September 2011 Case of the Month

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Clinical History

A 44-year-old man presents for chest radiography for pre-operative screening prior to surgical repair of a meniscal tear in his right knee. An abnormality was noted on this study.

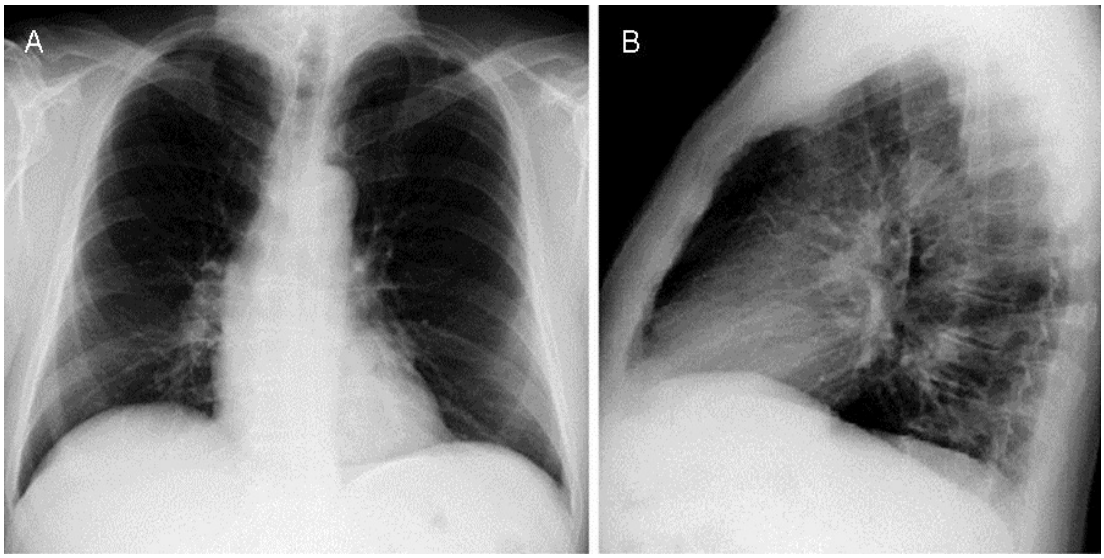

Figure 1A and B: Frontal (A) and lateral (B) chest radiography.

What abnormality is seen on the chest X-ray?

1. Right lower lobe consolidation
2. Left lower lobe consolidation
3. Right lower lobe nodule
4. Left upper lobe nodule
5. Left lower lobe nodule

Correct!
Answer: 5. Left lower lobe nodule

The chest radiograph shows a nodule faintly seen through the left retrocardiac region on the frontal image, seen to reside over the anterior lower thoracic spine on the lateral image.

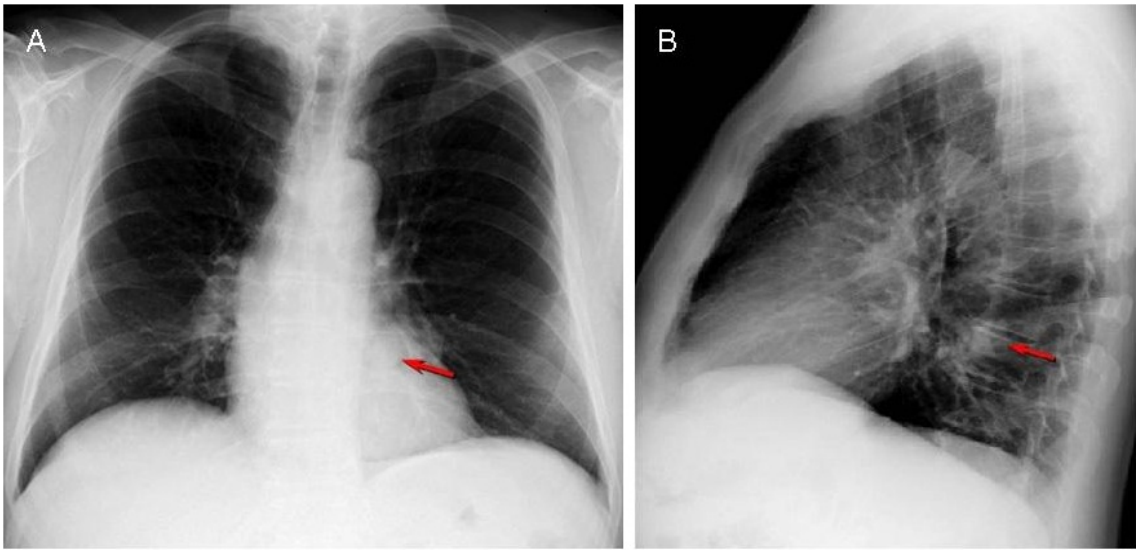

Figure 2A and B: Frontal (A) and lateral (B) chest radiography shows a small, circumscribed nodule (arrow) in the left retrocardiac region on the frontal image (Figure 2A) and projected over the spine on the lateral chest radiograph (Figure 2B).

