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CASE REPORT

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Thoracic hydatid cyst: A rare case CT and MRI finding

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ABSTRACT

Hydatid cyst is a worldwide zoonosis. The lungs and liver are the most common sites involved. Extrapulmonary intrathoracic hydatid cysts may include the pleural cavity, fissures, mediastinum, heart, vascular structures, chest wall, and diaphragm. Radiological imaging plays a pivotal role not only in the diagnosis of hydatid cysts but also in the visualization of the extent of involvement and complications. We report a case of a 47-year-old female with a history of chronic pyothorax tuberculosis, treated with antitubercular therapy and a left pneumonectomy in 1998. She complained of chest pain with mild shortness of breath and loss of appetite. computed tomography and magnetic resonance imaging showed a voluminous solid cystic process within the left pneumonectomy cavity with extrathoracic and intra-abdominal extension.

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Hydatid cyst; extrapulmonary intrathoracic localization; CT; MRI.

Introduction

Hydatid cyst disease, also known as echinococcosis, is caused by the larvae of the *Echinococcus* tapeworm. The most common species involved in human infection are *Echinococcus granulosus* and *Echinococcus multilocularis*. Hydatid cysts typically form in various organs, most commonly the liver and lungs, and less frequently in other organs. Intra-thoracic and extra-pulmonary hydatid disease is uncommon and may involve the pleura, mediastinum, heart, diaphragm, and chest wall. Unusual locations or complications of hydatid disease in the chest may pose a diagnostic challenge and influence treatment options [1,2]. Here, we report a case of a massive thoracic hydatid cyst developed after a pneumonectomy.

Case Report

A 47-year-old female patient with a history of chronic pyothorax tuberculosis was treated with antitubercular therapy and a left pneumonectomy in 1998. She had no complications reported. The patient presented in May 2023 with a history of chest pain, mild shortness of breath, and anorexia. She had no complaints of fever, palpitations, nausea, or vomiting and did not report any change in bowel habits or urinary symptoms.

On respiratory examination, the surgical scar was clear; a soft swelling was noted within the left hemithorax. The remaining lung was found to be clear with good air entry. The patient was addressed for investigation.

Thoracic computed tomography (CT) was performed, and showed a widely expansive solid cystic lesion within the left post-pneumonectomy space, with parietal calcifications, responsible for homolateral costo-vertebral bone lysis and invasion of adjacent thoracic parietal soft tissues (Fig. 1). The patient underwent multiple biopsies with no malignant findings. We conducted magnetic resonance imaging (MRI) of the thorax which confirmed the presence of a voluminous solid cystic process within the left pneumonectomy cavity with extrathoracic and intra-abdominal extension, showed high signal intensity on T1 and T2 weighted images in the cystic part, and low signal intensity on T1 and high intensity on T2 WI in the solid part, without diffusion restriction or contrast enhancement (Fig. 2), which is suggestive of a complicated cyst hydatic. Serological tests were performed with both techniques enzyme-linked immunosorbent assay and indirect hemagglutination assay, confirming

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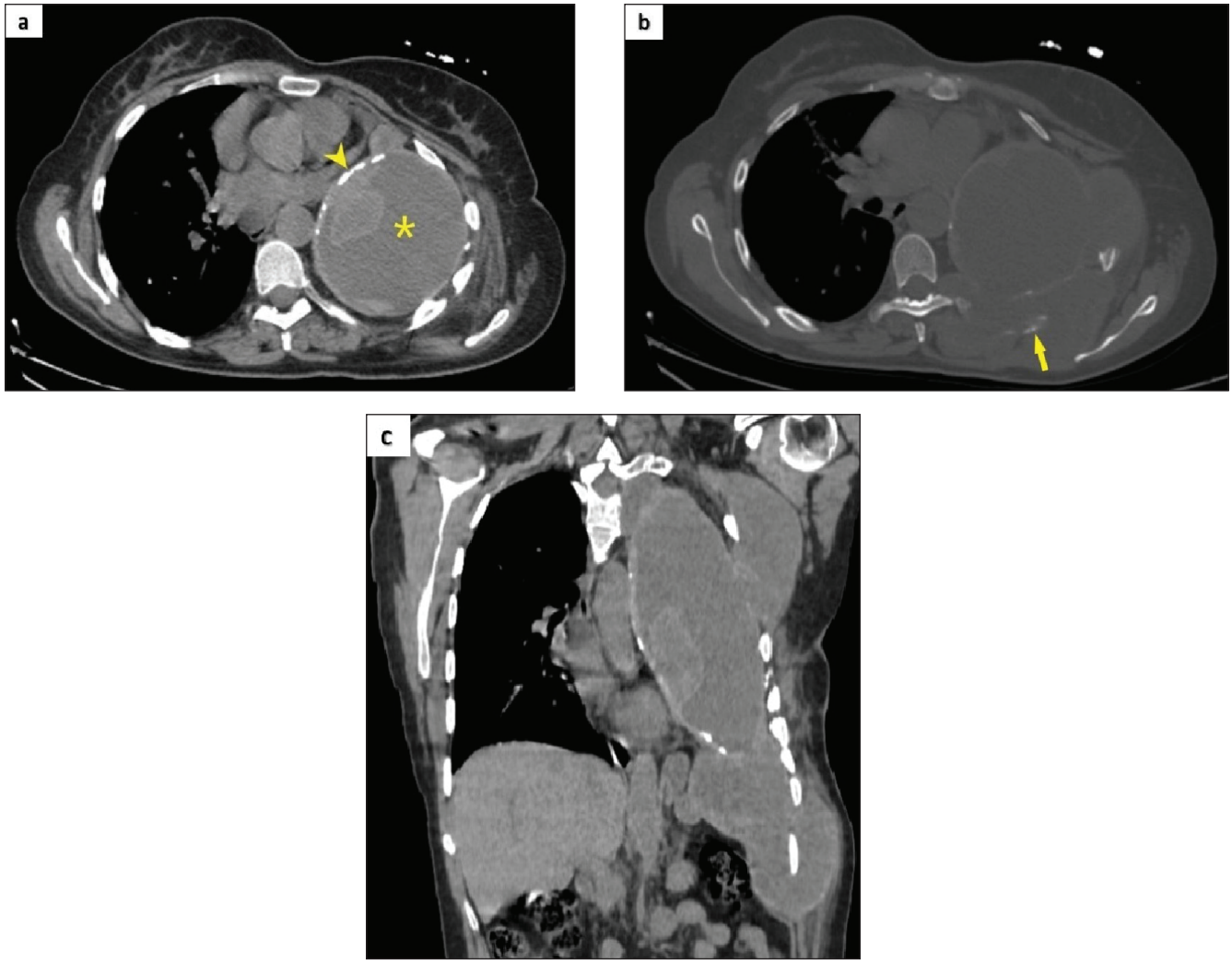


