

Intralobar pulmonary sequestration

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Section: Chest imaging

Area of Interest: Lung Mediastinum

Imaging Technique: CT

Case Type: Clinical Cases

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Patient: 39 years, female

Clinical History:

A previously healthy 39-year-old female presenting with a 2-day history of epigastric pain, nausea, fever and mild cough.

Imaging Findings:

Chest radiograph on admission demonstrated a small left-sided pleural effusion associated with dense retrocardiac opacification (Fig. 1). No previous radiographs were available for comparison. Repeat radiograph 6 weeks following antibiotic treatment showed partial resolution of the findings with small residual retrocardiac opacity (Fig. 2). Recurrent symptoms a year later prompted a repeat chest radiograph which demonstrated increased opacification in retrocardiac region (Fig. 3). In view of this non-resolving retrocardiac opacity a contrast enhanced CT of the thorax was performed for further evaluation. This showed a diffuse mass lesion of heterogeneous attenuation within the medial basal segment of left lower lobe of lung. This consisted of areas of enhancing soft tissue attenuation, fluid filled cystic areas and multiple areas of punctate calcification. The mass lesion manifested a systemic arterial supply via a large calibre artery arising directly from the left side of the descending thoracic aorta (Fig. 4a, b, c).

Discussion:

Background:

Pulmonary sequestration is a rare congenital anomaly of the lower respiratory tract consisting of a segment of aberrant pulmonary tissue which lacks communication with the tracheobronchial tree and which receives its blood supply from branches of the systemic circulation [1]. The condition, also known as accessory lung, is classified anatomically into two distinct types: intralobar (75%) and extralobar sequestration (25%) [2]. In intralobar sequestration, the commoner of the two, the involved lung segment is contained within the same visceral pleural covering as the rest of the normal lung whilst extralobar sequestration is characterised by its own visceral pleura [3].

Clinical perspective:

The age of presentation and the clinical manifestations are dependent on the type of sequestration. Intralobar sequestration typically presents in early adulthood with recurrent chest infections whilst the extralobar variant presents early on in life with symptoms of respiratory distress, chest infections and cyanosis [2].

Imaging Perspective:

A chest radiograph is usually performed as the first-line imaging modality in patients presenting with symptomatic pulmonary sequestration. Findings include focal opacities, consolidation, subsegmental atelectasis, cystic spaces, cavitation with or without air-fluid level and focal bronchiectasis. Pulmonary sequestration is most commonly seen in the left lower lobe [3,4]. Patients with non-resolving or recurrent changes should be assessed further by CT angiography which is considered to be the gold standard diagnostic modality [4]. CT reveals the underlying sequestered lung lesion and the anomalous systemic arterial supply, usually via a branch of the aorta, which is key to the diagnosis and differentiates sequestration from other differential diagnoses [5,6]. CT can also differentiate between intralobar and extralobar sequestration through identification of the venous drainage which occurs via the pulmonary veins in intralobar sequestration and via the systemic veins in the extralobar type [7].

Outcome:

Treatment consists predominantly of surgical resection, even in the case of asymptomatic lesions, as these will invariably become infected if not removed. Whilst extralobar sequestrations can be removed by sparing normal lung parenchyma, intralobar sequestrations often require lobectomy. Surgical resection is best approached via open thoracotomy although video-assisted thoracoscopic surgery has been performed successfully. Preoperative coil embolisation has also been described [2,7].

Take Home Message / Teaching Points:

This case serves to highlight the importance of considering pulmonary sequestration as a potential diagnosis in young patients presenting with recurrent chest infections and to evaluate non-resolving chest radiograph changes via contrast enhanced CT of the thorax.

Differential Diagnosis List: Intralobar pulmonary sequestration, Extralobar pulmonary sequestration, Atypical pneumonia, Pulmonary abscess, Pulmonary arteriovenous malformation, Congenital pulmonary airway malformation

