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Case Report

Diagnostic errors in pulmonary hydatid cyst complicated by spontaneous rupture in the bronchus: clinical case presentation

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ABSTRACT

Diagnosis and treatment of a pulmonary hydatid cyst complicated by rupture are difficult, especially in cases of late presentation. In this context, the authors report a case of spontaneous rupture of a large pulmonary hydatid cyst diagnosed in a patient 12 years old who was directed to our institution with the preventive diagnosis of a right lung abscess rather late and successfully treated by surgery. The authors conclude that the disease was initially clinically misdiagnosed as a respiratory infection, then a lung abscess, the radiological examination being avoided at the initial stages of the disease. Diagnostic errors impose the need to familiarize physicians with hydatid disease to improve awareness. The padding procedure completed with filling used for resolving residual postechinococcectomy cavities in cases of pulmonary hydatid cyst complicated by rupture is an effective method that allows reducing the postoperative morbidity and the length of hospitalization. However, some pneumofibrotic sequelae associated with changes in pulmonary perfusion persist for a long time after surgery.

Keywords: Pulmonary hydatid cyst, Rupture, Lung, Management, Children

INTRODUCTION

Unlike adults, in children, the hydatid cyst predominantly affects the lungs (64%), being prone to develop giant cysts, susceptible to be complicated by rupture in the bronchus or in the pleural cavity, with the development of serious consequences.[1-3] Pulmonary hydatid cyst rupture is the most feared complication, with an incidence varying between 26.7-47%.[4] This serious complication can occur spontaneously due to increased pressure, cyst size or post-traumatic, with high morbidity and mortality rates.[5]

The evolution of the disease is determined by the leakage of the cystic material, which contains fragments of larval tissue, hydatid fluid and germ elements into the bronchial tree or into the pleural cavity.[6,7]

Diagnosis and treatment of a pulmonary hydatid cyst complicated by rupture is difficult, especially in cases of late presentation.[8] In this context, we report a case of spontaneous rupture of a large pulmonary hydatid cyst diagnosed rather late and successfully treated by surgery.

CASE REPORT

Patient P, 12 years old, was directed to our institution with the preventive diagnosis of right lung abscess. The anamnestic data made it possible to establish that the patient considers herself ill for 3 weeks, the disease starting with a severe dry cough and subfebrile fever. The next day, the child vomited a large amount of transparent, yellowish liquid, which was the cause he went to a medical institution at his place of residence. Despite the antibiotic therapy, after 5 days, a fever of 38.7 ^{0}C started, for which

the child was hospitalized at the place of residence, with the diagnosis of pulmonary destruction, abscess of the right lung (Figure 1). The patient received a complex treatment for several days, but his condition did not improve, breathing difficulties associated, therefore the child was transferred to the "Natalia Gheorghiu" National Scientific-Practical Center for Pediatric Surgery of PMSI Mother and Child Institute.

On the right, in the projection of the middle lung field, a cavitary, round, massive image can be detected, with obviously unevenly thickened walls. The content of the cavity is inhomogeneous, predominantly airy. Locally, the paracostal pleura is thickened. The right pleural sinus is opacified (radiological signs of exudative-fibrinous pleurisy). The diaphragmatic outline on the right is flattened, displaced cranially. Pleuro-diaphragmatic adhesions can be found basally on the right. Mediastinum usually located. The left lung is transparent (Figure 1).

At the time of hospitalization, the complete blood count showed anemia, the erythrocyte sedimentation rate was 70 mm/h, the results of the biochemical blood analysis were within the reference values. Computed tomography allowed to visualize the presence of a massive cavitary lesion located in the S2, S3 projection of the right lung, with subtotal involvement, with a round/ovoid configuration, capsule walls with a maximum thickness of 1.0 cm. The scalloped contour of the membrane showing an evacuated hydatid cyst (Figure 2).

After a short pre-operative preparation, the patient underwent the surgery (on the 20th day after the onset of the disease), a posterolateral thoracotomy was performed, the hydatid larvocyst was evacuated, the residual cavity was padded with hemostatic sponge filling soaked with platelet concentrate, and the operation was completed with the drainage of the pleural cavity through microthoracotomy and restoration of the anatomical plane (Figure 3). The postoperative period was without complications, the patient being discharged on the 10th day.

