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Radiology

Ruptured Pulmonary Hydatid Cyst in the Pleura and Bronchus in a Girl: A Case Report

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Abstract | **Case Report**

Hydatidosis is still endemic in Morocco; the pulmonary localization is the most frequent. In children, complications can sometimes be serious, we report the case of a 13 year old girl with a right pulmonary hydatid cyst ruptured in the pleura and the bronchus revealed by a thoracic pain and dysnea with a compressive right hydropneumothorax with a cavitary image containing serpiginous membranes realizing a nenuphar aspect.

Keywords: Pulmonary hydatid cyst, complications, child.

INTRODUCTION

Hydatidosis is still endemic in Morocco; the pulmonary location is the most frequent in children. The problem is the late diagnosis, the diversity of anatomical and radiological forms as well as complications such as rupture of the bronchial tubes and pleura, which can sometimes be serious.

We report a case of a 13-year-old girl with a ruptured pulmonary hydatid cyst in the pleura and bronchi.

CLINICAL CASE

This is a 13 year old girl with no particular pathological history who presented with chest pain, dyspnoea evolving for 2 months in a febrile context, with notion of taking antibiotics without improvement.

The clinical examination revealed a polypneic patient, normotensive with fever. The infectious workup was positive with hyperleukocytosis and increased CRP.

The requested chest radiograph showed (►Figure 1). Clarity occupying the right pulmonary hemichamp, avascular, surmounting an opacity of hydric tone with blunting of the costodiaphragmatic CDS, realizing a fluid-air level; The whole is responsible for a repression of the elements of the mediastinum of the contralateral side as well as a displacement of the anterior mediastinal line.

Individualisation in the right hemithorax of an excavated lesion formation with opaque, sloping contents and an undulating upper surface surmounted by a clearness, producing the water lily sign.

Figure 1: Frontal chest radiograph: compressive right hydropneumothorax associated with a homolateral excavated image with water lily sign

The thoracic CT scan requested showed (►Figure 2). The presence of a significant right thoracic distension with large hydro-pneumothorax, individualization of an excavated formation at the level of the pulmonary stump containing aerial contents as well as multiple serpiginous membranes, the whole is responsible for a refoulement of the elements of the mediastinum towards the contralateral side with anterior transmediastinal hernia.

