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Case Report

A Rare Case of Cardiac Hydatid Disease without Liver and Lungs Involvement

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Abstract

Hydatid disease is a parasitic infection caused by *Echinococcus granulosus*. Cardiac involvement is rare especially without liver and lungs tissue involvement. We describe a 12-year-old male patient referred to Mofid Children's Hospital, Tehran, Iran in Jul 2020 due to chronic pericardial effusion and suspected tuberculosis infection from Afghanistan. Echocardiography revealed a cystic lesion in the interventricular septum. Thoracic and abdominal computed tomography showed no similar cystic lesion in the lungs and liver. The patient underwent open-heart surgery for cystectomy and medical treatment with albendazole. Histological examination confirmed hydatid cyst diagnosis. The patient was discharged in good condition and oral albendazole was continued.

Keywords: Cardiac hydatid cyst; Interventricular septum; Pediatrics

Introduction

Hydatidosis is a parasitic disease arise from the larvae of the *Echinococcus granulosus*. Its distribution is globally but the prevalence in South Europe, South America, Africa, Turkey, Australia, New Zealand and India is higher and affecting children more than adults do (1). Hydatid disease might involve different tissues, mostly in the liver and the lungs (2). Cardiac involvement in hydatidosis is infrequent due to the myocardial contractions and composed only 0.5%-2% of all patients with hydatid cysts. Common locations of hydatid disease in cardia include the left ventricle (60% of cases), right ventricle (10%), pericardium (7%), pulmonary artery (6%) and left atrial appendage (6%), and involvement of the interventricular septum is rare (4% of cases) (3). In the majority of patients with cardiac hydatid cyst, the disease affects multi organ simultaneously, especially the liver and lungs (4). Manifestations of cardiac hydatid disease depend on the location and size of the cyst. Pericarditis, effusion, and cardiac tamponade might result from the rupture of the cyst into the pericardial

cavity (2). Imaging and surgical techniques, contribute in diagnosis and treatment.
We report a case of the cardiac hydatid cyst of the interventricular septum without any involvement of other organs such as liver and lungs in a 12-yr-old male.

Case Report

In Jul 2020, a 12-year-old Afghan male patient presented at Pediatric Cardiology Clinic, Mofid Children's Hospital, Tehran, Iran with palpitation and mild tachypnea. His illness began with fever, sweating and weight loss from 6 months ago in Afghanistan. Tuberculosis infection (TB) is endemic in Afghanistan. Therefore, according to the patient's symptoms and family history of TB, tuberculosis was suspected and anti- tuberculosis treatment was initiated for this patient. Echocardiographic examination revealed pericardial effusion. After 6 months, the patient's pericardial effusion did not improve. Therefore, the patient referred to Iran for treatment of cardiac complications. On our physical examination, he had weight loss. His pulse was regular with a heart rate of 98 beats per minute and blood pressure was 120/70 mm-Hg. The blood saturation was 95% at room air. Auscultation revealed no murmur or gallop. Pulmonary and abdominal examinations were normal. Electrocardiography demonstrated sinus tachycardia at a rate of 105 beats per minute with a normal axis for age with no ST segment and T wave changes. Hematologic and biochemical laboratory tests showed mild leukocytosis of 15400 cells/m2 (normal range=4000-11000) and mild eosinophilia of 6% (normal range=4-5%).
Chest radiography showed no lung parenchymal abnormality, no pleural effusion but increased cardio-thoracic ratio. Transthoracic echocardiography revealed normal cardiac function but there was a large cystic mass measuring 4.4cm×4.7cm within the interventricular septum (Fig. 1,2).