No old chest X-rays are available.

What is the next step in evaluation?

1. Pulmonary angiogram
2. Tantalum bronchography
3. MRI
4. Thoracic CT scan
5. Needle biopsy of lesion

Correct!
Answer: 4. Thoracic CT scan

Thoracic CT (Figures 3-6 below) were obtained to evaluate the finding seen on chest radiography. What is the main finding on the thoracic CT?

Figure 3. Axial thoracic CT scan.

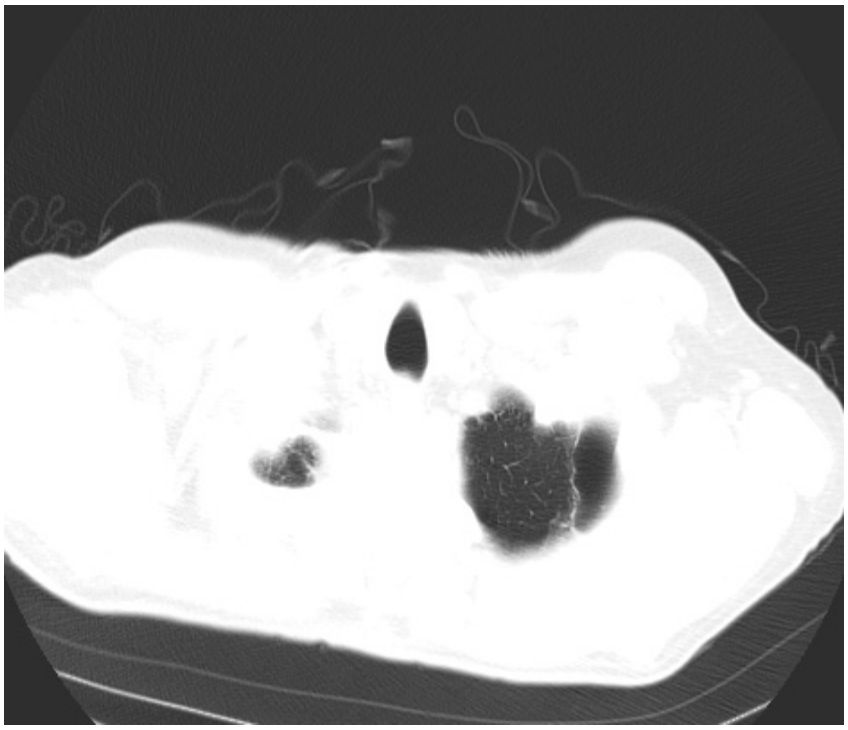

Figure 4. Movie of axial thoracic CT scan.

