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Case Report

Unusual case of unilateral whiteout on chest radiograph with evidence of previous pulmonary tuberculosis exposure

A. Dushianthan [a,*], S.A. Abbas [b,1]

[a] Department of Respiratory Medicine, Morriston Hospital, Swansea, UK
[b] Department of Respiratory Medicine, University Hospital Llandough, Penarth, UK

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ABSTRACT

Pulmonary hypoplasia is a rare congenital anomaly owing to the under development of lung tissue and usually present in childhood. We present an asymptomatic lady in her second decade with a unilateral hemithorax abnormality on her chest radiograph likely due to pulmonary hypoplasia. She also had evidence of previous pulmonary tuberculosis exposure with intra-pulmonary cavity and demonstrating a mass within that cavity consistent with aspergilloma. This case illustrates a rare congenital condition presenting in adulthood with evidence of chronic pulmonary infections.

1. Case report

A 29-year-old asymptomatic, previously healthy lady from an African origin was referred with an abnormal chest radiograph. This was organised by her general practitioner as part of screening investigation for pulmonary TB. She denied having any previous chest problems. Clinical examination of the respiratory system revealed signs of volume loss on left side. Chest radiograph showed loss of volume of the left hemithorax with mediastinal shift towards the same side. Intercostal spaces on this side were well preserved (Fig. 1). The CT scan of thorax showed grossly deviated mediastinal structures, underdeveloped airways and lung tissue on left side with compensatory hyperinflation and herniation of right lung (Figs. 2 and 3). It also showed calcification and fibrosis in right upper lobe with a small intra-cavitatory mass with an 'air crescent' sign (Fig. 4). Bronchoscopy revealed the under development of left bronchial tree. The left main bronchus divided into two and then ended without any further divisions. However, normal development of tracheo-bronchial tree was observed on the right side. Bronchial washings were negative for any infective agents.

2. Discussions

These features are suggestive of unilateral pulmonary hypoplasia. Pulmonary hypoplasia is a part of the spectrum of congenital anomalies of lung whereby there is poor development of lung tissue. There are various types of under development. They are agenesis (complete absence of lung tissue), aplasia (a rudimentary bronchus without lung tissue) and hypoplasia (variable reduction of lung tissue).[1] Aetiology of this condition remains unclear, however, factors affecting the lung growth such as reduced thoracic space available for lung development and decreased pulmonary vascular perfusion have been implicated.[2] It is associated with number of other congenital abnormalities and vascular defects.[3] The degree of severity depends on the type of abnormality present. Presentation is usually during neonatal or early childhood period. Asymptomatic adult presentation is rare.

On the plain chest radiograph it appears as whiteout, the differentials may include unilateral effusion, consolidation and segmental or lobar collapse. Although CT thorax may help to aid the diagnosis, angiography, DSA (Digital subtraction angiography) or MR angiogram may be indicated for vascular assessment.[4,5]

Clinical presentation and prognosis depend on the extent of pulmonary and vascular anomalies present, in-addition to the degree of secondary complications such as pulmonary hypertension or bronchiectasis. In adult pulmonary hypoplasia the symptoms are likely to be due to the development of bronchiectasis and hence the treatment consists of preventing recurrent infections and

* Corresponding author. Mobile no: 07931777292.
E-mail addresses: dushianthan@tiscali.co.uk (A. Dushianthan), ali.abbas@doctors.org.uk (S.A. Abbas).
[1] Mobile no: 07877991807.

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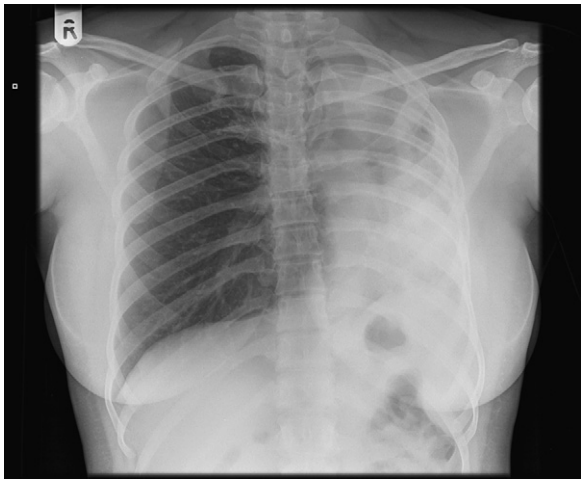

Fig. 1. Plain chest radiograph showing left hemithorax whiteout with signs of left sided volume loss and deviation of mediastinal structures.

Fig. 2. CT thorax showing left main bronchus dividing into two and ending without further divisions.

maintaining bronchial hygiene with physiotherapy, bronchodilators, antibiotics and mucolytics.

This lady had evidence of possible exposure to pulmonary tuberculosis with right upper lobe fibrotic changes, calcifications and a small cavity. This cavity is occupied centrally and likely to be an aspergilloma. As she was asymptomatic, she was reassured and was advised in-regards to bronchial hygiene. This case illustrates an unusual cause for unilateral whiteout on a chest radiograph in adults with complications from secondary infections. Pre-existing cavities (possibly old TB in this case) is the most common cause of aspergilloma. Features of unilateral pulmonary hypoplasia, old tuberculosis and aspergilloma were seen together in this interesting rare case.

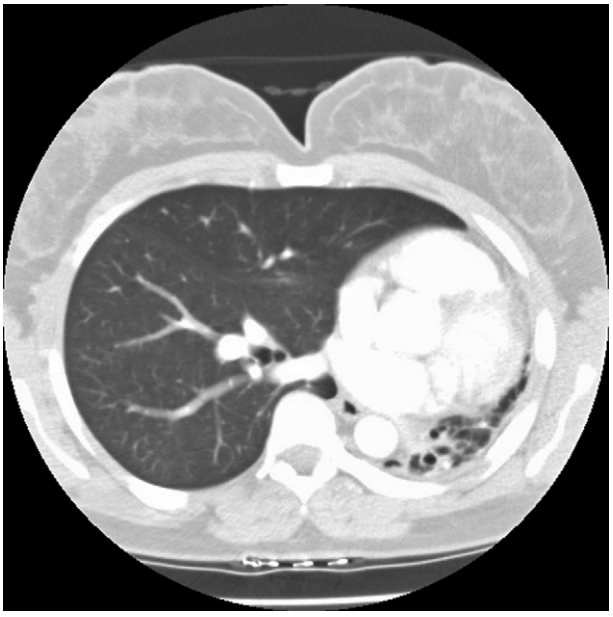

Fig. 3. CT thorax showing underdeveloped lung parenchyma on the left and herniation of right lungs towards left lung.

Fig. 4. CT thorax showing right upper lobe fibrosis and calcification along with aspergilloma. Air crescent sign or Monod's sign.

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