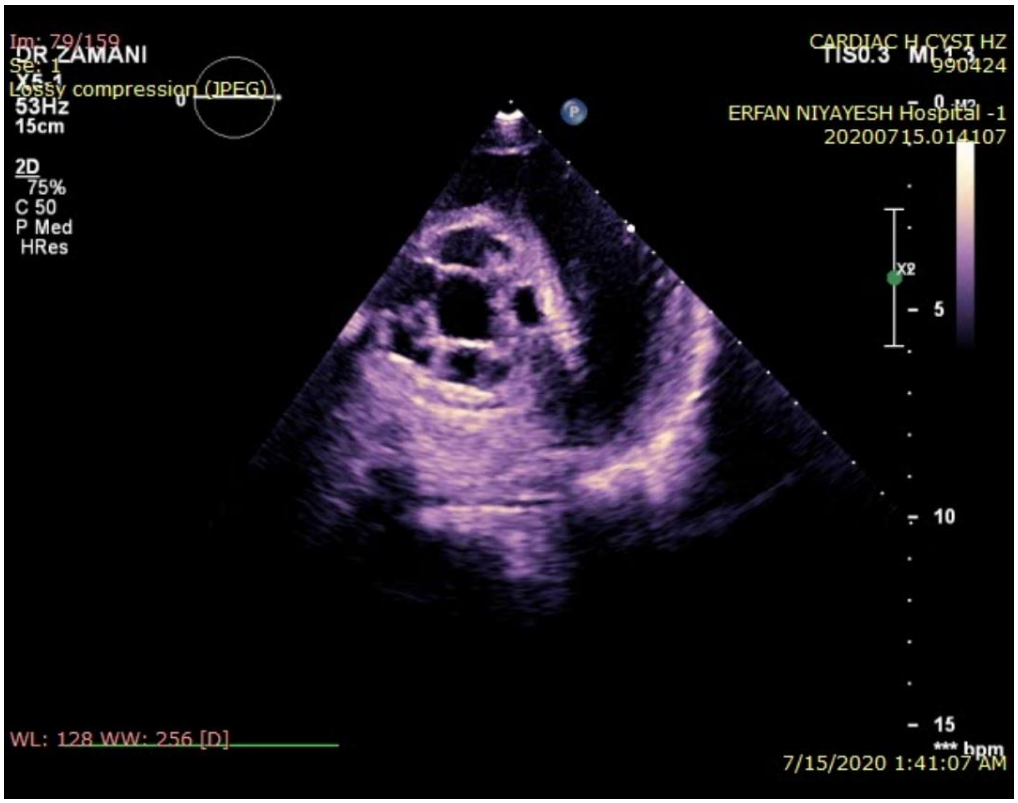

Fig. 1: Transthoracic Echocardiographic of interventricular septum hydatid cyst

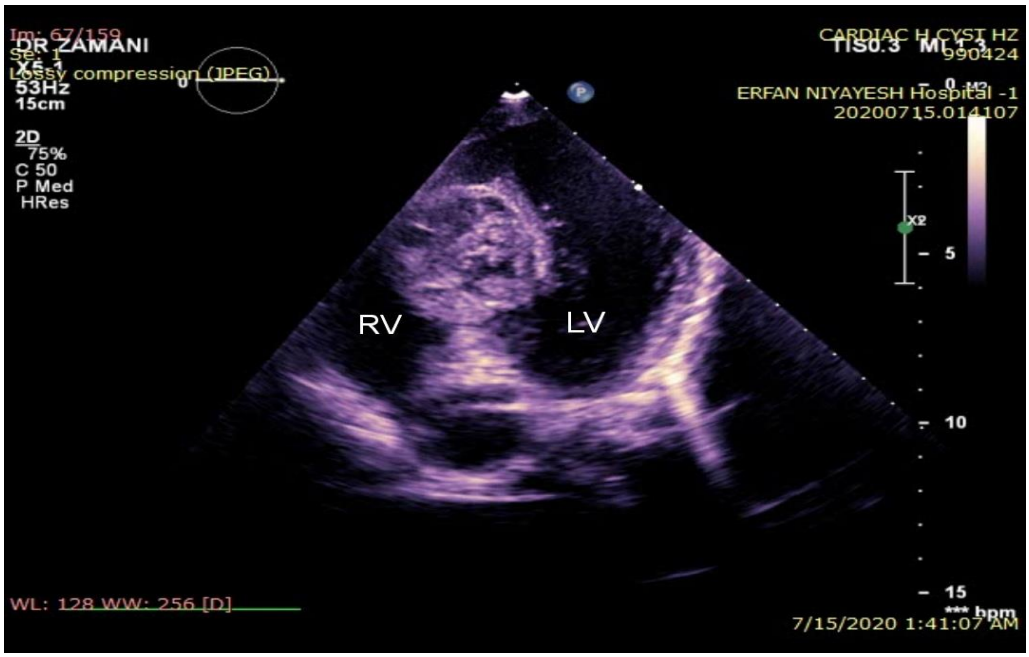

Fig. 2: Transthoracic Echocardiographic of interventricular septum hydatid cyst in 4chamber view

There was pericardial effusion, too. Abdominal and thoracic computed tomography (CT) confirmed interventricular septum mass (Fig. 3) and identified no any extra cardiac cystic mass. Albendazole was initiated for the patient preoperatively. Therefore, we decided to resect the