

# Report of a Case with Intraventricular Cardiac Hydatid Cyst with Coronary Artery Disease and Multiple Hepatic Hydatid Cysts

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## Abstract

Despite the prevalence of hydatid cyst in humans, its occurrence in the heart is rare. The clinical signs of the mentioned cyst in the heart are diverse, which makes its diagnosis challenging. In addition, the cardiac hydatidosis is diagnosed late as this disease progresses gradually. In this report, the cases discussed of a case with intraventricular cardiac hydatid cyst with coronary artery disease and multiple hepatic hydatid cysts. After diagnosis, the patient underwent coronary artery bypass graft surgery, and the cyst was successfully removed. Considering the probability of heart involvement in endemic regions, devoting due attention to the disease as well as performing faster diagnosis of the disease can play a significant role in reducing its complications.

**Keywords:** Heart, hydatid cyst, liver

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## INTRODUCTION

Cystic hydatid disease as a common parasitic disease is caused by the larval stage of *Echinococcus granulosus* or *Echinococcus multilocularis* in various organs of the body. The mentioned disease has been categorized as one of the most worrying diseases for humans after malignant diseases. Diagnosis of the disease is performed by serology, radiography, computed tomography (CT) scan, and magnetic resonance imaging (MRI). Moreover, surgery and often drug therapy as well as a combined therapy have been presented as the treatment options of this disease.<sup>[1]</sup>

Failure to perform a proper and timely treatment can lead to severe complications such as the rupture of organs in the body, secondary bacterial infection, abscess formation, and eventual mortality. This disease affects various organs and can mimic the clinical manifestations of other diseases.<sup>[2]</sup> However, the heart is one of the organs that are

rarely affected and accounts for only 0.2%–2% of cases in this regard. Therefore, as the occurrence of cystic hydatid disease with atypical symptoms or its location in uncommon areas such as the heart is rare, the mentioned disease is always attention-grabbing and noteworthy. As the case presented in this study, in addition to intraventricular cardiac hydatid cyst with coronary artery disease had multiple hepatic hydatid cysts, its consideration would shed more light in this respect.

## CASE REPORT

A 55-year-old woman referred to the cardiac emergency department of hospital due to abdominal pain. On examination, the patient had no edema, paleness, or jaundice. No complications were seen on abdominal examination, and the patient's blood pressure was normal. Patient's complete blood count results indicated white blood cell = 5600, with 30.4%

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lymphocytes, 4.8% monocytes, and 65% granulocytes. Other laboratory parameters were normal.

On CT of the abdomen, multiple hydatid cysts of the liver were reported [Figure 1a], as a result of which the patient was considered as a candidate for surgery. Cardiac counseling was requested for the patient before surgery.

On two-dimensional echocardiography, a 3.8 cm × 3.9 cm cystic lesion was observed in the upper part of the interventricular septum in the heart [Figure 1c], which definitely confirmed the cardiac hydatid cyst. The patient's EF was 45%, and the mitral valve was normal. Subsequent evaluations with a CT scan of the chest reported a 3-cm intraventricular cardiac hydatid cyst [Figure 1b].

The patient then became a candidate for the excision of the cardiac cyst. Significant stenosis of the left anterior descending artery (LAD), the right coronary artery (RCA), and the posterior descending artery (PDA) was reported on angiography [Figure 2].

The patient underwent cyst excision and coronary artery bypass graft surgery considering her condition. It should be noted that 20% normal saline was injected into the cyst and the surrounding cyst and surrounding area were limited to 20% normal saline-impregnated gas [Figure 3].

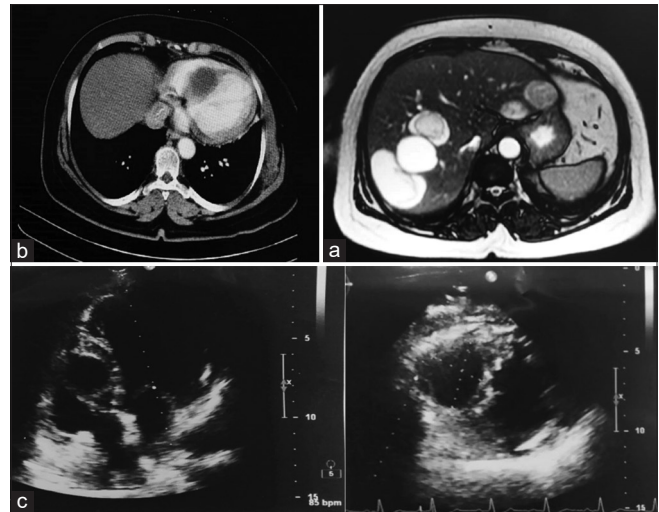
## DISCUSSION

The clinical signs of cardiac hydatid cyst are various, which makes its diagnosis challenging. As the cyst mass in the heart grows slowly, it is usually asymptomatic in the early stages. Depending on the location of the cyst formation in the heart, it is likely to manifest mild symptoms. It is estimated that only 10% of patients with cardiac hydatid cysts have overt clinical manifestations.<sup>[3]</sup>