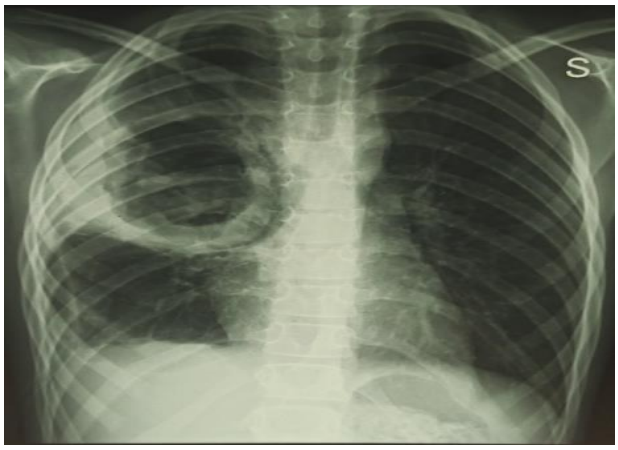

Figure 1: Preoperative chest X-ray.

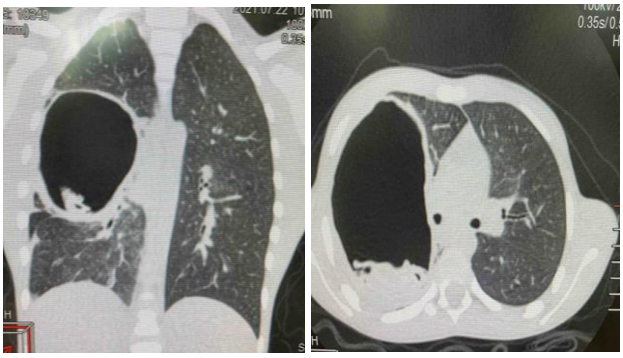

Figure 2: Preoperative chest CT – imaging data of pulmonary hydatid cyst complicated by rupture in the bronchus.

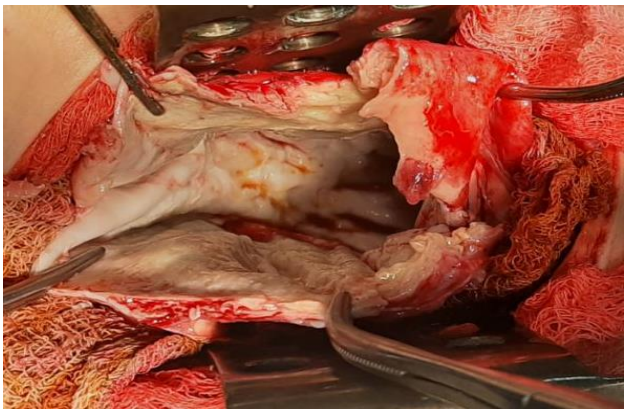

Figure 3: Intraoperative aspect of the residual cavity after removal of hydatid larvocyst complicated by endobronchial rupture.

The chest X-ray taken 1 year postoperatively revealed a well-expanded right lung, with a gradual resolution of residual pulmonary changes (Figure 4). In the figure, in place of the resected cyst, a sector of pneumofibrosis is visualized. Exudative-fibrinous pleurisy in regression. Right pleural sinus - free. The diaphragm contour is clearly visualized. Pleuro-diaphragmatic adhesions have disappeared. The lung volume on the right increased. X-ray with positive dynamics.

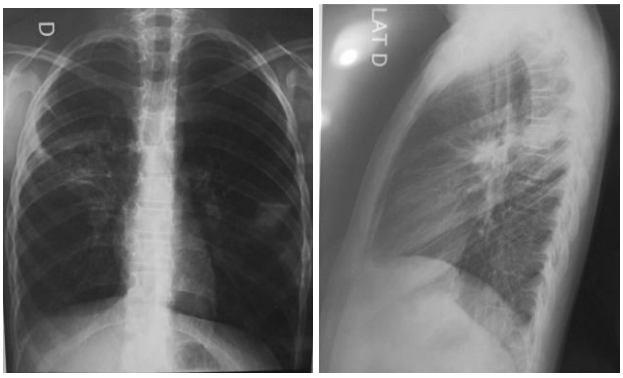

Figure 4: Chest X-ray in 2 projections taken 1 year after surgery.

The CT performed more than 1 year after the surgery revealed suggestive imaging data for the presence of fibrotic changes, in the projection of the upper lobe on the right, in S2 and S3. Minimal displacement of the mediastinum to the right. Single peribronchovascular micronodules on the right. Subcentimeter mediastinal lymphadenopathy (Figure 5).