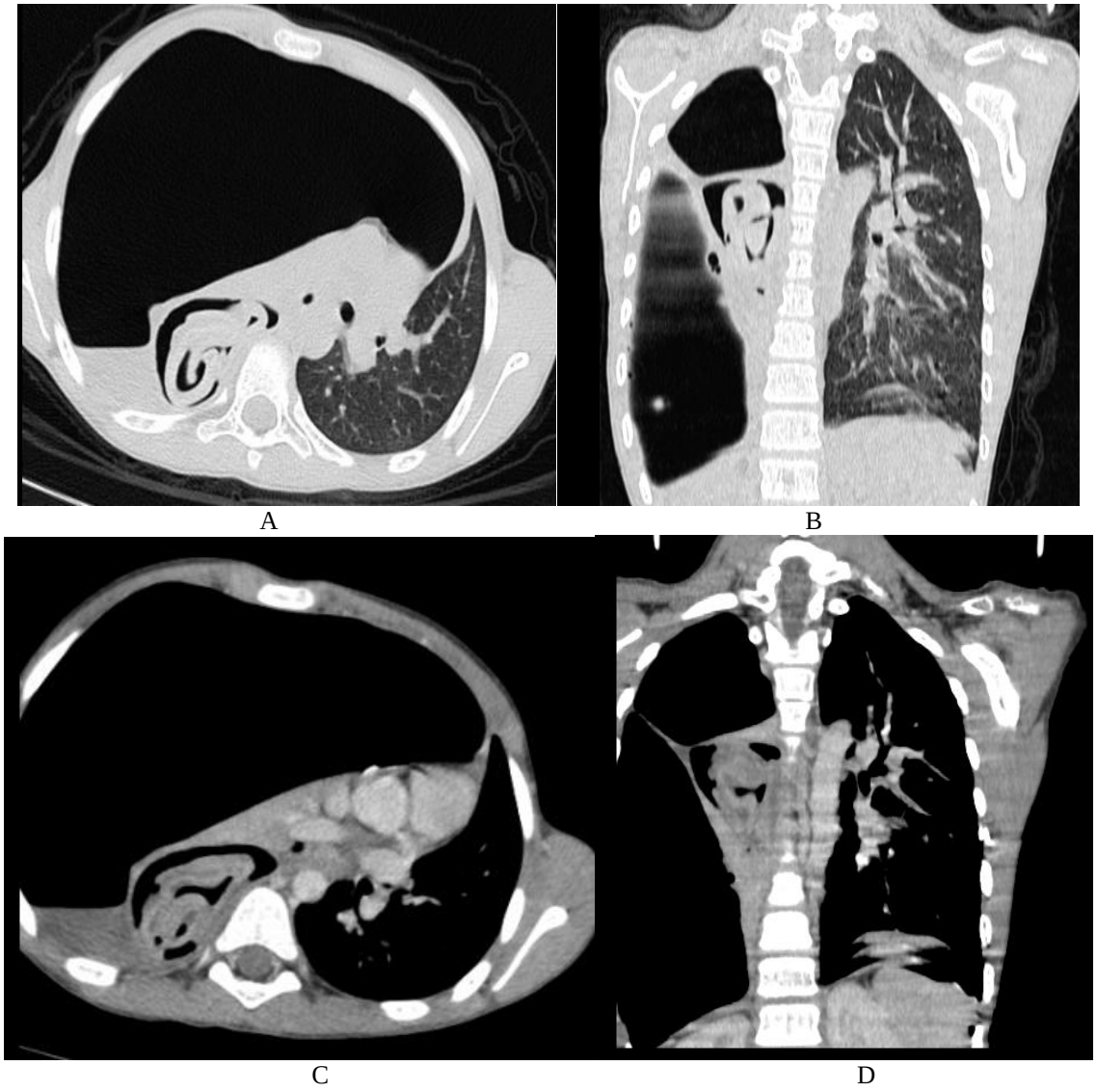

Figure 2: Chest CT scan after PDC injection, parenchymal window in axial and coronal sections (A and B); mediastinal window in axial and coronal sections (C and D): large compressive right hydropneumothorax with cavitary image of the pulmonary stump containing membranes

The hydatid serology in our patient was positive; the diagnosis of fistulised pulmonary hydatid cysts including the bronchus and the pleura was made.

The patient underwent surgery with extraction of the hydatid membranes and thoracic drainage as well as antiparasitic treatment (Albendazole) with a good evolution.

The follow-up chest X-ray showed (Figure 3) good improvement with regression of the hydropneumothorax with persistent pleural thickening of postoperative appearance.

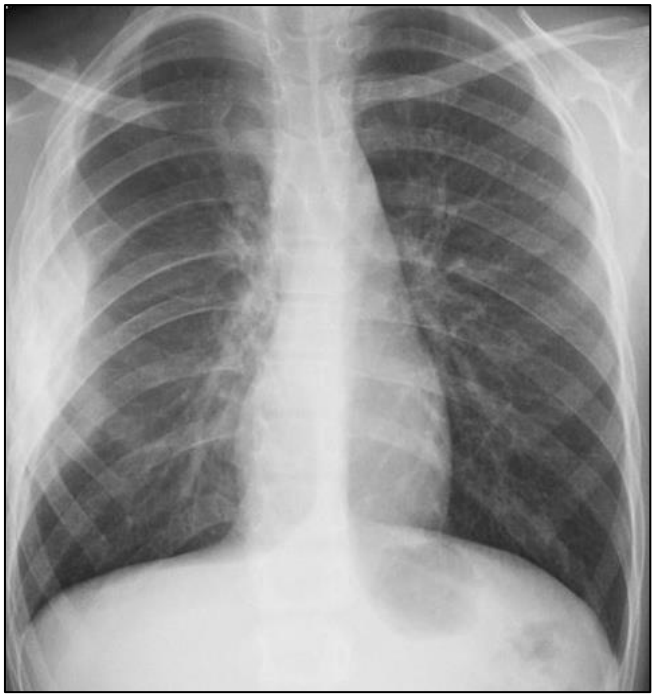

Figure 3: Frontal control chest X-ray, regression of the right hydropneumothorax with persistent postoperative pleural thickening

DISCUSSION

Hydatidosis is still endemic in Morocco in children. The diagnosis is based on a range of clinical, epidemiological and serological arguments as well as imaging data [1, 2].

