Atypical presentation of pulmonary tuberculosis in an infant

Clinical History:

7-month-old male patient admitted with sudden onset of dyspnoea. On examination, failure to thrive, mild respiratory distress, reduced air entry on the left side. No history of vomiting, feeding difficulty or fever. Past history was suggestive of recurrent episodes of coughing relieved with conservative medical treatment. History of preterm delivery.

Imaging Findings:

Supine chest radiograph shows hyperinflated left lung field. Ill-defined haziness in the left upper zone. Shifting of mediastinum towards the right side.

CT chest plain scans shows fairly large ill-defined heterogeneous mass-forming lesion with multiple scattered lobular areas of faint calcifications involving the left lung upper lobe, the left hilum and infiltrating the superior and middle mediastinum (Fig. 2).

On post-contrast study, the lesion shows heterogeneous enhancement with multiple non-enhancing hypodense areas in it. The lesion shows loss of fat planes with arch of aorta and its branches and is seen encasing the trachea (Fig. 4).

The subcarinal component of the lesion shows infiltration of the wall of the left main bronchus causing bronchial stenosis and hyperinflation of the lingula and left lung lower lobe with resultant displacement of superior mediastinal structure including thymus towards the right side (Fig. 2, 3, 4).

Ill-defined haziness is seen in the right perihilar region possibly due to hypoventilation (Fig. 4).

CT guided tru cut biopsy of the lesion was done (Fig. 5).

Discussion:

Tuberculosis remains an important cause of morbidity and mortality worldwide. Mainly as a result of the worsening HIV epidemic, homelessness, drug abuse and migration from developing countries, the problem of pulmonary tuberculosis in Western countries has markedly increased [1, 2]. Children represent one of the high-risk groups in the resurgence of this disease. Among children, those younger than 5 years are at the highest risk for pulmonary tuberculosis [3].

Pulmonary tuberculosis in infants has some differences from that seen in older children; it is more symptomatic, and
the risk of severe and life-threatening complications such as tuberculous meningitis or miliary tuberculosis is higher [3]. Therefore, early diagnosis and prompt treatment are very important for infants with tuberculosis. Bacteriologic confirmation of the disease in children is difficult, and in younger infants (< 3 months), the tuberculin skin test is frequently negative [5]. Therefore, chest radiographs and a history of direct contact with patients who have contagious tuberculosis play essential roles in diagnosing tuberculosis in infants. The importance of the role of radiologists cannot be overemphasized.

Frequent radiologic findings of pulmonary tuberculosis of infants are mediastinal or hilar lymphadenopathy with central necrosis and air-space consolidations, especially mass-like consolidations with low-attenuation areas or cavities within consolidations. Disseminated pulmonary nodules and airway complications are also frequently detected in this age group. CT can be a useful diagnostic technique for infant tuberculosis, as it can show parenchymal lesions and tuberculous lymphadenopathy better than chest radiography (as in our case). CT scans can also be helpful when chest radiographs are inconclusive or complications of tuberculosis are suspected [5].

CT scans can reveal lymphadenopathy, calcifications, bronchogenic nodules, and complications such as airway narrowing, emphysema and pleural effusion [4].

Our case is interesting as the paediatrician initially suspected a foreign body based on clinical presentation and referred for CT chest which showed a mass-forming lesion in the lung with subtle lobular areas of calcification without airbronchogram or cavitations and was infiltrating mediastinal structures (like a neoplastic lesion) leading to symptoms. So our primary differential were mediastinal germ cell tumour and mesenchymal tumour. But the tumour marker level came normal so CT-guided biopsy was performed, which revealed granulomatous inflammation with caseous necrosis, occasional acid fast bacilli. The patient is responding well to anti-tubercular therapy.

This case cautions the clinicians and radiologists about the possibility of tuberculosis in considering the differential diagnosis of mass forming lung and mediastinal lesions especially in infants in those areas where tuberculosis is endemic.

**Differential Diagnosis List:** Mass-forming pulmonary tuberculosis, Germ cell tumour, Mesenchymal tumour, Infections

**Final Diagnosis:** Mass-forming pulmonary tuberculosis

**References:**


Uzum K, Karahan OI, Dogan S, Coskun A, Topcu F ([200] Chest radiography and thoracic computed tomography findings in children who have family members with active pulmonary tuberculosis. Eur J Radiol 48:258-262 (PMID: [14652143](pmid:14652143))

Figure 1

Description: X-ray chest supine view shows hyperinflated left lung. Ill-defined haziness in left upper zone. Deviation of trachea on right side. Origin: Concept diagnosis and imaging surat
**Figure 2**

a

**Description:** Ill-defined soft tissue density lesion with scattered lobular areas of soft calcification seen involving left lung upper lobe and superior mediastinum with shifting of trachea on the right side. **Origin:** Concept diagnosis and imaging Surat

b

**Description:** CT scan chest at subcarinal level shows mediastinal mass infiltrating the wall of the left main bronchus causing bronchial stenosis. **Origin:** Concept diagnosis and imaging Surat
Description: Hyperinflated left lung with shifting of mediastinum on the right side. Origin: Concept diagnosis and imaging Surat

Description: Hyperinflated lingula and left lung lower lobe with left main bronchus stenosis. Origin: Concept diagnosis and imaging Surat
Figure 4

a

**Description:** Lesion shows heterogeneous enhancement with nonenhancing hypodense area in it. Mediastinal component of lesion is seen encasing vessels of arch of aorta and trachea. Changes of pneumonitis in right upper lobe. **Origin:** Concept diagnosis and imaging Surat

b

**Description:** Lesion is extending up to the subcarinal region, encasing the left main bronchus and involving the left hilum. **Origin:** Concept diagnosis and imaging Surat
Description: Coronal reconstructed image shows mass lesion encasing left common carotid artery.
Origin: Concept diagnosis and imaging Surat
**Description:** Coronal reconstructed image shows heterogenous mass with non-enhancing areas in it. Lesion causes stenosis of left main bronchus. **Origin:** Concept diagnosis and imaging Surat
Description: CT guided tru cut biopsy from mass lesion. Origin: Concept diagnosis and imaging, Surat.