A cardiac hydatid cyst; four years of postoperative follow up

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Introduction

Hydatid disease is a parasitic disease that mainly involves liver and lung tissues. Isolated cardiac involvement is very rare. We report a 40-year-old woman who presented in our emergency department for non-specific chest pain. She had no prior history of a hydatid disease. Her transthoracic echocardiography illustrated a cystic mass in the right ventricular apex. Her contrast-enhanced computed tomographic scan of the chest showed a complex cystic lesion in the right ventricular wall at the region of apex with enhancing thin wall and internal septations. Her immunological IgG test was positive for Echinococcosis. No other hydatid cysts were seen in the other organs such as liver and lungs by ultrasound scan of abdomen and computer tomography scan of chest respectively. After a week course of Albendazole, 400mg twice a day, she underwent cystectomy with cappitonage surgery under cardiopulmonary bypass. The patient was discharged from the hospital after an uneventful postoperative recovery. Echocardiographic and cardiac contrast enhanced computer tomography (CECT) evaluation in fourth year of follow-up revealed no evidence of recurrence of hydatids and ventricular function remained normal.

Case Report

A 40-year-old female presented in our emergency department with the complaint of non-radiating chest pain for 1 week with no other associated symptoms. She had no significant past medical history or comorbidities. Transthoracic echocardiographic examinations illustrated normal cardiac structures and function. However, there was large pericardial effusion with fibrin deposits with no features of cardiac tamponade and a cystic mass in right ventricular apex measuring 2.8 cm x 3.7 cm. Thoracic and abdominal cavity multislice CT scan with intravenous contrast showed a complex cystic lesion in right ventricular wall at the region of apex with enhancing thin wall and internal septa, gross pericardial effusion. There were no other such cystic lesions in the lung or liver.

Figure 1: Transthoracic Echocardiography showing a mass at right ventricular apex

Abstract

Hydatid disease is a parasitic disease that mainly involves liver and lung tissues. Isolated cardiac involvement is very rare. We report a 40-year-old woman who presented in our emergency department for non-specific chest pain. She had no prior history of a hydatid disease. Her transthoracic echocardiography illustrated a cystic mass in the right ventricular apex. Her contrast-enhanced computed tomographic scan of the chest showed a complex cystic lesion in the right ventricular wall at the region of apex with enhancing thin wall and internal septations. Her immunological IgG test was positive for Echinococcosis. No other hydatid cysts were seen in the other organs such as liver and lungs by ultrasound scan of abdomen and computer tomography scan of chest respectively. After a week course of Albendazole, 400mg twice a day, she underwent cystectomy with cappitonage surgery under cardiopulmonary bypass. The patient was discharged from the hospital after an uneventful postoperative recovery. Echocardiographic and cardiac contrast enhanced computer tomography (CECT) evaluation in fourth year of follow-up revealed no evidence of recurrence of hydatids and ventricular function remained normal.

Keywords: Hydatid cyst, Cardiac involvement, Right ventricle

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Echinococcus IgG test was positive. She was planned for urgent surgery. Preoperatively, tablet Albendazole 400 mg twice daily was given for two weeks. Surgical cystotomy of cardiac hydatid cyst via a median sternotomy on cardiopulmonary bypass (CPB) was planned. Standard cardiopulmonary bypass through cannulation of the right atrium and the ascending aorta was established. Myocardial protection was achieved by administration of antegrade cardioplegia and mild hypothermia. Thickened and inflamed pericardium with fibrinous deposits all over the pericardial cavity was found. There was an intra myocardial hydatid cyst (4 cm x 3cm) with septation and daughter scolices at right ventricular apex. The cyst was surrounded by povidone-soaked gauze packs to prevent dissemination of cyst. An oblique incision on cystic mass was given and the cyst was excised from myocardium together with its capsule. Myocardial cavity was washed thoroughly with povidone iodine solution and normal saline. The cavity was filled with hemostatic powder. The shape and geometry of right ventricle was protected. The Teflon patch (felt) was used to suture myocardial cavity using pledged-U-sutures.

Successful weaning from extracorporeal circulation was completed with minimal catecholamine support. The postoperative period was uneventful. We prescribed her albendazole 400mg twice daily for 12 weeks. Yearly follow up of the patient was done. On the fourth year follow up, she had no postoperative complications and no evidence of relapse of the disease as evaluated by transthoracic echocardiography (figure 4) and CECT chest (figure 5).

The patient’s consent has been obtained, and reporting of the case for publication was approved by the institutional review committee of our institution.
Cardiac hydatid cyst is a parasitic disease caused by a tapeworm of E. granulosus, E. multilocularis, or E. vogeli. The most common site of its involvement is the liver followed by lungs. The incidence of concomitant liver and lung hydatidosis ranges from 5.8 to 13.3%.

The primary echinococcosis of the heart is rare and can occur at around 0.5% and 2% of all hydatid cyst involvement in comparison with the liver (70%) or lung (20%). In primary cardiac hydatidosis, the tapeworm larvae reach the myocardium passing through the coronary circulation, via the pulmonary circulation or a patent foramen ovale. As the left ventricle has maximum myocardial mass and abundant blood supply, its invasion by echinococcus is 55-60%. Likewise, incidence of interventricular septum is 5-9%, right ventricle is 15%, right atrium is 3-4% and pulmonary artery, left atrium, and pericardium is up to 7-8%.

