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Case Report

Multiple hydatid cystectomy of the heart necessitating LIMA to LAD anastomosis in a young patient

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Abstract

Cardiac hydatid disease is very rare, even in endemic regions. Clinical manifestations included chest pain, anaphylactic shock, constrictive pericarditis, congestive heart failure, and arterial embolism. Surgery is the exclusive therapy, where the cysts are excised during open-heart surgery. The surgical approach therefore must be performed carefully, given the potential complications that surgery may bring. Because of the risk of potentially lethal complications, early diagnosis and definitive treatment are important. A 32-year-old male patient was admitted with chest pain, weight loss, lethargy, and dizziness. On the transesophageal echocardiography study, a cystic mass (2.5×3×4.5 cm in dimension adjacent to the left ventricular posterior wall) that was divided into two by a septum was noted. Diagnosis of hydatidosis was confirmed with serologic tests (ELISA and indirect immunofluorescence). Echinococcosis, also known as hydatid disease, is common in several regions of the world, for example, the Mediterranean countries, the Middle East, South America, and East Africa. While performing pericystectomy in the anterior left ventricular wall, we noticed that there were three cysts, contrary to the preoperative diagnosis pointing a single one, and it was impossible to effectively complete the procedure without compromising anterosuperiorly displaced left anterior descending artery (LAD). We decided to go on bypass, arrest the heart, and complete the pericystectomy at the cost of injuring LAD and grafting the left internal mammary artery to LAD. Microscopic examination of the cyst showed a germinal layer and an avascular, eosinophilic, chitinous layer that confirmed the diagnosis of hydatid cyst. The patient was discharged on the fifth postoperative day on albendazole medication.

Keywords: Hydatid disease; Coronary artery bypass grafting; Cystectomy; Ecchinococcus

1. Introduction

Echinococcosis, also known as hydatid disease, is common in several regions of the world, for example, the Mediterranean countries, the Middle East, South America, East Africa, and some areas in Canada and Australia [1,2]. The incidence and prevalence of this disease are estimated to be high in countries where sheep farming is widespread such as Turkey. Echinococcosis is a human infection caused by the larval stage of *Echinococcus granulosus*. The liver and the lungs are the most common sites of infection [3,4].

Cardiac cyst hydatid is a rare pathology and is seen in 0.5–2% of echinococcal infections [1]. A total of 77% of large cysts and 50% of medium-sized cysts are symptomatic [1]. It is therefore legitimate to state that the larger or more numerous the cysts are (covering a large surface of the myocardium), the more important is their effect on the functioning of the heart and thereby the severity of the symptoms and signs. We report a patient with multiple cysts adjacent to the myocardium, which were formerly diagnosed as a solitary cyst associated with superior displacement of the left anterior descending artery (LAD) with compression. This condition necessitated a LAD–left internal mammary artery (LIMA) bypass graft in our case.

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2. Case report

A 32-year-old male patient was admitted with chest pain, weight loss, lethargy, and dizziness. On the transesophageal echocardiography (TEE) study, a cystic mass (2.5×3×4.5 cm in dimension adjacent to the left ventricular posterior wall) that was divided into two by a septum was noted (Fig. 1).

TEE revealed the same findings. An MRI scan, which is a more reliable diagnostic procedure than the computed tomography (CT) scan for diagnosing cardiac hydatid cyst (CHC), was performed, and it revealed an apical left ventricular cyst with a dimension of 5×4.5 cm and noted pericardial thickenings that were anterosuperiorly and anteroinferiorly located with dimensions of 3.5×2 and 2.5×2 cm, respectively (Fig. 2).

Diagnosis of hydatidosis was confirmed with serologic tests (ELISA and indirect immunofluorescence).

After a 2-month treatment with albendazole, he was referred for surgery for the removal of the cyst within the heart that did not regress with medical therapy.

Cardiopulmonary bypass (CPB) was started; the heart was emptied, making exploration for apically and posteriorly located cysts easier (Fig. 3).

The cysts were then punctured and emptied with a syringe; they were sterilized by injecting a hypertonic saline solution. After a brief pause, the cysts were incised and emptied of their content. While performing pericystectomy in the anterior left ventricular wall, we noticed that it was impossible to effectively complete the procedure with effacement of the residual cavity without compromising the anterosuperiorly displaced LAD (Fig. 4). We decided to go on bypass, arrest the heart, and complete the pericystectomy and effacement of the cavity at the cost of injuring LAD and grafting LIMA to LAD. The residual cavities were closed by 3-0 polypropylene sutures.

