

Case Report: Cardiac Hydatid Cyst

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Abstract

Hydatid disease is one of the most important and widespread parasitic infection that cause significant health problem in undeveloped and developing countries. There main subtypes *Echinococcus granulosus*, *E multilocularis*, and *E vogeli* which can cause cystic echinococcosis in humans as intermediated host. The most common organ involved is the liver (50% to 70%) and the lung (20% to 30% of cases) in humans. Cardiac involvement in hydatid disease is rare (0.5% to 2% of all cases). We are presenting the case of cardiac hydatid cyst.

Keywords: Cardiac; Hydatid Cyst; Uncommon entity

Introduction

Hydatid disease is one of the most important and widespread parasitic infection that cause significant health problem in undeveloped and developing countries [1]. There main subtypes *Echinococcus granulosus*, *E multilocularis*, and *E vogeli* which can cause cystic Echinococcosis in humans as intermediated host. The main route of acquiring the infection is through the ingestion of food or fluids that contaminated with egg-containing feces. The embryo of the parasite is released into the intestinal tract and carried to the liver by the portal circulation [2]. The most common organ involved is the liver (50% to 70%) and the lung (20% to 30% of cases) in humans [3]. Cardiac involvement in hydatid disease is rare (0.5% to 2% of all cases).

Case Presentation

In November 2011, A 28-year-old female from Aldwadmi with history of palpitations 3 months back after she underwent cesarean section. She was referred for cardiac evaluation and her ECG showed T-wave changes. The patient had no history of dyspnea or shortness of breath. No other cardiac symptom. She is not known to have diabetes or hypertension. She had transthoracic echocardiography which showed the cardiac cystic lesion mainly in the distal part of the interventricular septum. Further work up including the cardiac MRI and cardiac CT which confirmed the presence of cystic lesion in the interventricular septum.

The patient had history of surgery on the liver while she was 6-year-old, most likely it was hydatid cyst of the liver. From the history, she had contact with the dogs in the childhood. The patient was referred to cardiac surgery for removal of the cyst.

Physical examination revealed nothing unusual, and the results of routine laboratory tests were normal, apart from (ESR:71, CRP:20.6 and Echinococcus serology: -ve).

A chest radiograph showed a normal cardiothoracic ratio with no evidence of gross abnormality (Figure 1). Transthoracic echocardiography revealed a large cyst in the interventricular septum measuring 5 cm × 5 cm. Computed tomography (CT) and magnetic resonance imaging (MRI) were performed to further characterize the lesion. Thoracic CT showed a cystic lesion in the interventricular septum, and MRI confirmed the presence of 5 cm × 5 cm mass (Figure 2).

The cardiothoracic surgery team decided to excise the hydatid cyst by open heart surgery. The patient underwent median sternotomy and was placed on cardiopulmonary bypass with ascending aorta and bicaval venous cannulation.

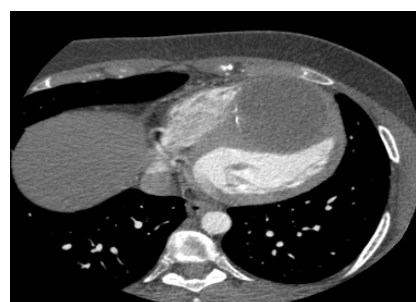


Figure 1: At 2011. CT scan shows well-defined cystic mass arising from the interventricular septum with uniform homogeneous appearance and showing peripheral calcification.

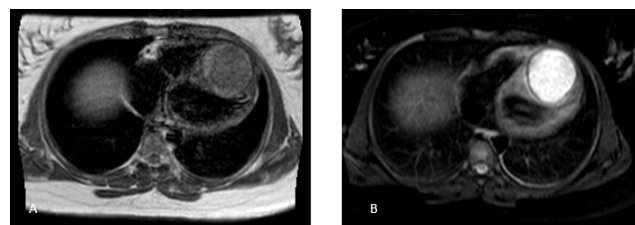


Figure 2: Magnetic resonance images of the hydatid cyst (A: T1 weighted image, B: T2 weighted image fat suppression). MRI shows well defined non-enhancing mass which showed low signal intensity in T1 and high in T2 STIR images, with smooth border arising from the interventricular.

