

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Medical Imaging Quiz – Case 18

A 35-year-old male was admitted to our hospital after complaining for 15 days of fever, productive cough and chest pain. On physical examination, the patient's vital signs were within normal limits. The breath sounds in the left lung base were decreased. The laboratory results included an elevated white blood cell count.

The past medical history has included recurrent lower lobe pneumonia in childhood and chronic cough.

Chest radiograph showed a dense opacity of the left lower lobe (figures 1, 2), whereas computer tomography showed an ill defined heterogeneous consolidation in the posterior basal segment of the left lower lobe with mucoid impaction in the rudimentary bronchi. According to the imaging findings along with the laboratory tests, the patient was treated for the lung infection with antibiotics. After a course of appropriate medical therapy, the follow-up chest X-ray showed a well defined mass in the left's lower lobe base (fig. 3). The definite diagnosis was made after the contrast enhanced computed tomography (CT) scan revealed a mass of mixed attenuation with an arterial supply from the aorta (fig. 4).



Figure 1. Left lower lobe consolidation.

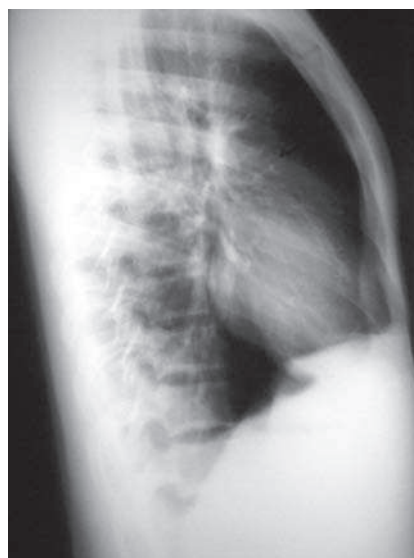


Figure 2. A dense opacity of the left lower lobe.

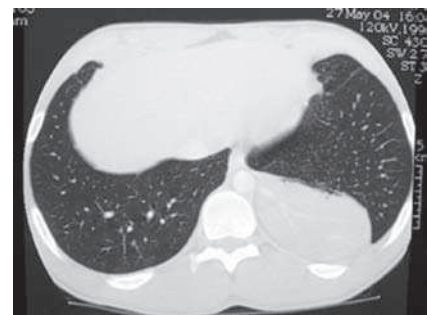


Figure 3. Consolidation in the posterior basal segment.

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Comment

Pulmonary sequestration is a nonfunctioning mass of lung tissue that lacks connection to the bronchial tree and has a systemic arterial blood supply. Pulmonary sequestration represents approximately 6% of all congenital pulmonary malformations.

This congenital anomaly can be classified as:

- *Intralobar sequestration (ILS; 75% of patients with pulmonary sequestration) covered by the pleura of the adjacent normal lung and drains into the pulmonary veins. ILS is the most common form and 60% of these are found in the posterior basal segment of the left lower lobe. ILS typically manifests in adults.*
- *Extralobar sequestration (ELS; 25% of patients with pulmonary sequestration) covered by its own pleura and drains into the vena cava or azygos vein. It is usually diagnosed in the newborn or*



Figure 4. Arterial supply from the aorta.

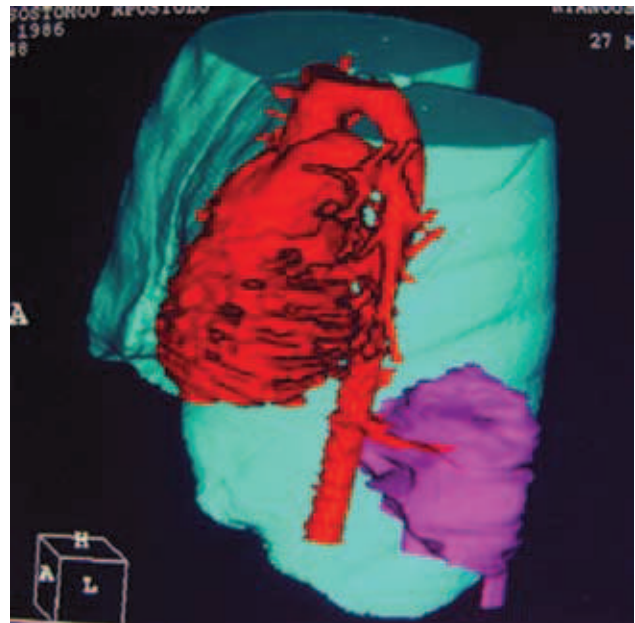


Figure 5. 3D reconstruction.

early infant, often this is because other congenital anomalies are present, including congenital diaphragmatic hernia, and cardiac malformations. ELS may occur above, within, or below the diaphragm, and nearly all appear on the left side.

Most are clinically silent until they become infected and present as pneumonia. Symptoms may begin early in childhood with multiple episodes of pneumonia and chronic or recurrent cough. The diagnosis should be considered in any patient with persistent or recurrent lower lobe pneumonia.

Conventional chest radiographic findings vary depending on the size of the lesion and whether the lesion is infected. An uninfected sequestration is seen as a well-defined mass or, less commonly, as a cyst in the medial aspect of a posterior lung base. An infected sequestration tends to appear ill defined, may be associated with parapneumonic effusion, and may contain one or more fluid levels.

CT scans have 90% accuracy in the diagnosis of pulmonary sequestration. The enhanced contrast spiral CT scan studies can reveal the anatomic position of the abnormality, the vascular supply and venous drainage. 3D reconstruction provides excellent spatial resolution and definition of the spatial relationships of structures, which can obviate invasive angiographic procedures.

MRI and MRA can provide information similar to that of CT scans without the need for ionizing radiation; however, MRI is less accessible, takes longer to perform, is subject to motion artifacts, and requires sedation in infants and small children.

The definitive diagnosis is made by using angiography (con-

ventional, CTA, or MRA), which delineates the feeding vessel to the sequestration along with its venous system (fig. 5).

Ultrasonography is important in the diagnosis of pulmonary sequestration in the prenatal and postnatal periods. The diagnosis can be made as soon as the early second trimester.

Management of an asymptomatic pulmonary sequestration is controversial; however, most references advocate resection of these lesions because of the likelihood of recurrent lung infection and the possibility of hemorrhage from arteriovenous anastomosis. Surgical resection is the treatment of choice for patients who present with infection or symptoms resulting from compression of normal lung tissue. ELS can usually be excised without loss of normal lung tissue. ILS often requires lobectomy.

In the absence of perioperative complications, surgical resection of the abnormal segment is usually curative. Prognosis may also be determined by the presence of any accompanying anomalies.

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