The primary pericardial cysts are among the rare phenomenon and are seen to develop after a rupture of myocardial cyst or contamination during surgical intervention. The differential diagnosis of the cardiac hydatid cyst includes intracardiac tumors, congenital cysts and aneurysms.

The clinical presentation of cardiac echinococcosis depends on the size and location of the cyst. The growth of hydatid cyst is usually slow and asymptomatic and just about 10% of patients with cardiac hydatid cyst are symptomatic. The symptoms and signs of cardiac echinococcosis (if present) are extremely variable. Non-specific features such as weight loss, cough, fever, and dyspnea are likely to be the presenting symptoms especially in children.

Hydatid disease is endemic in cattle-raising areas of the world, notably in the Mediterranean countries, the Middle East, South America, Australia, and New Zealand.

The incidence of hydatidosis in the Turkish population has been reported as 1:20,000.

To our knowledge, this is the first case report of isolated cardiac hydatid cyst in the country. Out of total 20000 cardiac operation performed at this center; this is the first operation for cardiac hydatid cyst in the country. Out of total 20000 cardiac operations performed at this center; this is the first operation for cardiac hydatid cyst in the country. Out of total 20000 cardiac operations performed at this center; this is the first operation for cardiac hydatid cyst in the country. Out of total 20000 cardiac operations performed at this center; this is the first operation for cardiac hydatid cyst in the country. Out of total 20000 cardiac operations performed at this center; this is the first operation for cardiac hydatid cyst in the country.

In our patient, she is in fourth years of follow up and there are no cardiac symptoms. Her echocardiography and CECT is free from symptoms, especially in the endemic zones. Due to the high risk of associated complications, cardiac hydatid cysts should be removed surgically as early as possible, even in asymptomatic patients. During surgery, measures should be taken to prevent perioperative embolization of a germinative membrane. Surgical

Intrapericardial rupture of hydatid cyst develops in about 10% of the cases resulting in acute pericarditis and eventually constrictive pericarditis. During intracardiac rupture embolization in the pulmonary or systemic circulation may occur, leading to dissemination of the disease in different organs. The patient may develop anaphylactic reaction with severe circulatory collapse and even death may ensue. The frequency of intramyocardial perforation is high i.e., 25-40%. The right atrium hydatid cyst can give rise to pulmonary hypertension secondary to cystic embolization.

There are different methods in order to investigate cardiopericardial hydatidosis and echocardiography is the procedure of choice. Echocardiography is highly sensitive and specific in the diagnosis of hydatid cysts and positive serological tests can help the diagnosis of this disease. Thameur et al. have suggested that CT scan is better than echocardiography considering its ability to distinguish solid from liquid tumors and also CT scan is an effective and reliable tool for the surgeons which can provide the exact site of the abnormality. Two-dimensional echocardiography and magnetic resonance imaging are currently the best diagnostic modalities to demonstrate a cardiac hydatid cyst. Pericardiocentesis and invasive diagnostic procedures should be avoided due to the risk of rupture of cyst.

For the cardiac hydatid cyst, the recommended treatment is enucleation of the cyst under cardiopulmonary bypass with topical scolicidal agents in the surrounding operative field.

In addition, adjuvant treatment with oral Albendazole may reduce the size of the cyst and prevent recurrence. The recommended treatment is enucleation, pericystectomy or cystectomy with cappitonage of the cyst under cardiopulmonary bypass via median sternotomy with topical scolicidal agents in the surrounding operative field by instillation of scolicidal agents such as 2% formalin, 0.5% silver nitrate solution, 20% hypertonic saline solution, 1% iodine solution or 5% cetrime solution.

During surgery, it is important to minimize spillage of the cystic contents in order to prevent intraoperative dissemination and eventual recurrence. This may be accomplished by delivery of intact cyst or by cystic fluid aspiration with use of scolicidal agent and preoperative therapy with Albendazole. As a rule, the heart should not be manipulated before application of cross clamp and cardiopulmonary bypass. Surgical excision is also indicated in symptomatic patients because if left untreated it may transform to large cavity with a high risk of rupture.

In our patient, she is in fourth years of follow up and there are no cardiac symptoms. Her echocardiography and CECT is free from recurrence. In a study from China, 15 patients with cardiac hydatid cyst were followed up from ten months to 22 years, there were four recurrences of myocardial cysts after 12 months. About 10% of all cardiac hydatid cysts tend to recur after surgery, but this rate may decrease with proper medical treatment and proper prevention of spillage of protoscoleces during surgery.

Conclusion

Cardiac hydatid cysts are rare and may present with a variety of signs and symptoms, especially in the endemic zones. Due to the high risk of associated complications, cardiac hydatid cysts should be removed surgically as early as possible, even in asymptomatic patients. During surgery, measures should be taken to prevent perioperative embolization of a germinative membrane. Surgical
excision under cardiopulmonary bypass is the treatment of choice. Regular follow up with echocardiography and CECT is recommended to detect recurrence.

References


