasizing leiomyomas may manifest in this fashion as well. Nevertheless, even when the clinical history favors one particular consideration, tissue sampling is often required to establish the correct diagnosis when a nodule-within-cyst appearance is present.

References

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4. Colombat M, Stern M, Groussard O, Droz D, Brauner M, Valeyre D, Mal H, Taillé C, Monnet I, Fournier M, Herson S, Danel C. Pulmonary cystic disorder related to light chain deposition disease. Am J Respir Crit Care Med 2006;173:777-780.