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Huge intracavitary cardiac hyadatid cyst presenting with heart failure

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ABSTRACT

Although cardiac involvement is an infrequent presentation in human hydatidosis, early diagnosis and prompt surgical intervention of cardiac hydatid cyst are of utmost importance for the prevention of potential complications. We report a young female patient who presented with a huge cardiac hydatid cyst and severe heart failure symptoms undergoing successful surgical cyst removal with late follow-up.

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Introduction

Hydatid disease is a serious parasitic tissue infestation, which is frequently caused by the larva of Echinococcus granulosus [1]. Humans as incidental hosts are infected by having contact with dogs or ingesting cyst-containing meat from an intermediate host [2]. It remains endemic in some regions, such as the Middle East, the Mediterranean area, Australia, South Africa, and America. Hydatid cysts more commonly affect the liver and lungs; however, the cardiac hydatidosis is extremely rare [3].

The left ventricle (LV) is involved two to three times more frequently than the right ventricle (RV). Solitary cysts occur in approximately 60% of the patients with cardiac hydatidosis, and they are usually located in the subepicardial region, and therefore, may rarely rupture in the pericardial space.

Approximately, 10% of the cases with cardiac hydatidosis are symptomatic. It may cause life-threatening complications, including cyst rupture; tamponade; anaphylactic shock; infection; symptoms of low cardiac output state (Cysts can act as a space-occupying lesions, ventricular outflow tract obstruction, or constrictive pericarditis); cerebral, pulmonary or peripheral arterial embolism; dysrhythmias; acute coronary syndrome; valvular or ventricular dysfunction; as well as sudden death [4]. Perforation of a hydatid cyst is the

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most dangerous complication of cardiac hydatidosis that leads to death in three-quarters of the patients due to anaphylactic shock or embolic complications. Consequently, cardiac hydatid cysts should be scheduled for operation as soon as the diagnosis is made to ameliorate the possible complications.

We report a young female patient who presented with a huge cardiac hydatid cyst and severe heart failure symptoms undergoing successful cardiac surgery with late follow-up.

Case Report

A 23-year-old female patient presented to the cardiology outpatient clinic with complaints of easy fatigability, chest heaviness, and decreased exercise tolerance for the preceding three months. She had occasional and atypical chest pain that had been aggravated for two months. The patient history and physical examination were unremarkable with normal pulmonary auscultation and normal heart sounds. Moreover, frontal chest X-ray showed increased cardiothoracic ratio with normal cardiac borders and lung parenchyma, as well as no pleural effusion.

Transthoracic and transesophageal echocardiography study showed the presence of an intramural multilocular cystic mass (8*7 Cm) in the anterolateral wall of the LV cavity strongly suggestive of hydatid cyst. On color Doppler echocardiography study, no color flow appeared within the cystic cavity. On color Doppler echocardiography study, no color flow appeared within the cystic cavity. The cyst protruded into the LV occupying the intracavitary space and was inseparable from the underlying structures and endocardium. The LV systolic function was severely reduced (left ventricular ejection fraction of 15%). Trace mitral regurgitation and increased pulmonary artery pressure were noted; however, there was no pericardial effusion. The serologic study confirmed the diagnosis of hydatid disease and further evaluation showed another cyst (5 Cm) in the liver.

After one week of albendazole treatment, the patient was scheduled for early hydatid cyst removal. Cardiopulmonary bypass was established with bicaval cannulation following median sternotomy and systemic heparinization. Hydatid cyst covered the anterolateral surface of the LV with adhesion to the surrounding pericardium.

After a cardioplegic arrest and covering the heart with a hypertonic saline-soaked sponge, the LV cyst was aspirated with a large-bore needle followed by direct instillation of hypertonic saline into the cyst. The cyst was then incised from the anterior surface evacuating the contents while trying to avoid spillage into the pericardium, heart, and pleural spaces. The daughter cysts were removed and the germinative membrane was completely ablated (Figure 1).

