



# Urgent surgery for cardiac hydatid cyst located in interventricular septum

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## Abstract

A 6-year-old girl was referred with acute chest pain and dyspnea. Transthoracic echocardiography revealed a single large well-defined intramyocardial cystic mass in the interventricular septum. A serologic test was positive for echinococcal infection. Urgent open heart surgery was undertaken to remove the cyst, and albendazole treatment was started. The postoperative course was satisfactory, and the patient was discharged on the 5th postoperative day without any complication.

## Keywords

Child, echinococcosis, heart diseases, ventricular septum

## Introduction

Hydatid disease is a parasitic infection that is endemic in certain parts of the world.<sup>1</sup> Hydatid cysts commonly affect the liver and lungs, although any part of the body can be involved. Cardiac hydatid cysts are rare and represent <2% of all cases.<sup>2</sup> These cysts can occur as part of a widespread systemic infection or as an isolated event.<sup>2</sup> The slowly enlarging echinococcal cyst generally remains asymptomatic until the space-occupying effect in an involved organ elicits symptoms. Transthoracic echocardiography showing a cyst with echo-negative contents and smooth contours is the most efficient method of diagnosing a hydatid cyst.<sup>3–5</sup> Cross-sectional echocardiography images show cystic masses with well-defined walls. In a few cases, a solid mass appearance and multiloculated character may be found.<sup>3</sup> Computed tomography can identify cysts, but it often fails to detect small lesions. Because of the localization in the myocardium or pericardium with life-threatening complications, urgent treatment is deemed necessary. Therapy for cardiac echinococcosis is based on consideration of the size, location, and manifestations of the cyst, and the overall health of the patient. Surgery is the definitive method of treatment. Albendazole, which is active against echinococcus, should be administered adjunctively, beginning several days before resection and continued for several weeks.

## Case report

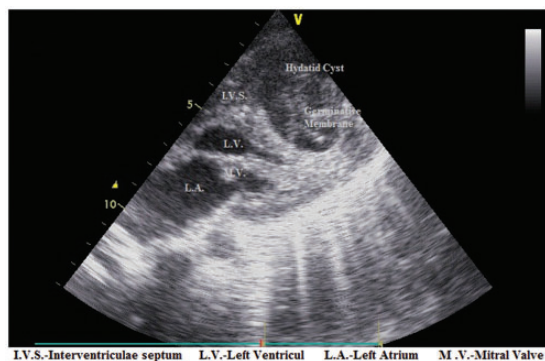
A 6-year-old girl was referred to our emergency department with acute retrosternal discomfort of 5-h duration and dyspnea. Her history was not suggestive of any cardiac or respiratory illness. On physical examination, her blood pressure was unstable and her heart rate was 132 beats per minute. Cardiovascular examination was unremarkable. Electrocardiography showed sinus tachycardia and nonspecific ST-T changes. Chest radiography revealed a borderline cardiothoracic ratio and no cystic mass. Routine blood investigations were within the normal ranges. Serum creatine kinase-MB was within upper of limit of normal. Two-dimensional transthoracic echocardiography demonstrated a cystic mass measuring 40 × 30 mm within the interventricular septum (Figure 1). Abdominal ultrasonography was normal. Urgent surgical excision of the cardiac hydatid cyst was planned. The patient underwent surgery via a sternotomy. Standard cardiopulmonary bypass and potassium cardioplegia with aortic crossclamping

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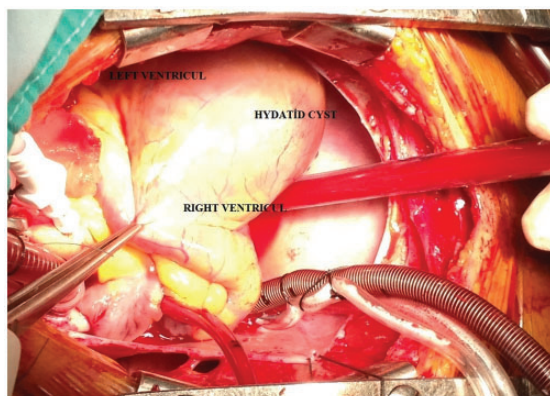
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**Figure 1.** Echocardiography presenting interventricular cardiac cyst.

LV: left ventricle; LVS: left ventricular septum; MV: mitral valve; RV: right ventricle.