Microscopic examination of the cyst showed a germinal layer and an avascular, eosinophilic, chitinous layer (Fig. 5) that confirmed the diagnosis of hydatid cyst and pericystic area consisting of fibrovascular tissue with mononuclear inflammation and foreign-body reaction (Fig. 6).

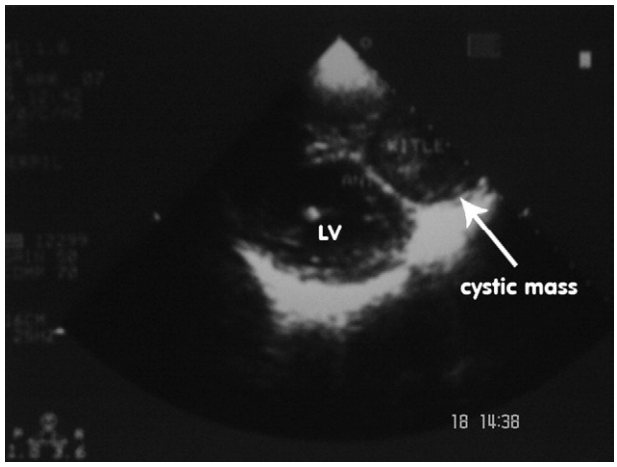

Fig. 1. Transthoracic two-dimensional echocardiogram of parasternal long-axis view showing a hydatid cyst (arrow).

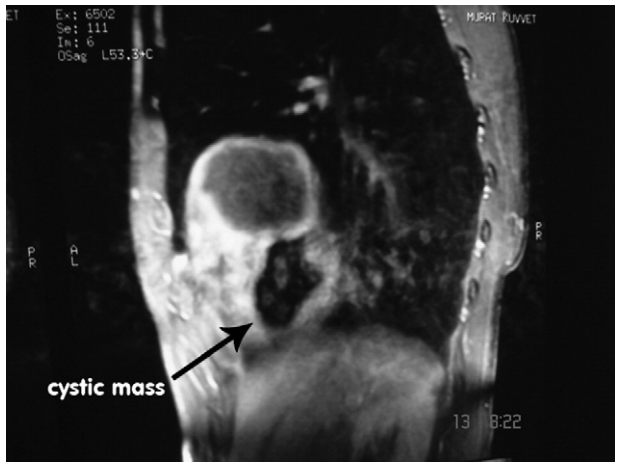

Fig. 2. Nuclear magnetic resonance imaging, direct coronal section, shows an apical left ventricular cyst.

3. Discussion

Hydatid disease is a parasitic infestation most frequently caused by the larval form of the tapeworm *E. granulosus*, which uses the dog as the definitive host [2,3]. After ingestion, the larvae go through the duodenal wall to the portal blood system and into the liver, where they are found in about 60% of cases [5]. Some of them (ca. 20%) may escape hepatic filtration and enter the pulmonary circulation. A small percentage may reach the systemic circulation, resulting in infection and cyst formation in any organ [2,3]. Isolated cardiac involvement by echinococcosis at any age is very rare and occurs in 0.5–3% of the cases [2] as in our case.

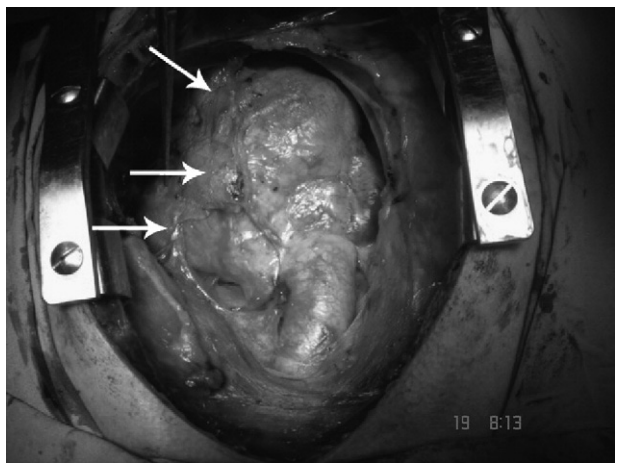

Fig. 3. Arrows point to the location of multiple cysts. Upper arrow: posteroapically located cyst; middle arrow: anteromedially located cyst; lower arrow: anterolaterally located cyst.