

CASE FOR DIAGNOSIS

An elderly female with dyspnoea and anaemia

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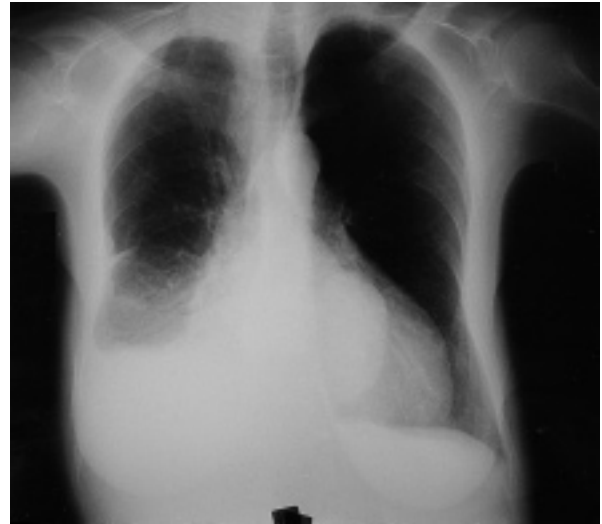
Case history

An 84-yr-old Caucasian female had been investigated elsewhere for increasing breathlessness and lethargy. She complained of exertional dyspnoea over several months. She denied cough, fevers, night sweats or weight loss. She was born in Bombay (of English parents) and came to London in 1965. She had a 40 pack yr smoking history. Investigations revealed a hypochromic microcytic anaemia (Hb 9.3 g·dL⁻¹, mean corpuscular volume (MCV) 78.9 fL, mean corpuscular haemoglobin (MCH) 26.8 pg) and a reticulocytosis ($134 \times 10^9 \cdot L^{-1}$) and the chest radiograph (CXR) revealed a right pleural effusion. Barium swallow and upper and lower gastrointestinal endoscopies were normal. Pleural aspiration and biopsy had been performed on two occasions. The effusion was an exudate (protein 49 g·L⁻¹) but all microbiological and histocytological analysis of both pleural fluid and pleural biopsies were negative for alcohol and acid fast bacilli and malignancy. The effusion reaccumulated after each aspiration and she was referred on to the Chest Clinic for further investigation.

Symptomatology had changed little and her weight was unchanged. On examination she was pale but with no clubbing or lymphadenopathy. The chest was hyperexpanded with decreased percussion and air entry at both bases. The remaining examination was normal.

Repeat posterior-anterior and lateral CXR were taken (fig. 1) and a computed tomography (CT) scan of the thorax obtained (fig. 2). A CT guided fine needle aspiration of one of the masses was undertaken (fig. 3).

a)



b)



Fig. 1. – a) Posteroanterior; and b) lateral chest radiograph.

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Fig. 2. – Computed tomography scan of thorax. M: thoracic masses; *: fat; p: pleural effusion.

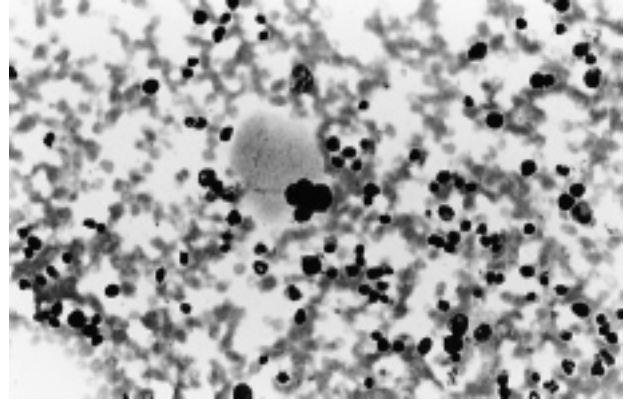


Fig. 3. – Direct smear from computed tomography guided fine needle aspirate of mediastinal mass. (May-Grünwald Giemsa stain).

BEFORE TURNING THE PAGE, INTERPRET THE CXR, CT AND THE CYTOLOGY AND SUGGEST A DIAGNOSIS

Interpretation

Chest radiography

A double shadow can be seen through the left heart border on the posterior-anterior view CXR raising the possibility of a mass behind the heart (fig. 1a). On the lateral CXR the pleural effusion is clearly seen along with a separate posterior lobulated mass (fig. 1b).

Computed tomography

CT scanning of the chest was performed and demonstrated bilateral well circumscribed lobulated lower thoracic masses containing fat and a right sided pleural effusion (fig. 2). The presence of fat and absence of local bone erosion or reactive change made extramedullary haematopoiesis the most likely diagnosis.