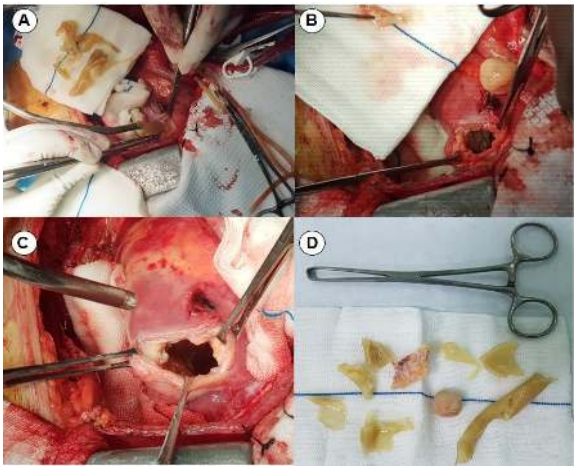

Figure 1 (A-D): Intra-operative photos showing the large cardiac cysts, evacuated from anterior of left ventricular wall.

The LV wall was repaired with 3-0 Prolene sutures with pericardial felt. It took 42 and 65 min to perform aortic cross-clamp and cardiopulmonary bypass, respectively.

The postoperative course was uneventful, and the early trans-thoracic echocardiography showed a residual cavity of 2*3 Cm^2 with good LV systolic function (EF= 35%). The patient was discharged on the 6^{th} day with Albendazole 400mg twice daily for 6 months. During a 1-year postoperative follow-up period, the patient remained asymptomatic with no recurrence. A two-dimensional echocardiogram taken one year after surgery showed small residual fibrotic changes with improved LV systolic function (EF=40 %) (Figure 2).

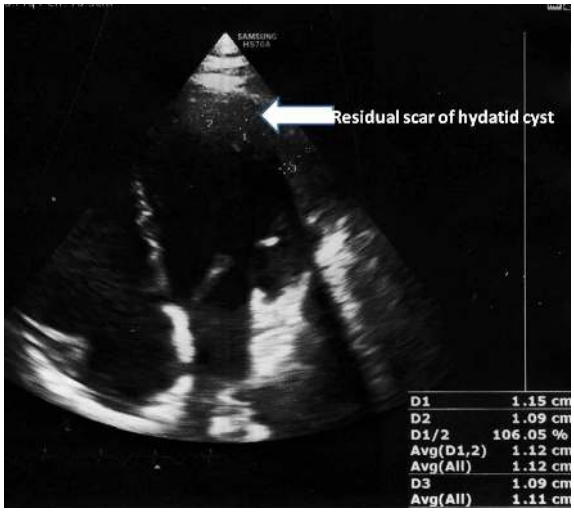

Figure 2: Follow up echocardiography showing residual scar of removed hydatid cyst.

Discussion

Cardiac involvement in hydatidosis is infrequent and presents in less than 2% of the cases [5]. The most frequent route of parasitic cardiac invasion is through the coronary circulation. Since the cardiac contractions prevent the implantation of larvae to the myocardium, an isolated cardiac hydatid cyst is very rare.

Clinical symptoms and presentation in cardiac hydatidosis are largely dependent on the specific site of the cyst within the heart and the resulting interference with the function of the adjacent cardiac structures [4]. In cardiac hydatidosis, the LV is the most common site of involvement (55-60%) due to more extensive coronary circulation and greater mass [6]. The RV, interventricular septum, and right atrium are involved in 15%, 5-9%, and 3-4% of the cases, respectively [7]. The RV cysts are more prone to rupture leading to complications, such as anaphylaxis, pulmonary embolism, or sudden death; however, LV cysts tend to grow in the subepicardial area [8, 9].

The diagnosis is based on serological studies, X-ray, echocardiography, computerized tomography, and magnetic resonance imaging. Long term administration of germicide agents may lead to the destruction of the cyst wall and predispose to cyst rupture before surgical removal. To obviate potential fatal complications, surgical resection implemented with medical therapy should be performed as the only treatment option as soon as the diagnosis is made. According to guidelines approved by the World Health Organization [10], surgical resection is the treatment of choice in cardiac hydatidosis. During surgery, the spillage of the cyst contents can lead to the dissemination of infected scolices and anaphylaxis, which can be avoided using scolicidal solutions, such as hypertonic saline, iodine, methylene blue, and ethanol.

In the presented case, we planned an early surgical resection after a short period of medical therapy to prevent possible complications and eliminate heart failure symptoms caused by the compressive effect of a huge hydatid cyst. During a 1-year postoperative follow-up period, the patient remained asymptomatic with no recurrence, and echocardiography showed an improved LV systolic function with a negligible residual cavity.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

All authors have made substantial contribution to concept this paper.

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