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Case Report

Presentation of Epicardial and Intrapericardial Hydatid Cysts: A Case Series

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Abstract

Hydatid cyst mainly involves the liver and lung; however, it can rarely involve cardiac tissue. This study describes the presence of hydatid cysts in the heart with considerable disease points in Tehran, Iran. Two cases aged between 25 to 50 years with cardiac hydatid cyst involvement were identified in 2021 in Tehran, Iran. Epicardial hydatid cyst between a left anterior descending coronary artery (LAD) and left obtuse marginal artery (OM) on the left ventricle, and in the second case, intrapericardial cyst attached to the pulmonary trunk with a thin base were identified. The cardial cysts were resected, and the patients recovered without any complications. Cardiac hydatid cyst is a very rare disease. Rapid diagnosis and surgical and medical care are necessary for treatment.

Introduction

Echinococcosis or hydatidosis is a zoonosis parasitic infection caused by *Echinococcus* genius. It is endemic in some parts of the world, such as the Mediterranean region, the Middle East, South America, Australia, New Zealand, Alaska, and Canada, where it is widespread among native American tribes (1). The highest infestation rates have been reported in countries with close contact between humans and carnivores like cats, dogs, and some ruminants such as sheep (2).

The prevalence of hydatidosis was 5% in Iran, and most organs involved were the liver and lungs in the population between the ages of 20-40 years old (3).

Infection is diagnosed according to imaging studies, ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) and may be confirmed using an Enzyme-linked immunosorbent assay (ELISA). Sensitivity of serology is about 80% to 100% for liver cyst infection; however, sensitivity is low for lung (50%–56%) or other organs (25%–56%) cyst infection. Imaging has remained more sensitive than serological methods, so characteristic scans in the presence of negative serologic results can be indicated the diagnosis of echinococcosis (4).

Cystic lesions on ultrasound are divided into three groups: active (CE1 and CE2), transitional (CE3), and inactive (CE4 and CE5). CL represents an early, undifferentiated cystic lesion. The optimal treatment for large CE2 to CE3b cysts is surgical resection; however, PAIR has been recommended in cases of CE1 and CE3a cysts (4).

Hydatid cyst (HC) mostly involves the liver and lung. Although bone, muscle, and spleen involvement has been reported scarcely (2, 5-7), a cardiac hydatid cyst is much rarer and can be fatal. The frequency of cardiac hydatid cysts is between 0.5–2% (8, 9). Although any part of the heart can be involved, it depends on the cyst's size, location, and integrity. The left ventricle (LV) is the most common site of cardiac involvement and can be involved almost two to three times more than the right ventricle. The affection of the right and left atria is approximately equal; however, involvement of the interventricular septum is so rare. Solitary pericardial HC is almost rare, and most pericardial involvement is identified as multifocal cardiac echinococcosis (8).

The cyst growth pushes them toward a weaker side of the cardiac wall; it can be the epicardium or the endocardium. LV hydatid cysts are usually subepicardial and rarely rupture into the pericardial space. However, rupture may be silent or pressure the heart and cause acute pericardial tamponade, constrictive pericarditis, or secondary pericardial cysts (8). Although subendocardial cysts rupture can cause anaphylactic shock, peripheral, systemic, or pulmonary embolization and lead to sudden death, it can also be silent (8).

This study describes the presence of hydatid cysts in the heart with considerable disease points in Tehran, Iran.

Case presentations

Ethics approval and consent to participate

Two patients who participated in this study were informed about the study and agreed to participate, and informed consent was obtained from them. All methods were performed following the relevant guidelines and regulations.

First case

A 50-year-old female was born in a village in Lorestan Province with a history of rectal adenocarcinoma, hypothyroidism, and a mass in her heart. She was admitted to Rasoul Akram hospital in Tehran in 2021. The patient, due to colon cancer, was under laparotomy,

underwent chemotherapy treatment four years ago, and was under treatment with levothyroxine because of hypothyroidism.

Further assessment was done by CT-scan, and the result indicated epicardial mass between the left anterior descending coronary artery (LAD) and left obtuse marginal artery (OM) on the LV (Fig. 1. A). The result of sonography showed the liver was normal. A cardiac hydatid cyst of 2.9×4.9 cm was identified in the lateral wall of the LV. After diagnosis, she was under treatment with Albendazole 400 mg/ PO every 12 h, and the patient was scheduled for an operation. Puncture Aspiration Injection Respiration (PAIR), injection, and aspiration of the cyst before resection was observed in (Fig. 1. B, C).

