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Pericardial Hydatid Cyst in a Child: A Case Report

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ABSTRACT

Hydatid disease is a parasitic infestation caused by *Echinococcus granulosus* larvae. Cases of cardiac hydatid cyst with pericardial involvement are uncommon. Its essential characteristics include clinical polymorphism, latency, and severity of complications. Herein, we reported a rare case of isolated pericardial hydatid cyst whose diagnosis was evoked on the imaging data and confirmed with the parasitological study of the operative specimen.

1. Introduction

Hydatidosis is a parasitic disease that is endemic in several parts of the world, including Morocco. Cardiac and especially pericardial involvement is very uncommon (1). The diagnosis of this disease is difficult because of the absence of specific clinical signs. Positive hydatid serology associated with semiological signs on imaging is required to establish a presumptive diagnosis of the hydatid infection. Herein, we aim to report a case of pericardial hydatidosis without cardiac involvement.

2. Case Presentation

A 12-year-old Moroccan girl living in a rural area was referred to our institution for consultation on exertional chest pain and dyspnea, which has been evolving for six months without alteration of general conditions, fever, or hemoptysis. The clinical examination and other relevant laboratory investigations were normal. Chest X-ray displayed a well-defined bulge of a middle and a left arch. Transthoracic echocardiography was also performed, which revealed normal reference range for left ventricular size and a pericardial detachment with echogenic areas. Further examinations with Magnetic Resonance Imaging (MRI) demonstrated a pericardial cystic mass adjacent to the upper cardiac border pushing the myocardium downwards (Figures 1 and 2). The results of ELISA serum test showed negative hydatid serology.

The patient underwent surgical treatment and a definitive diagnosis of hydatid cyst was carried out by direct parasitological examination and identification of scolices and hooks in cyst contents. Further investigations showed no other organ involvement.

3. Discussion

Hydatid cyst is a parasitic cyst mainly caused by development of the larval stage of the tapeworm *Echinococcus granulosus*. The infestation occurs either by direct ingestion of parasitic eggs from contact with dogs or indirectly following ingestion of contaminated water or food (2, 3). Liver and lungs are the most common affected sites. Cardiac involvement is rare and forms only 0.5 - 2% of all hydatid disease cases in humans (1-3). The larva of *E. granulosus* reaches the heart chambers after crossing the hepatic and pulmonary filters. In case of cardiac involvement, multiple localizations are observed. However, the left ventricle is by far the one most frequently involved (55 - 60%) due to its rich parietal vascularization

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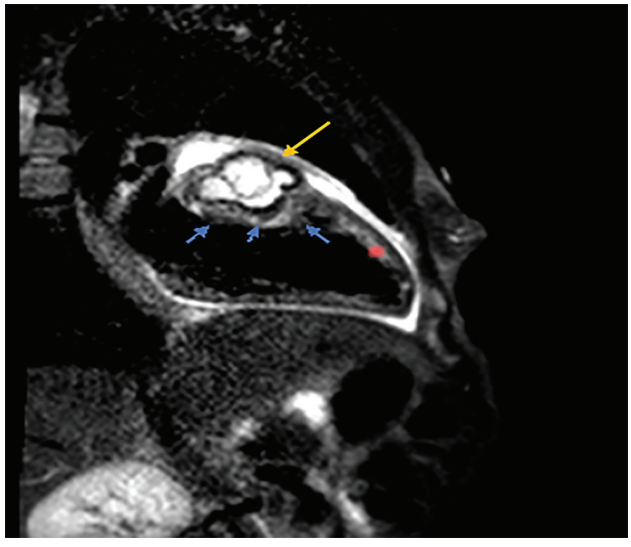
Figure 1. Sagittal Short Time Inversion Recovery (STIR)



Sequence showing a pericardial cystic mass (yellow arrow). A unilocular cyst measuring 44.5/35 mm was adjacent to the upper cardiac border pushing the myocardium downwards (small arrows).

and the good perfusion of the left myocardial mass. The frequency of the right ventricle involvement has been reported to be 15%, whereas the frequency of hydatid cysts originating from the left atrium, the right atrium, and the interventricular septum has been reported to be 8%, 3 - 4%, and 7 - 9%, respectively. The pericardial localization as in our case is exceptional, and only 2 - 10% of disease cases at this site involve the pericardium. Pericardial hydatidosis without cardiac involvement is extremely rare even in endemic countries (4-7).

