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Case Report

Cardiac Hydatid Cyst without Liver Involvement: A Case Report

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Abstract

Hydatid disease is a rare parasitic disease, which mainly involves liver then lung tissues. Cardiac involvement is very rare, especially when there is not hepatic involvement. We describe a 47-year-old woman with a history of a lung hydatid cyst who was referred to Rajaei Heart Center, Tehran, Iran in 2012. Her chest computed tomographic scan showed a cardiac mass. Echocardiographic examination illustrated a large, well-defined heterogeneous mass (4.5 × 2.5 cm) in the roof of the right atrium with attachment to the crista terminalis without compressive effect on the inferior and superior venae cavae. The patient was candidate for open-heart surgery via median sternotomy. A cystic mass was observed in the lateral aspect of the right atrial wall. After an injection of hypertonic normal saline into the cystic lesion, the mass was excised totally. The right atrial defect was reconstructed with autologous pericardium. The patient was discharged from the hospital in good condition. Histological examination confirmed the diagnosis of the hydatid cyst.

Introduction

Hydatid disease is a parasitic infestation caused by *Echinococcus granulosus*. The liver, followed by the lung, is the most common site of involvement. Cardiac involvement of the hydatid cyst is uncommon (<2%), and particularly rare is cardiac involvement without hepatic involvement. However, the most common sites for cardiac involvement are the ventricular septum and the left ventricular free wall (1). In addition, the hydatid cyst of the right atrium is a very rare finding. We describe here a woman with the hydatid cyst of the atrial free wall without hepatic involvement.

Case Report

The patient was a 47-yr-old woman with a history of a lung hydatid cyst resection 2.5 yr previously. She was asymptomatic, but follow-up chest computed tomographic (CT) scan revealed a cardiac mass (Fig. 1).

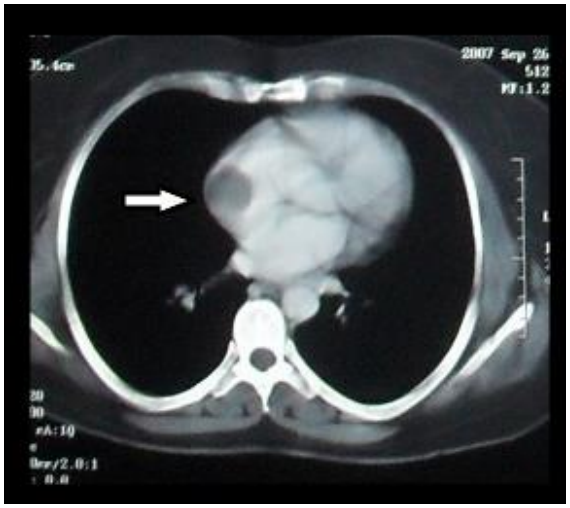

Fig. 1: CT scan showing the mass (arrow)

Transthoracic and transesophageal echocardiographic examinations illustrated normal cardiac structures and function; however, there was a large, well-defined heterogeneous mass (4.5 × 2.5 cm) in the roof of the right atrium with attachment to the crista terminalis. The mass had a small stalk and exerted no compressive effect on the inferior and superior venae cavae (Fig. 2 and 3). Abdominal and pelvic cavity multi-slice CT scan with both intravenous and oral contrast was normal with no solid or cystic mass. Selective coronary angiography revealed normal epicardial coronary arteries. She had no history of pulmonary or cardiac complaints, but had a history of controlled hypertension and seasonal allergy. Her medications were amlodipine and occasional cetirizine consumption.

After consultation with an infectious disease specialist, oral albendazole (200 mg/ twice a day) was started. Thereafter, surgical resection of the cardiac mass was planned. Via a median sternotomy on cardiopulmonary bypass (CPB), cardioplegic arrest was introduced. There was a whitish cystic lesion in the lateral aspect of the right atrium wall. After an injection of hypertonic saline into the cyst, total excision of the cyst with a safe margin (1-2 mm) was performed (Fig. 4).

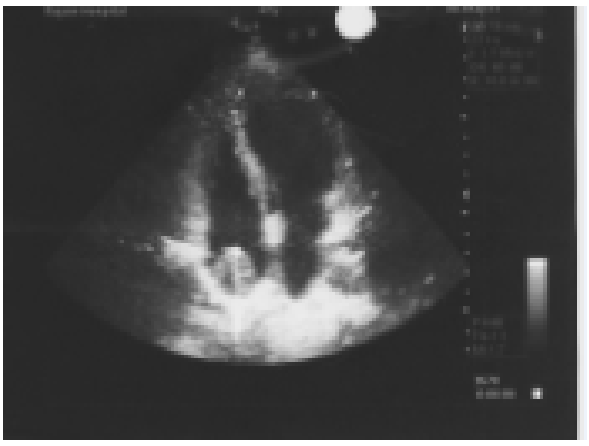

Fig. 2: Transthoracic echocardiography of RA Hydatid cyst in 4 chamber view

The right atrial wall defect was repaired with autologous pericardium, and the patient was weaned off CPB successfully. On cutting, the specimen contained a creamy fluid with fragile

debris and necrotic material. In microscopic examination, the sections showed myocardial tissue occupied by a multilayered hydatid cyst, necrotic debris, and foreign-body-type granuloma formation. The final diagnosis of a hydatid cyst was therefore established. The patient's consent was obtained, and the report was approved by the Ethics Committee of our institution.