Fine needle aspiration

A CT guided fine needle aspirate of one of the masses was undertaken. Groups of haemopoietic cells, including myeloid and erythroid precursors together with megakaryocytes, were seen on the cytopsin against a background of red cells (fig. 3). These findings are indicative of extramedullary haematopoiesis. Malignant cells were not seen.

In order to elucidate the underlying haematological abnormality driving the extramedullary haematopoiesis a bone marrow aspirate was performed. This showed marked dyserythropoietic changes with binucleate and multinucleate pronormoblasts and late normoblasts (fig. 4). There were no features of myelodysplasia and no ring sideroblasts. Marrow cytogenetics were normal. Bone marrow trephine was hypercellular with erythroid hyperplasia. Ham's test was negative. Serum B12, ferritin, folate and HbA₂ and percentage foetal haemoglobin (F%) were all normal. The findings were, therefore, of dyserythropoietic anaemia of uncertain aetiology. In the absence of electron microscopy studies a variant form of congenital dyserythropoietic anaemia could not be excluded.

Diagnosis: "Extramedullary haematopoiesis, secondary to dyserythropoietic anaemia, presenting with pleural effusions"

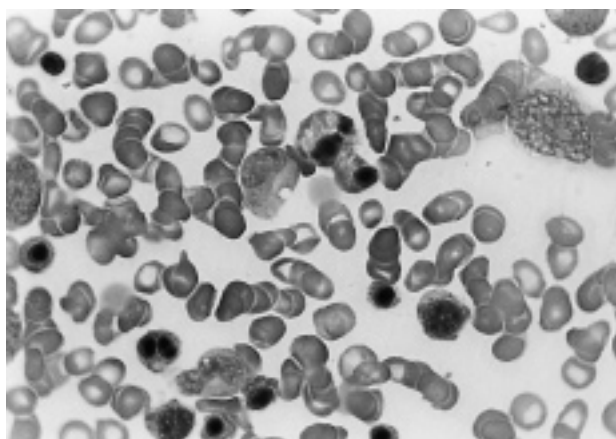


Fig. 4. – Bone marrow aspirate showing marked dyserythropoietic features with binucleate pronormoblasts and late normoblasts.

Clinical course

Following one further pleurocentesis the patient remained well and was asymptomatic when last reviewed in July 1999. Her anaemia had not progressed and she required no further invasive investigations.

Discussion

Extramedullary haematopoiesis is the production of blood cells outside the bone marrow to compensate for bone marrow dysfunction. Extramedullary haematopoiesis most commonly occurs in the reticuloendothelial system but has been reported in the thoracic cavity, spinal cord, pleura and pericardium [1]. Intrathoracic extramedullary haematopoiesis is most commonly associated with thalassaemia, sickle cell anaemia or hereditary spherocytosis and more rarely with myelofibrosis. Radiologically, bilateral smoothly marginated masses containing fat situated between T8 and T12 have been classically described in extramedullary haematopoiesis. Other differential diagnoses for posterior mediastinal masses include neurogenic tumours, lymphoma, reactive lymphadenopathy, spinal abscesses and primary or secondary bone tumours [2]. Exudative pleural effusions is very rare in association with extramedullary haematopoiesis but has been reported accompanied by ascites in a patient with myelofibrosis [3]. Haemothoraces secondary to extramedullary haematopoiesis have been more commonly reported. These haemothoraces have been reported in patients with myelofibrosis, thalassaemia (alpha and intermedia) and hereditary spherocytosis [3–7]. The mechanism as to the cause of the pleural effusion is unknown.

Congenital dyserythropoietic anaemias are a group of hereditary refractory anaemias characterized by chronic haemolysis. Only one previous report of extramedullary haematopoiesis with congenital dyserythropoiesis type II was found. Three siblings with congenital dyserythropoiesis type II were found to have asymptomatic paravertebral masses on CXR screening but no pleural effusions [8].

Intrathoracic extramedullary haematopoiesis is rarely symptomatic but the development of acute fatal respiratory failure secondary to interstitial extramedullary haematopoiesis has been reported in a patient with myelofibrosis [9]. Spinal cord compression needs to be treated urgently but the routine drainage of pleural effusions is enough to relieve symptoms. Pleural effusions or haemothoraces that persist despite drainage usually respond well to thoracic radiotherapy [4, 6, 7, 9]. Extramedullary haematopoiesis should be considered in the differential diagnosis of pleural effusions in the anaemic patient.

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