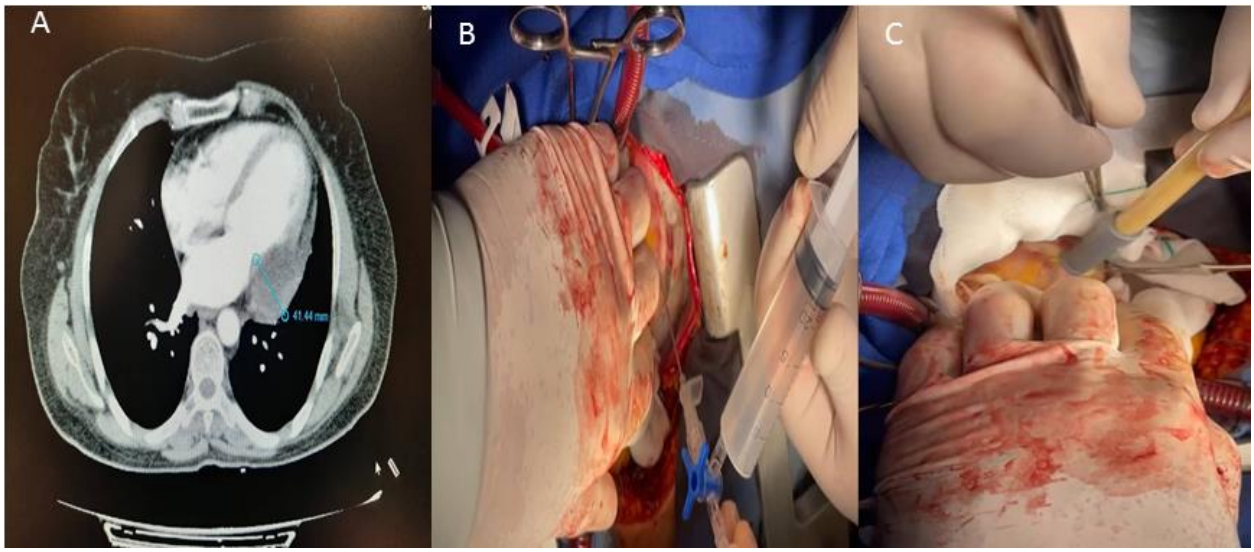

Fig. 1: A: In the first case, a CT scan showed a cystic mass at the left side of the heart (blue arrow); B: PAIR, instill of the first case before resection; C: PAIR, aspiration of the first case before resection

Macroscopic and microscopic diagnosis

Specimen appearance was as a piece of cream green multiloculated partially cystic mass with a firm wall measuring (4×3.5×0.5 cm). On section, gray whitish membranous tissue with foci of yellowish discoloration is noted. Finally, according to pathology results, a hydatid cyst with fibrosis and chronic inflammation was diagnosed. The cardial cyst was resected, and the patient recovered without any complications.

Second case

A 27-year-old female from Tehran with dyspnea with class IV from one year ago without a history of contact with cattle was admitted to Rajaei Heart Hospital in Tehran in 2021 and diagnosed with emboli and pulmonary mass because of varicose veins and consumption of contraceptive and after administration of warfarin and follow up for pulmonary mass every three months candidate for surgery and resection of pulmonary mass she referred to Rasoul Akram hospital. The CT-scan result indicated a large intrapericardial cyst attached to the pulmonary trunk with a thin base (Fig. 2. A). Although the surgeon strongly believes in hydatid cysts, the result of laboratory test for hydatid antibodies and atrial mass pathology was negative for hydatid cysts, so albendazole was discontinued. After surgery, a large, heterogeneous cyst (4.8×3.9 cm), heterogeneous, intrapericardial cyst is attached to the pulmonary trunk with a thin base.

Macroscopic appearance indicated a creamy rubbery ovoid cystic measuring mass (4×3.5×3.5 cm) with wall thickness up to 1 cm. The pathology report confirmed an epi-pulmonary cyst, epicardial mass, and bronchogenic cyst, with one reactive lymph node. Finally, R/O complex epi-pulmonary was diagnosed. The cardial cyst was resected, and the patient recovered without complications (Fig. 2. B, C). After one year, follow-up imaging was normal, including CT of the heart and liver sonography.