Figure 1. CT axial images (a,b) depict a solid cystic lesion (asterisk) with parietal calcifications (arrowhead), causing destruction of adjacent ribs. (c) Coronal CT image demonstrates transdiaphragmatic extension of the hydatid cyst.

the diagnosis. The present case has no known history of pulmonary or extrapulmonary hydatidosis.

Therapeutic strategies were discussed at a multidisciplinary consultation meeting, surgical intervention is not recommended due to the patient's compromised overall health status, compounded by the advanced progression of the disease, the decision was to survey with oral albendazole 400 mg twice daily, oral praziquantel 1,800 mg twice weekly and morphine-based analgesic treatment.

After 4 months, repeat CT showed no significant progression of the condition. Presently, praziquantel was stopped and the patient is on therapy with oral albendazole 400 mg twice daily.

Discussion

Hydatid cyst disease caused by the larval form of *Echinococcus* is a worldwide zoonosis, which is most commonly caused by *Echinococcus granulosus*. It may affect any organ system and anatomical site of the human body. Pulmonary hydatid cyst is the second most frequent location in adults. Although the lung parenchyma is the most common site in the thorax, it can develop in any extrapulmonary region, including the pleural cavity, fissures, mediastinum, heart, vascular structures, chest wall, and diaphragm. Unusual locations or complications of hydatid disease in the chest may pose a diagnostic challenge or influence treatment options [3]. The extrapulmonary intrathoracic hydatid cysts may be silent with no symptoms and may present with symptoms commonly related to mass effect and compression of adjacent organs. Imaging findings of hydatid cysts are variable, depending on the presence of complications, ranging from purely cystic lesions to solid-appearing lesions. Cross-sectional imaging with CT and MRI provides valuable diagnostic information about the cysts