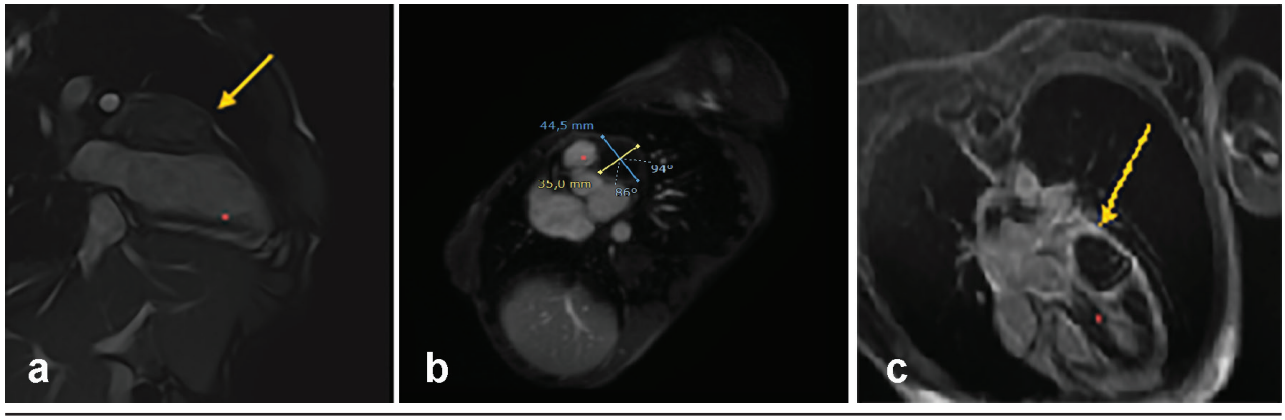
Most patients with cardiac hydatid cysts are asymptomatic because of slow growth of cysts in the heart. This is due to the inelasticity of the heart tissue, which offers limited resistance. Thus, cardiac hydatid cysts are usually diagnosed late (in the third decade) and are rarely discovered during infancy (7% in a series of 100 cases) (8). However, cardiac echinococcosis in children has been reported in a few studies recently (9, 10).

The clinical manifestations of cardiac echinococcosis are directly related to the size and integrity of the cyst, its relative location to the valvular orifices and the conduction tissue, and its presence in the right or left heart. The disease is often latent and chest pain, such as precordialgia and angina, has been reported in most cases (2-11). Persistent chest pain and shortness of breath are the main symptoms associated with cardiac hydatidosis as seen in the present case. In the absence of treatment at this stage, cardiac involvement may lead inevitably to lethal complications, including cyst rupture, cardiac compression, atrial fibrillation, and even sudden death (12). Furthermore, solitary cardiac involvement is very rare and accounts for about one third of cases, while it is accompanied by involvement of other organs, such liver, lung, and mediastinum, in two thirds of the cases (13, 14).

Radiologically, chest X-ray remains the mainstay of hydatidosis diagnosis even though it does not provide any information regarding the origin of the cysts. Chest radiographmay shows cardiomegaly with and without deformation of the cardiac shadow, determines arcuate calcifications, and may reveal any associated pulmonary localization (11). On the other hand, echocardiography is the imaging method of choice for diagnosis of cardiac echinococcosis, while Computed Tomography (CT) and MRI best demonstrate the detachment of the membranes and multi-visceral involvement, suggesting the hydatid origin. In addition, CT and MRI define the entire extent and the anatomic relationship of the cysts more efficiently, eventually helping in surgical planning. All these imaging modalities should be performed systematically in case of visceral echinococcosis to search for a cardiac location. It is also necessary to search at other common sites of hydatid cyst occurrence, such as liver. In the present case, a specific sign of membrane detachment was revealed by echocardiography.

Hydatid serological testing sometimes contributes to diagnosis, but it is not very useful. Indeed, evidence has indicated a high rate of false negative results (in 50% of cardiac cysts) (15). In this context, ELISA and indirect immunofluorescence methods have been described to be the most sensitive tests, while immunoelectrophoresis has been reported to be the most specific one (9, 11-16).

Figure 2. Sagittal (a), Axial (b), and Coronal (c)



T1 weighted MR images after contrast agent injection, showing one well defined cystic mass in the pericardium (yellow arrow). The lesion appeared as an unenhanced hypoattenuating cyst. There was no evidence of intracavitary expansion and only a mass effect on the myocardial wall was seen.

The hydatid serology plays a key role in monitoring the treatment progress. This must be performed every two months for two years to detect any possible recurrence. In the present case, the final diagnosis of the hydatid cyst was achieved through direct parasite visualization in cysts contents after surgery.

When cardiac hydatidosis is diagnosed, immediate surgical excision is claimed due to the high risk of associated complications. Postoperatively, treatment with 10 - 15 mg/k/day Albendazole in 6 one-month courses separated by 15-day intervals is recommended to minimize the recurrence rate. According to the World Health Organization's (WHO) guidelines, medical therapy may be a good alternative for non-operable patients, those with multiple hydatid cysts, and patients with severe underlying diseases (16).

In conclusion, although cardiac hydatid cyst is a rare disease, early diagnosis and treatment is of great importance because of the frequent fatal complications.

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Authors' Contribution

H N, M I, Z L: Parasitological diagnosis. S S, J E: Radiological diagnosis. S A, H N: Literature review and writers. B L: Critical review.

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