Final Diagnosis: Intralobar pulmonary sequestration

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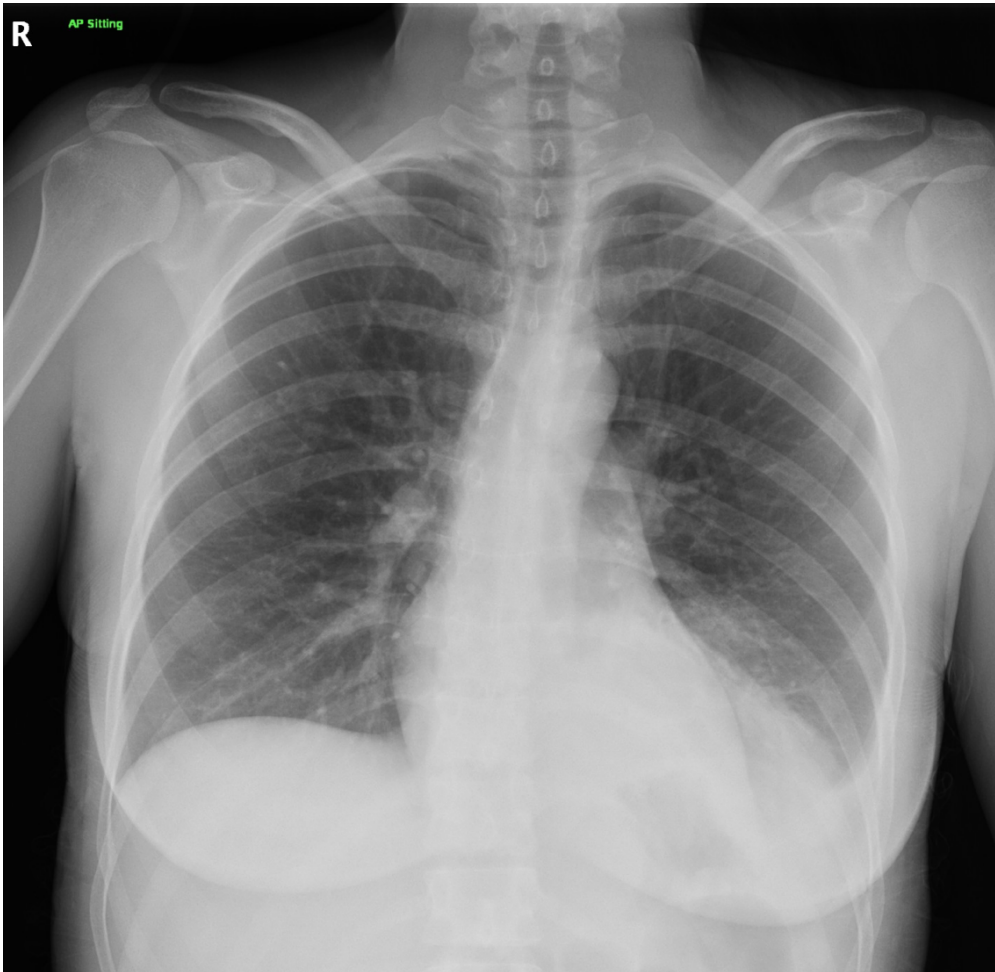
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Figure 1

a



Description: Chest radiograph demonstrating airspace shadowing in the left lower lung zone associated with a small left-sided pleural effusion. **Origin:** Medical Imaging Department, Mater Dei Hospital, Malta, 2019

Figure 2

a



Description: Repeat chest radiograph 6 weeks following antibiotic treatment demonstrating partial resolution of the radiographic findings with a small residual opacity in the left retrocardiac region. **Origin:** Medical Imaging Department, Mater Dei Hospital, Malta, 2019

Figure 3

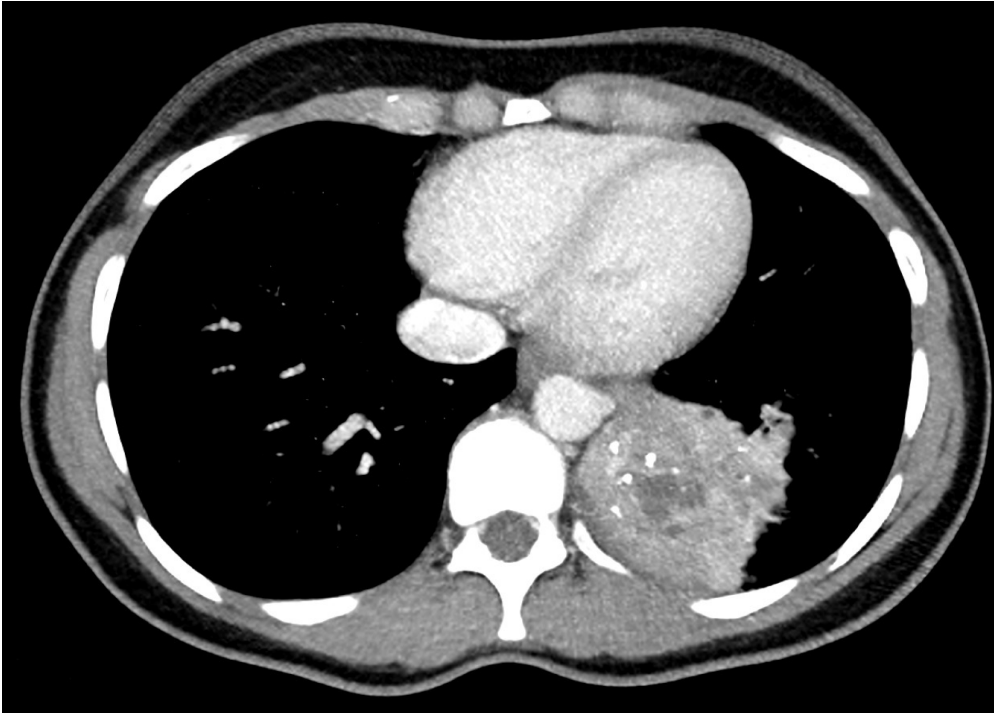
a



Description: A repeat chest radiograph a year later due to recurrent symptoms demonstrates increased opacification in the retrocardiac region. **Origin:** Medical Imaging Department, Mater Dei Hospital, Malta, 2019

Figure 4

a



Description: Contrast-enhanced CT of the thorax demonstrating a mass lesion within the medial basal segment of left lower lobe of lung. This is of heterogeneous attenuation, consisting of areas of enhancing soft tissue attenuation, fluid filled cystic areas and multiple areas of punctate calcification.

Origin: Medical Imaging Department, Mater Dei Hospital, Malta, 2019

b



Description: Contrast-enhanced CT of the thorax demonstrates systemic arterial supply via a large calibre artery arising directly from the left side of the descending thoracic aorta (red arrow). **Origin:** Medical Imaging Department, Mater Dei Hospital, Malta, 2019