Cardiology in the Young

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Cystic echinococcosis of the interventricular septum: a rare clinical presentation

Erkan İriz[1], Semih Yaylı[1] and Serdar Kula[2]

[1]Department of Cardiovascular Surgery, Gazi University, Ankara, Turkey and [2]Department of Pediatric Cardiology, Gazi University, Ankara, Turkey

Abstract

Cystic echinococcosis caused by infection with the larvae form of *Echinococcus granulosus* remains highly endemic and constitutes a public health concern in some regions of the world. In this case report, we present a rare children case of interventricular hydatid cyst with a size of approximately 5 cm and its successful treatment.

Brief Report

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Author for correspondence: Erkan İriz, MD, Professor, Gazi Üniversitesi Tıp Fakültesi Kalp ve Damar Cerrahisi AD Beşevler 06500, Ankara, Turkey. Tel: +90 312 2025619, +90 312 2025637; Fax: +90 312 2129014. E-mail: erkaniriz@hotmail.com

Cystic echinococcosis remains highly endemic in rural sheep raising areas including regions of South America, the Mediterranean coast, Eastern Europe, the Near and Middle East, Africa, China and Russia.[1] Carnivorous animals are definitive hosts, producing embryonated eggs in their faeces. Most of larvae forms are filtered in hepatic sinusoids or alveolar tissue; consequently, liver (50–70% of cases) and lungs (5–30%) are the most common localisations of Cystic echinococcosis,[1–4] but some reach the systemic circulation, leading to uncommon locations like heart, that is accounted for 0.5–2% of total cases.[1–3] Diagnosis at early stage becomes challenging as only 10% of cardiac involvement shows symptoms,[1] including chest pain, dyspnoea and palpitations.[5] Although serological tests including enzyme-linked immunoabsorbant essay and indirect haemagglutination employed for initial scanning, they can be false negative in 50% of all cardiac Cystic echinococcosis.[1,4] Echocardiography is a low cost and effective modality for the diagnosis of Cystic echinococcosis and thus preferred in all patients for initial screening.[1,2] While CT best shows wall calcification, MRI is optimal for showing anatomic location and cyst contents, both used for further evaluation of the cyst size, detailed anatomic information and complications.[1–3]

Case presentation

A 15-year-old female with atypical chest pain admitted to our hospital in November 2019. Besides handling with stray dogs and cats, she had unremarkable medical history. Her physical examination was normal as ensuing routine laboratory tests, along with high-sensitive troponin T levels. Her electrocardiogram showed negative T waves in the anterolateral leads. Transthoracic echocardiography showed patent ductus arteriosus and a round, multilocular cystic lesion with daughter cyst formations in interventricular septum close to the apex, which was conforming with World Health Organization type 2 Cystic echinococcosis disease. CT and MRI obtained for detailed evaluation. CT results showed in Figure 1a. MRI showed well-circumscribed cystic lesion within the apical segment of the interventricular septum and the size was $57 \times 44 \times 42$ mm (Fig 1b). There was no liver or lung involvement in CT and abdominal ultrasound results. Her echinococcal serologic results were negative.

Surgical excision under cardiopulmonary bypass was planned. Through median sternotomy, we first located and ligated the patent ductus arteriosus. Cardiopulmonary bypass initiated with aortic and bicaval cannulation. After aortic cross clamping and cardioplegic arrest, we lifted the heart and reached free surface of the cystic lesion that protruded from interventricular septum towards the diaphragmatic surface. To prevent local invasion, we localised the apical portion by gauzes impregnated with povidone-iodine solution. Under the guidance of transoesophageal echocardiography, cyst was punctured, aspirated and injected with 20% hypertonic saline solution for sterilisation. Subsequently, repeating this process four times, the pericyst was opened, endocyst was extracted as a whole while taking care of not to spread its contents (Fig 2a and b). Cyst cavity was opened for protection new mass in this region. Histopathological examination of collected materials was coherent with Cystic echinococcosis disease. According to the literature review, this child is the first case of cardiac cyst hydatid in the interventricular septum with patent ductus arteriosus.

The patient received albendazole therapy by the dose of 400 mg twice daily perioperatively and showed uneventful course of recovery.