cardiac cyst. Surgical excision was performed under cardiopulmonary bypass. Postoperative histological examination of the resected cyst confirmed the diagnosis of hydatid cyst containing of echinococcosis.

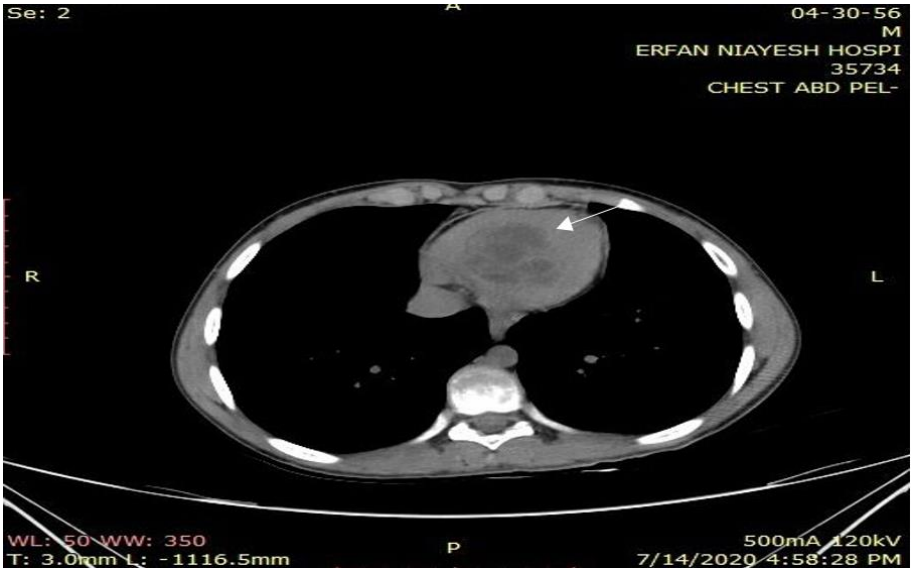

Fig. 3: CT Scan showing the mass (arrow)

After surgery, oral albendazole continued for the patient. One month after surgery, he had a good condition with no palpitation or tachypnea. Echocardiography showed good left ventricular function and no residual interventricular mass (Fig. 4).

