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Case Report

Pulmonary Hydatid Cyst with Broncho-Pleural Rupture: A Rare Complication to be Considered (Case Report)

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Abstract

Background: Hydatid cyst (HC) is a parasitic condition caused by *Echinococcus granulosus*. The lung is the most common site of localization in the pediatric population, then the liver. Pulmonary HC can be complicated mainly by a rupture in the bronchus and more rarely in the pleura.

Aim of the Study: To report a case of pulmonary HC ruptured in the pleura and bronchi.

Case Report: A-13-year-old child, presented with HC of the left lung, complicated by a rupture in both the bronchi and the pleura, and responsible for a significant compressive hydro pneumothorax managed conservatively by drainage, respiratory physiotherapy and antihelmintic drugs. Chest computed tomography (CT) was very helpful for the diagnosis of HC with its complications, as well as the follow-up control. Management was conservative no surgery was necessary.

Conclusion: Pulmonary HC in children remains a common condition in Morocco. Its rupture in the pleura is a rare complication even in endemic areas and can be indicative. Conservative management can be efficient in some cases and must be considered as a treatment option.

Keywords: *Child; Acute Respiratory Distress; Chest Computed Tomography; Hydatic Cyst; Rupture in Pleura and Bronchi; Conservative Management*

Introduction

Hydatid disease is a zoonotic parasitic infestation caused by tapeworms, particularly *Echinococcus granulosus*. The lung is the second most common site followed by the liver accounting for 10% - 30% of the cases [1-4].

Pulmonary hydatid cyst in children remains a common condition in Morocco. Its rupture in the pleura is a rare complication even in endemic areas and can be indicative of pathology. Pleural rupture and intrabronchic HC rupture are very rare [1,2,4-6].

Besides anaphylactic reactions, the most frequent complication of the hydatid disease is rupture into neighboring structures, often affecting the bronchi, gastrointestinal tract, and pleural cavities, according to its location [5]. They occur in < 1% of all hydatid cysts in the body and can cause serious complications such as pleural effusion, pneumothorax, and intrabronchic rupture, and mediastinal shift.

A case of child HC revealed by chest HC of the left lung, complicated by a rupture in both the bronchi and the pleura, with compressive hydropneumothorax is reported.

Case Report

A 13-year-old female patient, without significant medical history presented to the emergency room for acute respiratory distress with left chest pain. Chest x-ray revealed a significant left hydropneumothorax with no identifiable cause. The chest Computed tomography scan (CT) reveals an intra-parenchymal cyst of the oval left lower lobe with regular contours, containing an hydro-aeric level (Figure 1 and 2) and communicating on the one hand with a very abundant hydropneumothorax (Figure 3 and 4), and on the other hand with two bronchi which are dilated. The interrogation reveals a notion of contact with dogs, and the serology reveals the infection by *Echinococcus granulosus*. Urgent drainage of the hydropneumothorax was carried out, with the initiation of anthelmintic therapy to prevent recurrence. Pulmonary CT scan control scans one month later showed the collapsed appearance of the hydatid cyst, with the persistence of a minime layer of pneumothorax (Figure 4), thus communication with the segmental bronchus. The respiratory physiotherapy sessions contributed to the complete emptying of the cyst through the bronchi and subsequently avoided surgical intervention.

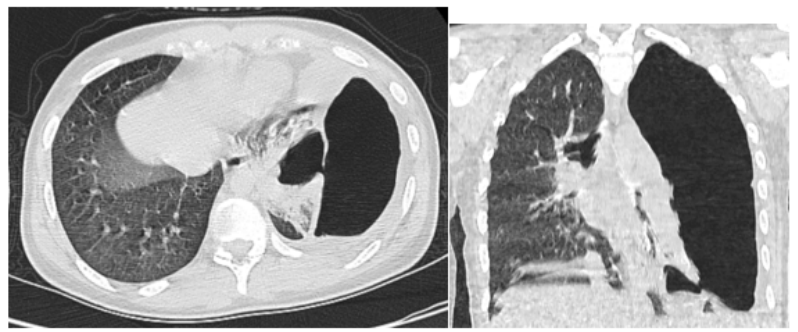

Figure 1: *Axial and coronal pulmonary CT scan sections showing a left, oval intraparenchymal cystic formation, containing a hydro-aeric level, with a defect in its wall communicating with the pleura and responsible for a large hydropneumothorax collapsing the ipsilateral lung. Pulmonary hydatic cyst ruptured in the pleura and bronchi in 13-old-child.*