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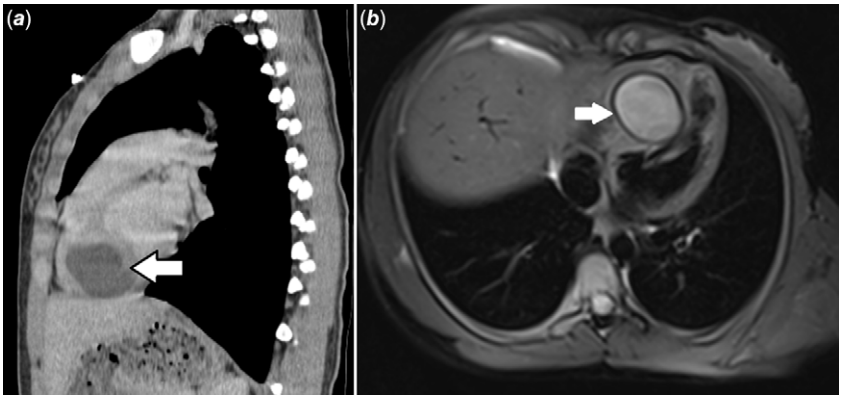

Figure 1. Saggital CT image (***a***) shows a smooth, round cystic lesion (white arrow) extending towards the inferior surface of the heart. Axial T2-weighted image (***b***) shows a round, hyperintense, multilocular cystic lesion (white arrow), containing hypointense areas in IVS close to the apex.

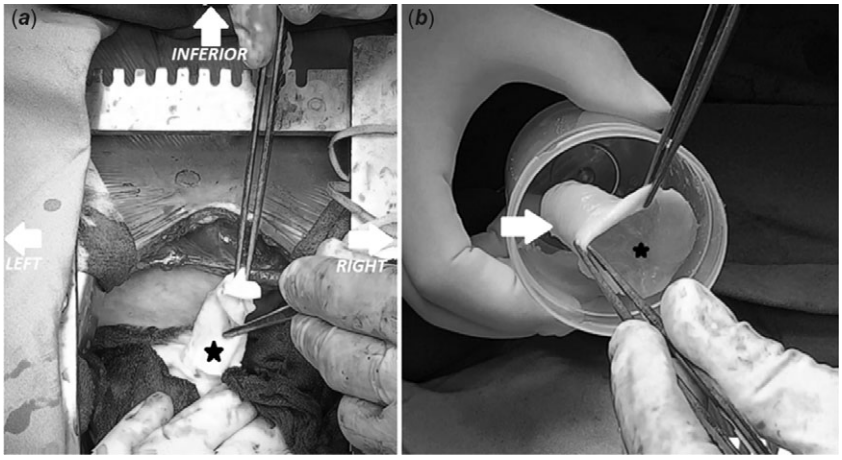

Figure 2. Operative picture (***a***) extraction of the endocyst (black star). (***b***) Extracted endocyst (white arrow) filled with smaller daughter cyst suspended in a liquid substance (black star).

Discussion

Cystic echinococcosis of the interventricular septum is a rarely encountered clinical entity. Mainly, parasite reach the heart through coronary circulation, for this reason left ventricle myocardium is the most common cardiac localisation (60%) owing to its reach blood flow, followed by the right ventricle (10%), pericardium (7%), left atrium (6–8%) and the right atrium (3–4%).[2–4] The interventricular septum is particularly a rare location, stated in only 4% of cardiac cases.[2–5] While atypical chest pain becomes the most common symptom, it can cause palpitations or even atrio-ventricular block by interference with conduction pathways, dyspnoea and syncope attacks due to obstruction of the outflow tract or valvular dysfunction.[2,4,5] That being said, only 10% of patients are symptomatic at admission, making early diagnosis of the disease very difficult.[1] In endemic areas, it must be considered for differential diagnosis in patients with indefinite cardiac symptoms. While echocardiography becomes a cornerstone diagnostic tool, CT and MRI can be useful for detailed evaluation.[2–4] In our case, Cystic echinococcosis diagnosis was made coincidentally while the patient was further evaluating for patent ductus arteriosus.

Because of its potentially lethal complications, surgery is the definitive treatment choice.[1–4] In literature, surgical technique consists on right atriotomy, right ventriculotomy or left ventriculotomy. Since the cyst was under the epicardium, we killed the cyst with 20% hypetonic fluid via percutaneously first, and then emptied it, without opening the heart cavities. Transoesophageal echocardiography guide was used in order not to enter the heart cavities (left ventricle) in the heart that was cardioplegic arrested during these procedures.

In conclusion, the cases of Cystic echinococcosis located in the interventricular septum, it is safe to kill the cyst with hypertonic fluid 20% and then evacuate the cyst on the cardioplegic arrested heart.

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Conflicts of interest. None.

Ethical standards. Not applicable.

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