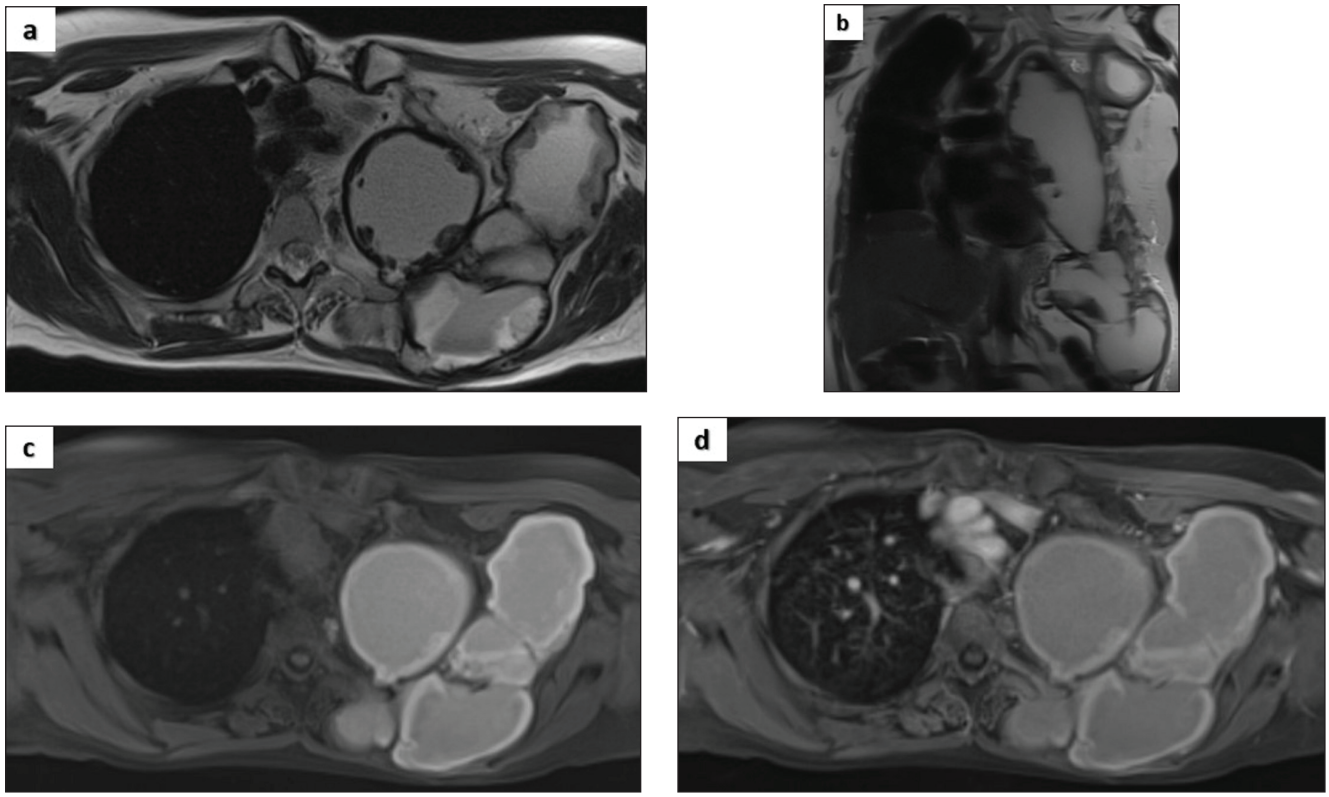


Figure 2. MRI images (a,d) reveal a voluminous solid cystic process within the left pneumonectomy cavity, showing high signal intensity on T2-weighted imaging (a,d) and low signal intensity on T1-weighted imaging (b), without post-contrast enhancement (c). Coronal view (d) highlights transdiaphragmatic migration of the cyst.

including morphologic features, densities, signal changes, locations, and relationship with surrounding structures. On imaging, hydatid cysts can have variable imaging appearances ranging from unilocular cysts to multivesicular cysts with or without calcification. Calcifications are better detected on CT. The inherent superior contrast resolution of MRI for cystic lesions makes it invaluable in assessing the presence of daughter cysts and resolving them from the mother cyst matrix [3]. Hydatid cysts can be classified as uncomplicated and complicated (contained rupture, complete rupture, superinfection). Besides pulmonary hydatid cysts, associated thoracic findings can be seen. Unlike uncomplicated hydatid cysts, complicated hydatid cysts may show higher density values due to mucus, infection, or hemorrhagic content.

Intra thoracic but extrapulmonary hydatid cysts may develop in the chest wall, pleural cavity, fissures, diaphragm, mediastinum, heart chambers, and vascular structures.

Chest wall involvement of hydatid cysts can be in both bony structures and soft tissues. Bone involvement of hydatid cysts is seen as expansile lytic lesions with irregular branching located most commonly in the spine but the thoracic cage including the ribs and sternum can also be seen. Therefore, it may manifest itself as pain or swelling of the chest wall, with extension to the surrounding soft tissues. The radiological features of soft tissue involvement (muscular and subcutaneous soft tissue) may have various appearances including unilocular cysts, multiloculated cysts with daughter cysts, and complex cystic lesions with or without calcification.

The hydatid cysts can perforate into the pleural cavity and cause pleural effusions, hydropneumothorax, simple and tension pneumothorax, and empyema. It can be seen as unilocular or multilocular cysts in the pleural cavity.

Trans-diaphragmatic migration can be seen as an hourglass-shaped lesion or loculated pleural effusion in the posterior thorax on the lateral projection. Although CT is very useful in demonstrating the location and extension of HC, it cannot easily show the diaphragmatic defect. MRI can better delineate the cyst structure and the diaphragmatic defect [2,4].

The present case report highlights the fact that hydatid cysts should always be kept in mind in the differential diagnosis when a cystic lesion is

detected in a patient who has come from an endemic area.

Conclusion

Hydatid cysts may develop in any extrapulmonary region. As symptoms are non-specific, imaging plays a crucial role in the diagnosis of hydatid cysts in common pulmonary and uncommon extrapulmonary locations. Imaging can also show complications and extension of hydatid cysts. A good knowledge of imaging findings and differential diagnosis of hydatid cysts will enable early diagnosis and guide therapeutic management.

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