Figure 2: *CT scan in axial section, showing the great abundance of the left hydropneumothorax.*

Figure 3: *CT scan in axial section, after one month of drainage: Regression of the hydropneumothorax with collapsed appearance of the pulmonary hydatic cyst and the clear communication with two facing bronchi.*

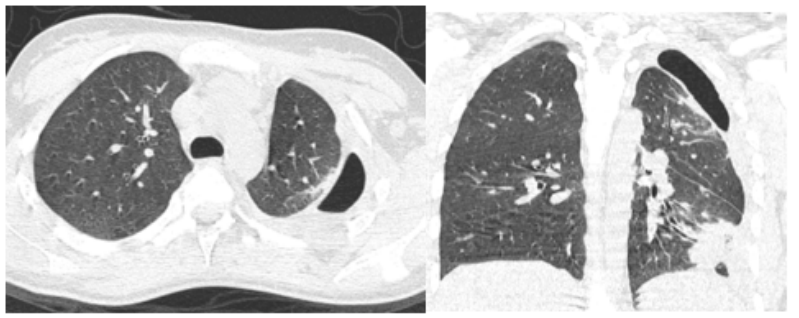

Figure 4: *Axial CT scan in axial and coronal sections, after one month of drainage: persistence of a minim hydropneumothorax and the communication of an opposite bronchi.*

Discussion

Hydatidosis is an endemic parasitic disease in Mediterranean countries, often caused by the dog tapeworm *Echinococcus granulosus*. The disease predominantly affects the liver (60 - 70%) and lungs (30%). The pulmonary HC represents 20 to 40% of all hydatid cysts [1]. Its evolution can be marked by certain complications such as rupture, superinfection, and compression of neighboring organs. Unlike intrabronchial rupture which is frequent and even part of the natural history of pulmonary HC, rupture in the pleura is rare even in an endemic area, its frequency in the literature varies from 1.5 to 6% [1,2,6]. Cases of intrapleural rupture of iatrogenic or post-traumatic origin have been reported, but most often it is spontaneous and even reveals pulmonary hydatidosis as in our patient.

In the physiopathology of intrapleural rupture: It may present as a spontaneous rupture in the pleura or a bronchus. During spontaneous breathing, the cyst content of the endobronchial ruptured pulmonary hydatid cyst is mostly evacuated by coughing. However, during positive pressure ventilation such extruded fragments may lodge into smaller airways leading to an airway catastrophe [7].

Chest radiography is the first-line examination and alone allows the diagnosis to be confirmed in the event of a typical presentation. The pulmonary uncomplicated HC appears in the form of an opacity of water tone, well-limited and oval. A ruptured HC results in the presence of intracystic air. Thoracic ultrasound can help classify the stage of development of the cyst by studying the cystic contents, but

it remains rarely used in current practice [4,6,7]. Chest CT constitutes the gold standard for confirming the cystic nature of the mass, searching for other locations, diagnosing atypical forms, searching for complications, and eliminating other etiologies. Currently, the strategy in the surgical management of pulmonary hydatid disease is conservative treatment. Intrapleural rupture needs surgery in the majority of cases. Conservative management must be considered with close follow-up under antihelmintic therapy in some cases [2,3,6,8].

The pulmonary HC can make some differential diagnoses such as lung abscess, tuberculosis cave, pulmonary aspergilloma, and pleuropulmonary staphylococcal disease [3,4].

Management: The treatment of choice is surgical removal of the HC, draining pneumothorax, along with perioperative antihelmintic therapy to prevent recurrence and anaphylaxis [2,3,6].

Our patient presented an HC revealed by an intrapleural rupture with massif hydropneumothorax treated by pleural chest drainage and respiratory physiotherapy for one month. The surgery was not necessary. This finding is very rare even in HC-endemic areas. Surgery remains the mainstay of treatment for pulmonary hydatid ruptured in pleura. Our case was managed conservatively with a good outcome.

Conclusion

The diagnosis of HC is made on clinical, radiological, and serological criteria. Its rupture can always be indicative of the disease. The chest CT scan is the key examination to confirm the HC nature, look for complications, and eliminate differential diagnoses. Intrapleural and intrabronchial rupture of pulmonary HC is a serious complication that must be considered in the emergency room in endemic HC areas. Conservative management can be efficient in some cases and must be considered as a treatment option.

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