**Figure 2.** Preoperative picture of the cardiac cyst.

were used. After diastolic arrest, the operative field was isolated with towels moistened with 1% povidone iodine solution (Figure 2). A longitudinal interventricular septum incision was performed (Figure 3). The cyst was opened and the cyst contents and germinative membrane were removed (Figure 4). There was no communication between the cystic cavity and the right and left ventricular chambers. The cavity was closed by obliteration and plication (Figure 5). Albendazole was started at 200 mg twice a day in 3 cycles of treatment for 28 days with a break of 14 days. The postoperative course was satisfactory, and the patient was discharged on the 5th postoperative day without any complication.

## Discussion

Hydatid cyst is an endemic disease in certain areas of the world. It is typically due to infection with the canine tapeworm *Echinococcus granulosus*. The liver (70%) and lungs (25%) are the most affected organs. Although cardiac involvement is seen only in 0.2%–3% of cases, early diagnosis and treatment

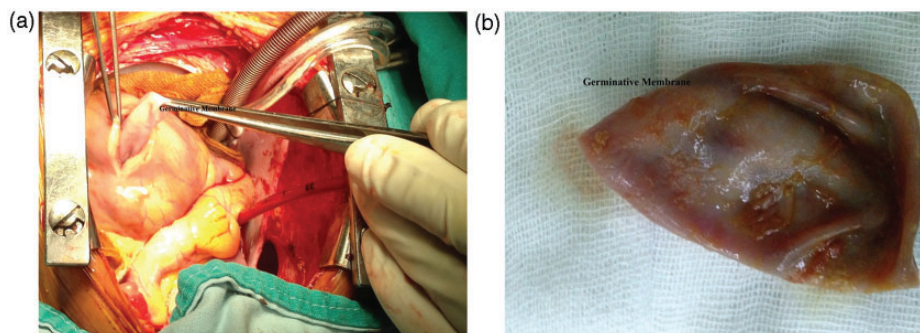


**Figure 3.** Incision of the interventricular septum.

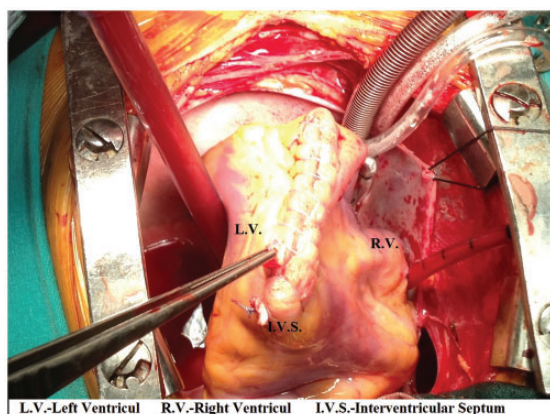
are important.<sup>6</sup> The most affected sites in the heart are the left (75%) and right ventricles (18%) and the interventricular septum, whereas the pericardium and left and right atria are the least affected.<sup>7</sup>

Indirect hemagglutination, indirect fluorescent antibody, and enzyme immunoassay complement fixation (Weinberg) tests are used for diagnosis. The sensitivity of these tests has been reported to be 60%–90%. In our case, the indirect hemagglutination test was positive. Echocardiography remains the preferred imaging method for the diagnosis of cardiac hydatid disease. Computed tomography and magnetic resonance imaging are other valuable diagnostic tools. It is important to consider the location, number, and size of the cysts when choosing the operative approach and deciding whether to use cardiopulmonary bypass or perform surgery on a beating heart. Clinical signs and symptoms vary according to the number, size, age, site, and whether there is calcification. As the cysts grow, they are pushed toward the weaker side of the cardiac wall, either the epicardium or the endocardium.

Hydatid cysts of the heart can result in serious consequences such as rupture into the circulation with a drastic anaphylactic reaction, acute coronary syndrome from compression of the coronary arteries, conduction abnormalities from bundle compression, heart failure, or systemic or pulmonary embolization. For these reasons, they should be operated upon as soon as they are diagnosed.<sup>8,9</sup> Compression of the coronary arteries by a cyst can cause myocardial infarction. However, there was no compression of the left or right coronary artery in our case. Urgent cardiac surgery was undertaken and the cardiac hydatid cyst was removed under extracorporeal circulation. Cardiopulmonary bypass is recommended if there is no safe way to remove the cyst.



**Figure 4.** (a) Removal of the germinative membrane. (b) The germinative membrane.



**Figure 5.** Closure of the interventricular septum.  
LV: left ventricle; LVS: left ventricular septum; RV: right ventricle.

Cardiac hydatid disease should be considered in the differential diagnosis of chest pain in young individuals, in the absence of conventional risk factors for atherosclerosis.

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### Conflicts of interest statement

None declared.

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