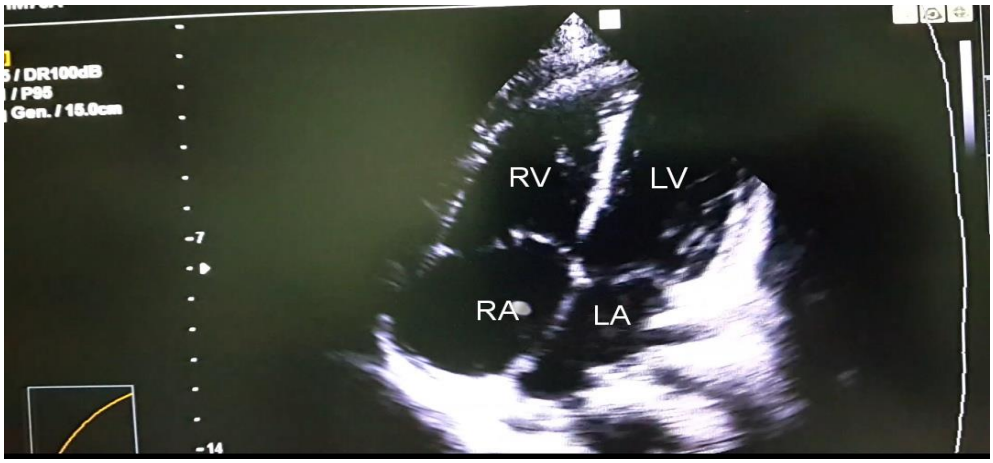

Fig. 4: Echocardiograghic frame taken after removal of hydatd cyst in 4 chamber

Ethical Approval

Informed consent was provided for the purpose of publication of images and other clinical information in this case report. In addition, in this paper, no identifiable personal details are included. The study was verified by the Ethics Committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.RICH.REC. 1399.064).

Discussion

Hydatid disease is a parasitic condition caused by a tapeworm of the *Echinococcus granulosus*. The most common location of hydatid disease involvement is the liver and lungs, respectively (5). Cardiac hydatid cysts are a very uncommon condition attributable to the persistent myocardial contraction, which prevents cysts of Echinococcosis to lodgment inside the cardia (6). Our patient presented with a hydatid cyst in the interventricular septum of the heart with no liver and lungs involvement.

Cardiac hydatid cyst might accompany to myocardial infarction, ventricular arrhythmias, pulmonary edema or sudden cardiac death because of the compressing the coronary arteries, cardiac conduction pathways and intracardiac cavities by the enlarged cyst (7).

The clinical presentation of cardiac echinococcosis is associated with the size and location of the cyst (8). In the early phase, it could be asymptomatic and may be identified incidentally. There are diverse clinical manifestations of cardiac hydatid disease in symptomatic patients. (5). Non-specific symptoms like weight loss, fever and dyspnea are may be presented (9). These non-specific clinical findings in our patient such as weight loss, fever and sweating in the endemic region in terms of tuberculosis (TB) resulted in misdiagnosis as TB and incorrect treatment for 6 months.

In symptomatic patients, the manifestations of cardiac hydatidosis comprise anaphylaxis, palpitation, findings of low cardiac output (such as cyanosis, respiratory distress, hypotension, mottled extremities), systemic or pulmonary embolism, and pulmonary hypertension. (10).

In the recognition of hydatid disease, an ELISA or indirect hemagglutination test (IHA) as a highly sensitive serological assay and immunoblot or gel diffusion assay as a highly specific test is usually

applied for screening and confirmation, respectively. Echinococcosis cannot be ruled out by a negative test (11). The best modality in diagnosing - cardiac echinococcosis has been provided by transthoracic echocardiography. The cysts include multiple septa, vesicles and often daughter cysts surrounded by a thin membrane are observed. These echocardiographic findings differentiated hydatid cyst from other cardiac lesions simply (7). Moreover, our case's diagnosis was established by echocardiography findings.

The optimal management for cardiac hydatid cysts is surgical resection mainly mobile cysts, which might be rupture. In addition, medical therapy such as albendazole may be effective for cardiac hydatid cyst but systemic or pulmonary emboli due to the rupture of the cyst is feasible with medical therapy alone (4). Our patient was treated surgically and the cyst from the intraventricular septum was removed successfully.

Conclusion

Cardiac involvement of hydatid disease is infrequent. Echocardiography, thoracic CT and cardiac magnetic resonance (CMR) are various methods for diagnosis. Surgical removal of cardiac hydatid cysts is the gold standard for the treatment of cardiac hydatidosis with good outcomes.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgements

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Conflict of interest

The authors have no conflicts of interest to declare.

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