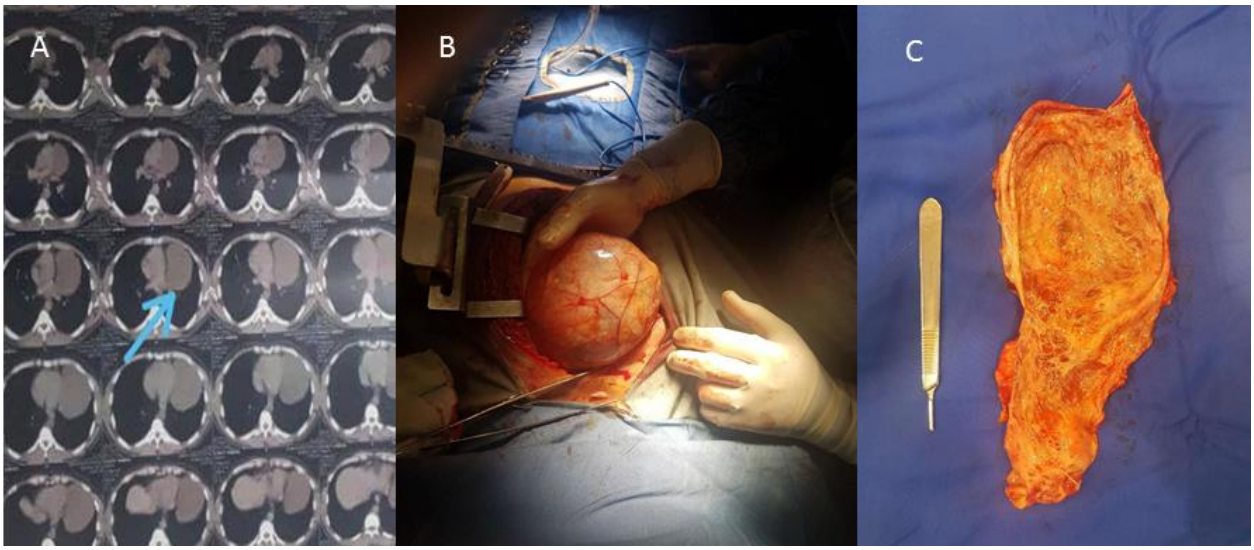

Fig. 2: A: In the second case, a CT scan showed a large intrapericardial cyst attached to the pulmonary trunk (cystic mass at the left side of the heart: blue arrow); B: View of the second case after operation; C: View of the cyst of the second case after the operation

Discussion

A cardiac hydatid cyst is a life-threatening complication and should be managed urgently to prevent fatal consequences. Cystic lesions should be noted carefully, and a rapid diagnosis should be made according to different imaging assays followed by pharmacological and surgical administration in endemic regions (10).

In this case series study, cardiac epicardium cysts attached between the left anterior descending coronary artery (LAD) and left obtuse marginal artery (OM) on the LV and Intrapericardial cyst to the pulmonary trunk with a thin base were identified. Cardiac hydatid cyst most commonly involves LV (55–60%). It may be due to a large myocardial mass and blood supply. The right ventricular (RV) involvement is about (15%), interventricular septum (5%–9%), and the right atrium involvement is almost 3%–4% of cases (11).

In a cardiac hydatid cysts case series study, various involvements of cardiac hydatid cysts presented, including pericardium cysts, interventricular septal hydatid cystic, cardiopulmonary hydatid cyst, and multiple HCs involving liver, spleen, lung, and heart-LV were presented (12). The pericardium cysts were found on the right side of the ascending aorta and the other on the left posterolateral wall of the heart. The aortic cyst was excised, followed by the initiation of cardiopulmonary bypass. In another case, an interventricular septal hydatid cyst lesion was found, and an operation was performed through median sternotomy. In the third case, a cardiopulmonary hydatid cyst was diagnosed in a patient. An operation was performed

through a median sternotomy. Cardiopulmonary bypass and both cardiac and pulmonary hydatid cysts were removed. In the last case, multiple hydatid cysts involving liver, spleen, lung, and heart- LV as malignant hydatidosis has been reported in a patient. In general, in 3 (75%) cases, cardiac cyst involvement has occurred in the LV, one (25%) in RV, and loss of consciousness in one case led to the death of the patient (12).

In another study, an 18-year-old female with negative medical and surgical history died, and after an autopsy, the hydatid cyst was identified at the LV wall ruptured into the LV chamber (13).

In a study, a myocardial hydatid cyst with multiple septa and calcification in the apex of the heart with bulging in pericardia attached to the apico-lateral LV wall and local thickening of the pericardium was found that leads to cardiac arrhythmia and patient death (14). These events demonstrated the catastrophic nature of cardiac hydatid cysts.

Our study is in line with the previous study that preoperative anthelmintic chemotherapy was suggested in cardiac hydatid cyst (12, 14); however, in a study, an 11- year-old boy with cardiac hydatid cyst in RV wall did not give preoperative chemotherapy and was under treatment on Albendazole for 12 months after operation (15).

Conclusion

Cardiac hydatid cyst is a very rare disease. Rapid diagnosis and surgical and medical care are necessary for treatment. Hydatid cysts should be noted in diagnosing heterogeneous echogenic lesions; especially in cases where serological tests are negative, so increased awareness is essential among cardiac physicians.

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Competing interest

The authors declare that they have no competing interest.

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