The problem that arises is the late diagnosis, the diversity of anatomical and radiological forms as well as the complications that can sometimes be serious.

The differential diagnosis is made with malformations, tumours and other infectious etiologies.

Rupture in the bronchial tree is an important event in the natural evolution of the pulmonary hydatid cyst, mainly in the bronchi, the mechanism being ischaemic necrosis and erosion of the bronchial wall followed by bronchocystic fistulation. The fistulas, initially sealed by the cuticle under tension, are exposed, the passage of bronchial air into the detachment space and the introduction of germs into this closed environment with no means of defence contribute to the fragility of the hydatid wall, which in turn ruptures and allows its contents to be evacuated into the bronchial tubes [3, 4].

Rupture in the pleural cavity is a rare complication, but one that predisposes to difficulties in diagnosis and treatment iatrogenic or post-traumatic cases of intrapleural rupture have been reported, but most often it is spontaneous and indicative of pulmonary hydatidosis.

Certain factors favour this rupture: the large volume of the cyst increasing the intra-cystic pressure, its peripheral location leaving part of the hydatid cuticle exposed without a nourishing pericyst, superinfection of the hydatid fluid by a prior communication with the bronchial tree [5, 6].

The paediatric population is particular because of the functional lability and immaturity of the structures, which explains the frequency of irreversible parenchymal lesions in infantile forms; the thickness of the bronchial wall in the early stages of life explains why the rupture of cysts in the bronchi is less frequent in children; The pericyst is often thin and flexible, collapsing after removal of the cyst, thus allowing minimally invasive surgical treatment; The rapid growth of the pulmonary hydatid cyst to sometimes occupy the entire hemithorax without any signs other than exertional dyspnoea [7].

From an imaging point of view [8], thoracic tomography is the second-line examination after the chest X-ray, allowing a positive diagnosis to be made as well as the detection of small cysts, the determination of their stage of development, and above all a complete assessment of other possible thoracic locations that may go unnoticed on the standard X-ray.

CT scans are made up of several stages that follow each other in time, depending on the amount of air introduced and fluid drained from the cyst [1, 9, 10].

- **Stage I:** Kitten ring appearance This is the result of a minimal amount of air entering between the endocyst and the pericyst without endocyst detachment.

- **Stage II:** "Crescent" and "Inverted crescent" aspects It is the result of the introduction of air between the endocyst and the pericyst with partial detachment of the endocyst.
- **Stage III:** "Trapped" and "honeycomb" appearance: This is the result of total detachment of the endocyst without evacuation of the fluid content. The appearance of "trapped cells" is defined by the presence of small air bubbles trapped between the folds of the detached endocyst within the fluid content. When the bubbles are very numerous, they create a "honeycomb" appearance.
- **Stage IV:** hydroaerobic images, due to the detachment of the endocyst with partial evacuation of the liquid content, producing a "double arch" appearance where the endocyst is partially collapsed, or a "nenuphar" appearance where the fully collapsed endocyst floats on the liquid. If it remains completely immersed, it produces a "serpiginous" appearance.
- **Stage V:** dry retention appearance; this is the result of complete evacuation of hydatid fluid and retraction of the endocyst, giving a "ball of wool" or "bell" appearance or a pseudotumour appearance.
- **Stage VI:** Sequelae; This is the result of complete removal of the KHP contents leaving a thin- or thick-walled aerial cavity or a dense linear non septal image

CONCLUSION

Hydatidosis is still endemic in Morocco; the pulmonary localization is the most frequent in children; the diagnosis is based on a set of clinical-epidemiological-serological arguments as well as imaging data. The diagnosis is based on clinical, epidemiological and serological arguments as well as imaging data. We report in this case a complication of hydatid cysts, that of intra bronchial and intra pleural fistula.

Patient Consents

The authors confirm that a written informed consent in the local language was obtained from the patient for publication of the case report, on the conditions of maintaining anonymity of identity.

Conflict of Interest: None.

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