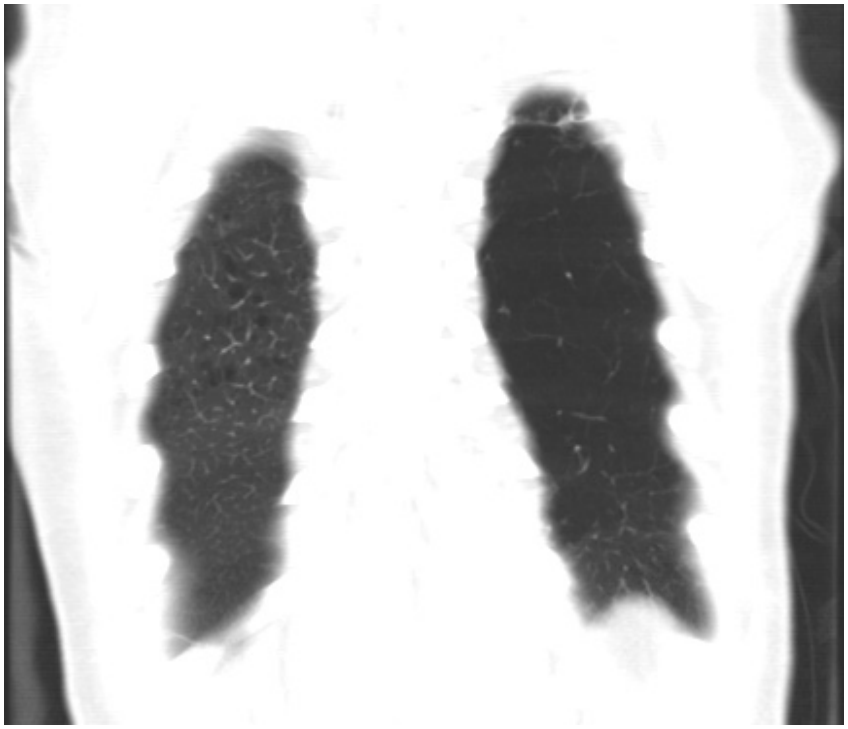

Figure 5. Movie of coronal thoracic CT scan.

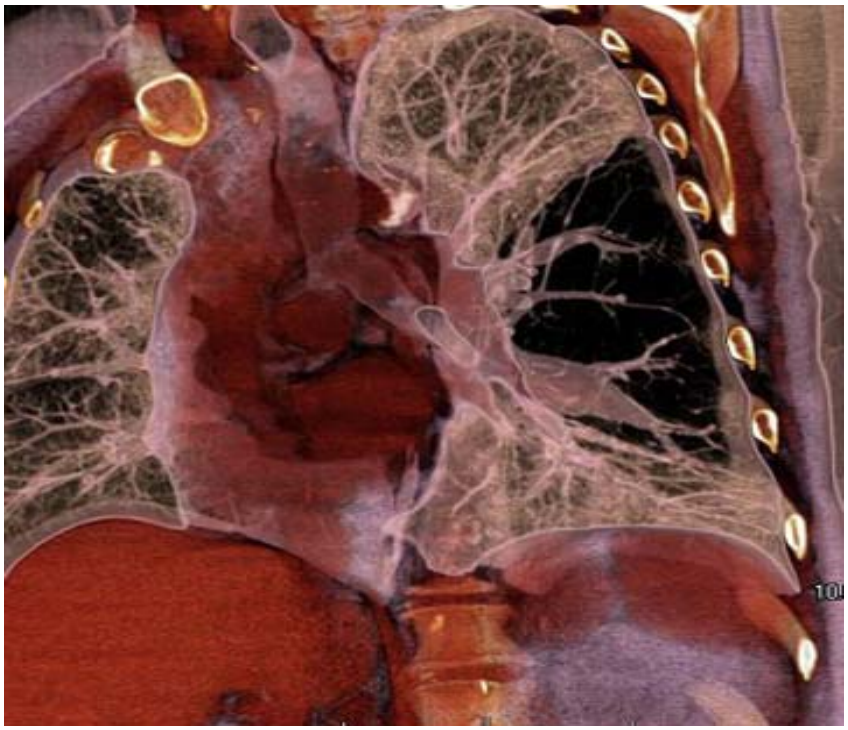

Figure 6. Volume rendering of thoracic CT scan.

The thoracic CT demonstrates a circumscribed nodule in the left lower that shows a branching configuration more inferiorly. Distal to the nodule, there is extensive hyperlucency throughout the left lower lobe, representing mosaic perfusion due to air trapping

What is the most likely diagnosis?

1. Lung cancer
2. Pulmonary granuloma
3. Congenital bronchial atresia
4. Pulmonary hamartoma
5. Pulmonary arteriovenous malformation

Correct!

Answer: 3. Congenital bronchial atresia

Differential Diagnosis: The differential diagnostic “gamut” for this case is that of the solitary pulmonary nodule (SPN). The differential diagnosis for an SPN is large, but the most common causes of an SPN include primary pulmonary malignancy (both bronchogenic carcinoma and carcinoid tumors), solitary metastases, and infections (typically granulomas). Other lesions that may present as an SPN on chest radiography include hamartoma, arteriovenous malformation, mucoid impaction of a bronchus (common with congenital bronchial atresia), round atelectasis, artifacts and abnormalities external to the lug (such as skin lesions), pleural abnormalities (particularly loculated pleural fluid or pleural plaques), among numerous other potential etiologies.

References

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2. Berrocal T, Madrid C, Novo S, Gutiérrez J, Arjonilla A, Gómez-León N. Congenital anomalies of the tracheobronchial tree, lung, and mediastinum: embryology, radiology, and pathology. Radiographics 2004;24:e17.
3. Biyyam DR, Chapman T, Ferguson MR, Deutsch G, Dighe MK. Congenital lung abnormalities: embryologic features, prenatal diagnosis, and postnatal radiologic-pathologic correlation. Radiographics 2010;30:1721-38.