

CASE FOR DIAGNOSIS

Haemoptysis and a cavity in a young man

M. Pastó, V. Curull, J. Minguella, M.A. Jimenez, C. Sanjuàs, J. Broquetas

Case History

A 23 year old Algerian male was admitted to hospital due to intermittent mucopurulent and blood-stained sputum of 2 yrs duration. Temperature, blood pressure, cardiorespiratory and abdominal examination were normal. Laboratory findings showed 480 eosinophils·ml⁻¹ in peripheral blood. The lateral and posteroanterior (PA) chest roentgenograms are shown in figures 1 and 2.

Empirical treatment with clindamycin was administered but no changes in chest roentgenogram were observed after one week. Computed tomography of the thorax is shown in figure 3.



Fig. 1. - Lateral chest roentgenogram.



Fig. 2. - Posteroanterior (PA) chest roentgenogram.



Fig. 3. - Computed tomography of the thorax.

A fiberoptic bronchoscopy was performed and bronchial washing was taken for cytological and microbiological analysis, with negative results.

BEFORE TURNING THE PAGE: INTERPRET THE FIGURES, AND SUGGEST DIAGNOSIS AND TREATMENT.

Interpretation of the roentgenogram and computed tomography

The PA and lateral chest roentgenogram show a cavity with an air-fluid level in the left hemithorax. The cavity could be intrapulmonary (in the apical segment of the lower lobe) or intrapleural. On the PA view it is wide and appears to be intrapleural, but on the lateral view it is narrow and looks more intrapulmonary.

Computed tomography of the thorax reveal an air-filled cavity in the left hemithorax. It appears to be located within the pleura, which is thickened all around the cavity. The adjacent part of the lung has a diminished volume and the blood vessels are pulled together. Several small bronchi are fluid-filled, but there is one open bronchus.

Diagnosis: "Loculate hydatid pyopneumothorax"

Due to the patient's country of origin, the radiological characteristics of the image and the blood eosinophilia, a thoracic hydatidosis was suspected. This diagnosis was confirmed with positive antibodies against *Echinococcus granulosus*. Abdominal ultrasonography was performed to identify a possible simultaneous liver cyst, with negative results.

Treatment

The patient was submitted to surgical treatment with posterolateral thoracotomy. This procedure revealed a 1 cm thick rear pachypleuritis, as well as a cavity with purulent content and a floating hydatid membrane. Lavage of the cavity with saline solution showed two fistula orifices to the lung. Parietal cystectomy and complete decortication were performed, followed by a myoplasty using intercostal muscle fibres that were stitched to the orifices.

Discussion

Hydatidosis is an endemic disease, common in North Africa and various countries on the Mediterranean coast. This is due to a platyhelminth, the *Echinococcus granulosus*, which is found in the bowels of dogs. The individual becomes infected by ingesting eggs which are incubated in the bowel and which leave embryos free on the intestinal wall. The embryos are then transported by portal circulation to the liver, where they develop and can cross the capillaries to reach the pulmonary circulation [1].

The chest roentgenogram of the hydatid cyst is typical, involving one lobe in 72% of cases, usually at the lung bases [1, 2]. The hydatid cyst not open to pleura appears in the form of a circular or oval image with well-defined limits, that can change according to its evolution. If the cyst ruptures, the radiological image of the pneumopericyst appears [3] (rounded shape, with a

superior crescent like a new moon, which is caused by the entrance of air into the cyst). If the content of the cyst is completely evacuated to the bronchial tree, a cavity similar to those observed in tuberculosis or pulmonary abscesses appears. However, if the content is only partially evacuated, the waterline image appears, commonly referred to as the sign of camalote [4, 5] (undulating image at the air-fluid interface produced by the floating hydatid membranes in the remnant fluid after vomica).

Pleural involvements have also been described, such as either exudative pleuritis [6], or the perforation of the cyst in the pleural cavity, the latter provoking a pneumothorax or a pyopneumothorax [7]. If the perforation takes place into a pleura with adhesions, a loculate pyopneumothorax appears, as was observed in our patient. It can be difficult, at times, to differentiate this type of image from a parenchymal cavity. In this patient, a pyopneumothorax should have been differentiated from a peripheral lung cavity similar to those produced by tuberculosis, pulmonary abscess, emphysema or congenital cyst.

The differential diagnosis between a loculate pneumothorax and a pulmonary cavity is based on the following signs, present in pleural cavities: thinner superior wall, greater variability of the size of the chamber, greater mobility in the level of fluid during respiration, different lengths of the air-fluid level when viewed at 90 degree angles, absence of the drainage bronchus, reduction of the cavity during cough, and obtuse angle between cavity wall and thoracic wall.

In the present case, the differential diagnosis between a pleural cavity and a peripheral pulmonary cavity with an air-fluid level, had been made. Distinguishing between a hydatid pyopneumothorax and a hydatid pneumocyst can often be difficult, and sometimes requires a thoracotomy.

Keywords: Hydatidosis, hydatid cyst, pneumocyst, pyopneumothorax.

References

1. Mahmoud AAF. Helminthic Diseases of the Lungs. In: Fishman AP, ed. Pulmonary Diseases and Disorders. 2nd edn. New York, McGraw-Hill Book Co. 1988; pp. 1719–1733.
2. Arora VK, Varma R. Right-sided chest pain with progressive dyspnea. *Chest* 1991; 100: 811–812.
3. Burgos L, Baquerizo A, Muñoz W, De Aretxabala X, Solar C, Fonseca L. Experience in the surgical treatment of 331 patients with pulmonary hydatidosis. *J Thorac Cardiovasc Surg* 1991; 102: 427–430.
4. Pare JAP. The pleura. In: Fraser RG, ed. Diagnosis of Diseases of the Chest, 3rd edn. Philadelphia, W.B. Saunders Co. 1991; pp. 2712–2793.
5. Sadrieh M, Dutz W, Nvabpor MS. Review of 150 cases of hydatid cyst of the lung. *Dis Chest* 1967; 52: 662–666.
6. Thurer RJ, Palatianos GM. Hydatid disease of the pleura: In surgical aspects of the pleural space. *Semin Respir Med* 1987; 9: 110–111.
7. Xanthakis DS, Katsaras E, Efthimiadis M, Papadakis G, Varouchakis G, Aligizakis C. Hydatid cyst of the liver with intrathoracic rupture. *Thorax* 1981; 36: 497–501.