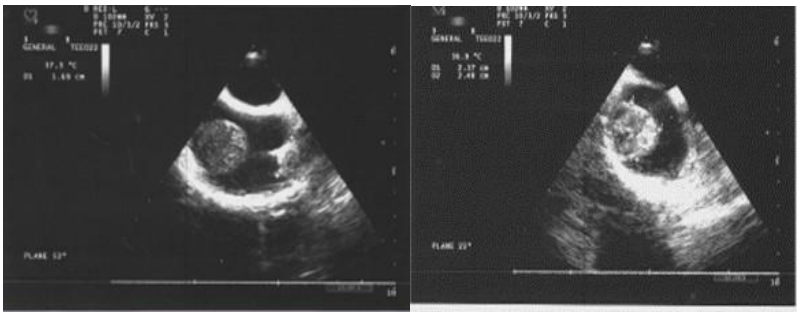

Fig. 3: Transeosophageal echocardiography of RA Hydatid cyst in 0 and 90 degree (bicaval view)

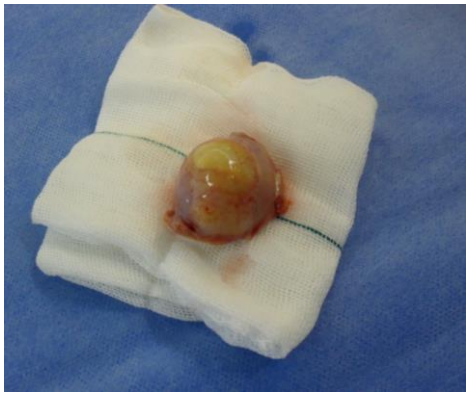

Fig. 4: Gross appearance of right atrial hydatid cyst

Discussion

Hydatid cyst is a parasitic disease caused by a tapeworm of the genus *E. granulosus*. The liver, followed by the lung, is the most common site of involvement. The incidence of concomitant liver and lung hydatidosis varies from 5.8 to 13.3% (1). Primary echinococcosis of the heart is rare and is reported to comprise between 0.5% and 2% of all hydatid cyst sites in comparison with the liver (70%) or lung (20%) involvement (2). The liver and lungs are regular sites of infection; nonetheless, on rare occasions the heart can be infected without the involvement of the other organs. Kuyumcu et al. described an old man with pure heart hydatid cyst involvement who was inoperable because of dementia. The authors treated the patient with albendazole for 6 months, and follow-up echocardiography revealed a reduction in the size of the cyst (3). "In primary cardiac hydatidosis, the larvae usually reach the myocardium through the coronary circulation, via the pulmonary circulation or a patent foramen ovale" (4).

The clinical presentation of cardiac echinococcosis depends on the size and location of the cyst (5). In the early stages of the disease, it can be asymptomatic and may be discovered incidentally, similar to the present case. The symptoms and signs of cardiac echinococcosis (if present) are extremely variable. Non-specific features such as weight loss, fever, and dyspnea are likely to be the presenting symptoms (6). "Mild, recurrent non-specific chest pain is the most common complaint, which may be due to an episode of partial rupture into the pericardium, with resultant pericarditis" (7). This condition can also lead to ischemic heart attack (8); and in the case of the left ventricular involvement, it can mimic acute coronary syndrome (9). Tandon et al. reported a right atrial hydatid cyst presenting with chest pain and hemoptysis (10). Poorzand et al. described a patient who presented

with pulmonary embolism owing to a giant multi-cystic mass in the right ventricle with adhesion to the septal leaflet of the tricuspid valve (11). If a cardiac cyst is located in the right atrium, it could even be mistaken with the myxoma of the atrium (12), and the patient may present with typical angina because of the compression of the hydatid cyst on the adjacent myocardium. This condition may result in misdiagnosis, especially in elderly patients (13). Moreover, it can present as a conduction disturbance when it is located near the conduction system, particularly the interventricular septum. Rarely, it can present as an anaphylactic shock following its rupture. Patients with the cardiac hydatid cyst may develop life-threatening complications secondary to the cyst rupture together with systemic and pulmonary dissemination. Accordingly, surgical excision is the treatment of choice in the cardiac hydatid cyst, even for asymptomatic patients (14). The right atrium hydatid cyst can give rise to pulmonary hypertension secondary to cystic embolization (15). In children, the cardiac hydatid cyst can present with dyspnea, cough, weight loss, and fever (16).

Two-dimensional echocardiography and magnetic resonance imaging are currently the best diagnostic modalities to demonstrate a cardiac hydatid cyst. For the cardiac hydatid cyst, surgical excision is the therapy of choice. In addition, adjuvant treatment with oral Albendazole may reduce the size of the cyst and prevent recurrence (17).

Our patient had pulmonary and cardiac involvement of the hydatid cyst, without hepatic involvement. (We detected her problem incidentally in her follow-up multi-slice CT.) It is worthy of note that the cardiac involvement was in the right atrium, which has been rarely reported in the literature.

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