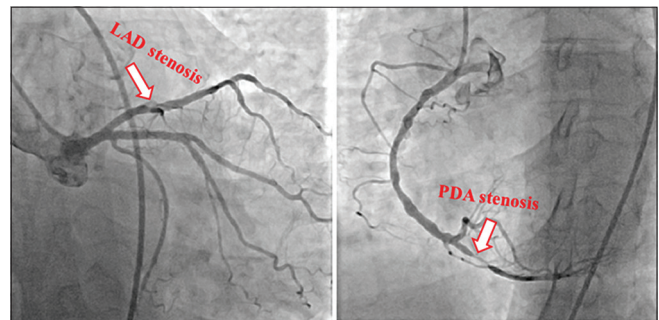
Kudaiberdiev *et al.* reported several hydatid cysts in the epicardium and pericardium of a 40-year-old man that underwent successful surgery.<sup>[4]</sup> The case studied by Fennira *et al.* was of particular significance due to the rarity of the hydatid cyst in the septum and the conflict between the absence of related symptoms and the severity of complications.<sup>[3]</sup> Other studies have reported acute pulmonary embolism due to the rupture of the ventricular hydatid cyst in the right ventricle.<sup>[5-7]</sup>

Biyik *et al.* also reported a case of cardiac hydatid cyst accompanied with a pulmonary cyst in a Turkish woman that finally died.<sup>[8]</sup> In another report, the areas of heart involvement included 60% of the left ventricle, 10% of the right ventricle, 7% of the pericardium, 6% of the pulmonary artery, and 6% of the left atrium.<sup>[9]</sup>

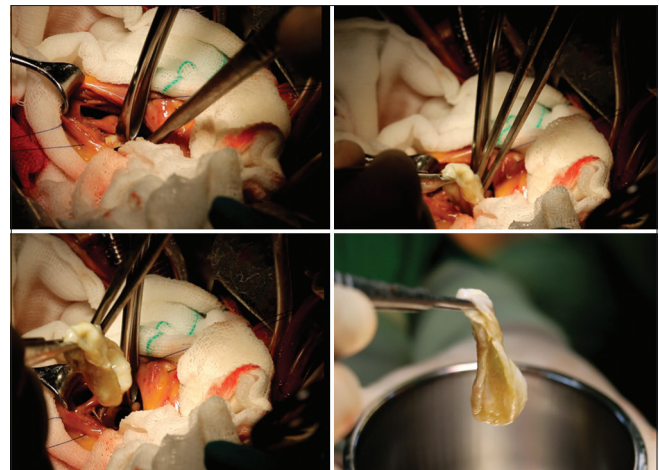
Electrocardiogram changes may be helpful in locating the cyst. T-wave changes and voltage drops are effective in determining the left ventricular involvement, and any abnormalities in the atrioventricular conduction or right bundle branch block indicate the ventricular septal involvement. Early detection



**Figure 1:** (a) Computed tomography of abdominal showing multiple hydatid cysts in the liver. (b) Computed tomography of chest showing hydatid cyst located in the interventricular septum. (c) Echocardiographic showing a large cystic mass splitting the interventricular septum



**Figure 2:** Angiography showing stenosis of LAD, PDA



**Figure 3:** The cyst excision surgery

of cardiac echinococcosis is demanding because the disease grows slowly and develops into a true cyst within 1–5 years.<sup>[10]</sup> Myocardial cysts may be calcified or ruptured. Rupture of a cyst in the pericardium can lead to acute pericarditis, which in turn can cause chronic pericarditis. Rupture of the cyst in the

cavities of the heart leads to systemic or pulmonary embolism. The pulmonary pressure increases rapidly in pulmonary embolism. In addition, the release of hydatid fluid into the bloodstream may cause allergic shock.

Echocardiography as a noninvasive procedure presents significant findings including the location, number, and size of cysts as well as the relationships with adjacent structures. MRI provides the anatomical position and extent of the mass as well as its relationship to the cardiac chambers. The preferred treatment is surgical excision.<sup>[2,11]</sup>

Although serological tests are also used to diagnose the disease, echocardiography is more sensitive. The sensitivity of serological tests in cardiac hydatidosis, liver involvement, and lung involvement is 25%–56%, 85%–89%, and 50%–56%, respectively.<sup>[12]</sup> It should be noted that we did not use these tests in our study and did not encounter any mistakes in the diagnosing this disease; however, the use of these tests in our study could double the certainty of the diagnosis due to their high sensitivity in liver involvements.

In addition, the treatment of patients with cardiac echinococcosis begins with drug therapy, which eliminates the cyst in only 20% of patients. Albendazole and mebendazole have been used in patients with small amorphous cysts; however, most patients require surgery to remove the hydatid cyst.<sup>[13]</sup> Treatment with albendazole or mebendazole is required 3 or 4 days before surgery to prevent metastatic consequences of the disease.<sup>[13]</sup> Drug therapy should be continued after surgery to prevent parasite growth in the viscera. Cardio pulmonary bypass is required during surgery to completely separate the cyst from the myocardium.<sup>[2]</sup> Considering the probability of heart involvement in endemic regions, devoting due attention to the disease as well as performing faster diagnosis of the disease can play a significant role in reducing its complications.

## CONCLUSION

To put in a nut shell, it can be stated that although hydatid cyst of the interventricular septum is not very common, it can result in serious complications. The beneficial role of imaging

in the diagnosis as well as the significance of the relationship between surgery and medical treatment in patient management was underlined considering the clinical history of the case reported in the present study.

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## Conflicts of interest

There are no conflicts of interest.

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