The incision to excise the cyst was parallel to and on the right side of the left anterior descending coronary artery, to avoid damaging that vessel. The needle inserted to the cystic lesion reached the cyst directly through the interventricular septum without opening any adjacent cardiac chambers. Around 20 ml of the very thick greenish fluid with pieces of the necrotic membrane were aspirated. They were unable to get all cystic contents due to thick fluid with necrotic tissue. The most

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prominent part of the cyst was opened, and the false capsule were incised uses diathermy and about 4 cm long incision was made. All the content of the cyst including the necrotic tissue and thick yellowish fluid were aspirated by suction.

The patient had begun taking albendazole (400 mg twice daily) 5 days before surgery and continued with this therapy postoperatively for 4 weeks.

Discussion

Hydatid disease is endemic in livestock raising countries with a 65 million is estimated to be infected [3,4]. Most common parasite seen in the Mediterranean region, Africa, South America and Middle East is *E granulosus*; however, *E multilocularis* is considered the main causative parasite seen in the polar region at the northernmost part of the earth (eg., Alaska, Canada) [4].

Most common sites the infected by echinococcosis are liver and lungs. Secondary involvement due to hematogenous dissemination from the liver involvement may be seen in almost any anatomic location [2]. Cardiac involvement is rare, which estimated to be 0.5% to 2% of all echinococcosis cases. Thoracic involvement may be seen in two main routes by direct extension through trans-diaphragmic and by the hematogenous dissemination through the coronary arteries which considered the main pathway to reach to infect the heart [2,3]. The Left ventricle is the most common site of cardiac hydatid cysts involvement which estimated about 55% to 60% due to rich coronary blood supply. Less common involved area is right ventricle (10% to 15% of cases), pericardium (7%), left atrium (6% to 8%), right atrium (3% to 4%), and in lesser extent interventricular septum (4%) [3].

Clinical signs and symptoms of the cardiac echinococcosis depend on different factors including the size and site and effect of the cysts. Most patients have no symptoms due to the latent course and slowly growth which lead the late diagnosis [5]. Primary symptoms are chest pain, palpitations, and dyspnea. Misdiagnosis of coronary artery disease is a common presentation due to the compression the of coronary arteries. Other presentation due to the obstruction of the outflow tract and compression of the conduction pathway leading to syncopal attacks and atrioventricular block. Few differential diagnoses should be considered which can includes all other cardiac tumors and cysts, pericardial cyst, and ventricular aneurysm [1].

CT, Echocardiography, and MRI are main diagnostic imaging tools that aid to diagnosis of hydatid disease which show the cystic nature of the mass and its relation to the cardiac chambers. MRI is impotent tools to know the exact anatomic location and the nature of the cyst and most likely used as post-treatment follow-up. Fluid signal intensity

(hypointense on T1-weighted images and hyperintense on T2-weighted images) with hypointense peripheral ring which represent a dense fibrous capsule from the reactive host tissue is main the imaging finding seen in MRI. Wall calcification is best seen in CT which one of the most specific sign to confidently diagnosis hydatid disease. The presence of daughter cysts and membrane detachment are other specific signs are considered to truly diagnosis hydatid disease. Cardiac involvement of hydatid disease could be seen as uniloculated or multiloculated cyst with thin or thick wall; however, may see as solid mass which is difficult to differentiate from other heart tumors [5].

Best treatment method is surgical excision with the use of antihelminthic drugs in the preoperative and postoperative periods under cardiopulmonary bypass. Long-term therapy with albendazole is considered with Inoperable patients [5-8].

Conclusion

Cardiac hydatid cyst should be considered in differential diagnosis of heterogeneous cystic lesion on even if the serologic tests are negative. It is considered an uncommon entity and has nonspecific clinical presentation. Chest pain may be a revealing symptom. Diagnosis of hydatid disease of the heart depends on a series of tests including hydatid serology, echocardiography, MRI, and CT scan. The treatment of choice is surgical excision, even in asymptomatic patients.

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