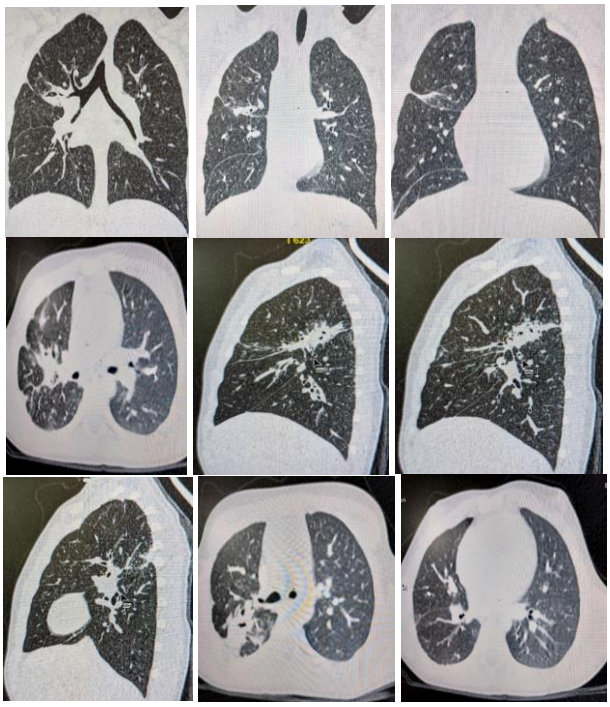

Figure 5: Postoperative CT performed 1, 2 years after the surgery.

However, even 1,5 years after surgery, lung scintigraphy showed severe changes in pulmonary perfusion of the right lung, especially of the upper lobe (Figure 6).

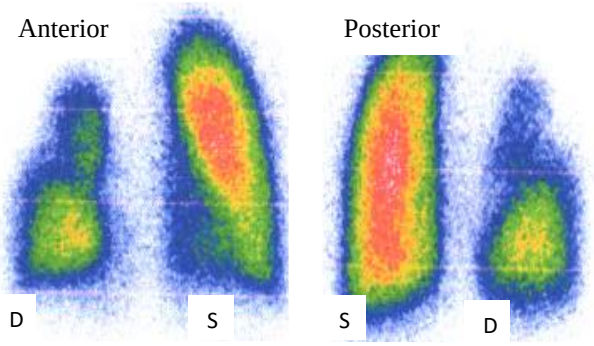

Figure 6: Lung scintigraphy (perfusion) with Tc99m MAA: the anterior and posterior scintigraphic image showed: the right lung is reduced in size (postoperatory status), blurred contours in the upper lobe, uneven distribution of the radiopharmaceutical substance, diffuse dicrease of the lung blood perfusion, especially in the upper segments; and blood perfusion changes in the left lung are not found.

DISCUSSION

The rupture of the pulmonary hydatid cyst can be characterized by expectoration of cystic fluid, the development of hydrothorax or hydropneumothorax, pleural empyema or abscess formation, in some cases presenting allergic reactions and anaphylaxis.[9-11]

Usually, the histological examination in these cases highlights the germinal membrane of the cyst, the presence of viable or damaged germinal elements, a mixed inflammatory infiltrate predominantly composed of neutrophils and eosinophils, signs of suppuration and inflammation of the adjacent lung parenchyma.[12] In some cases, the germinal layer detaches from the rest of the cyst and is positioned in the pleural cavity, floating in the effusion.[13]

Some authors believe that simple cystotomy and removal of parasitic membranes is the treatment of choice in this complication of the pulmonary hydatid cyst, the meticulous closure of the bronchial openings being mandatory to avoid prolonged air leaks, and padding of the residual cavity is unnecessary.[14,15] Contrary to this opinion, it is proposed that in this situation the technical surgical procedure should be chosen according to the degree of pulmonary destruction, including radical resections or procedures to preserve the pulmonary parenchyma with padding and closure of bronchial fistulas.[16,17]

CONCLUSION

This report draws attention that the anamnestic details are useful and allow to find some suggestive signs for the rupture of the pulmonary hydatid cyst, such as severe dry cough, "vomiting" with a large amount of transparent liquid, which needed to be taken into account in establishing the diagnosis, especially in endemic areas. The disease was initially clinically misdiagnosed as a respiratory infection, then a lung abscess, the radiological examination being avoided at the initial stages of the disease. Diagnostic errors impose the need to familiarize physicians with hydatid disease to improve awareness. The padding procedure completed with filling used for resolving residual postechinococcectomy cavities in cases of pulmonary hydatid cyst complicated by rupture is an effective method that allows to reduce the postoperative morbidity and the length of hospitalization. However, some pneumofibrotic sequelae associated with changes in pulmonary perfusion persist for long time after surgery.

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