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Case report

A multivesicular cardiac hydatid cyst with hepatic involvement

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Abstract

Cardiac hydatid cyst is an uncommon lesion, mostly caused by *Echinococcus granulosus*. Occurrence of the disease in man appears to be limited geographically to areas where close and continuous contact exists between domesticated carnivores such as dogs and ungulates such as cattle and sheep. Generally cardiac hydatid cysts are univesicular. Here we report our clinical and surgical experience of treatment in a case of a multivesicular cardiac hydatid cyst with hepatic involvement. © 1998 Elsevier Science B.V. All rights reserved

Keywords: Cardiac hydatid cyst; *Echinococcus granulosus*

Cardiac hydatid cyst is a rarely occurring disease, seen in 0.4–2% of patients with echinococcosis [1–6]. Hydatidosis is a parasitic infection caused by the larval stage of *Echinococcus granulosus*. Infestation with *Echinococcus granulosus* is usually seen in people with a history of close contact with dogs during their childhood in the sheep-raising areas of the world such as Australia, New Zealand, the Mediterranean countries, the Middle East and South America [6,7]. Surgery is the best treatment for *Echinococcus granulosus* infection [1,2,6–8]. Here we report our clinical and surgical therapy approach in the case of a young woman with multivesicular *Echinococcus granulosus* infection.

1. Case report

A 25-year-old woman was admitted to the hospital with dyspnea, palpitation, weight loss and fatigue which had lasted for 1 year. On physical examination blood pressure was 110/70 mmHg and the heart rate was 120 bpm. Auscultation revealed 1–2/6° systolic murmur at the pulmonic area; 3–4 cm hepatomegaly was noted. No abnormality was found on PA chest X-ray. ECG was normal with sinus rhythm, except from the (–) T waves in V1–V4. All routine blood tests were normal, except for a little eosinophily.

Two-dimensional echocardiography revealed normal dimensions of the left heart chambers, while the right atrium (RA) was enlarged minimally. A multilobular cystic lesion with measurements of 12 × 8 cm filling nearly all the right ventricle (RV) cavity, was seen under the tricuspid valve (Fig. 1). The cyst was in close relation with the diaphragm.

Thoracoabdominal Computerized Tomography confirmed the presence of a hydatid cyst in the RV cavity and showed three other cystic lesions with 4 × 2 × 7 cm dimensions on both hepatic lobes.

The patient was transferred to the Department of Cardiovascular Surgery of the University of Ankara School of Medicine. A median sternotomy incision showed that the cyst was adherent to the heart and diaphragm under the pericardium. Following the initiation of cardiopulmonary bypass (CPB) under mild systemic hypotermi, the heart was arrested with cold potassium cardioplegia. On the inferior side of RV, the wide cyst, adherent to the diaphragm, was seen. As RA approach was not suitable for reaching the cyst, a right ventriculotomy incision was performed after protecting the surrounding tissues with swabs with hypertonic saline. After the cystotomy, numerous daughter cysts ranging from 2–30 mm were observed. The cyst space was adherent to peritoneum passing throughout the diaphragm. The daughter cysts were carefully removed (Fig. 2), and the

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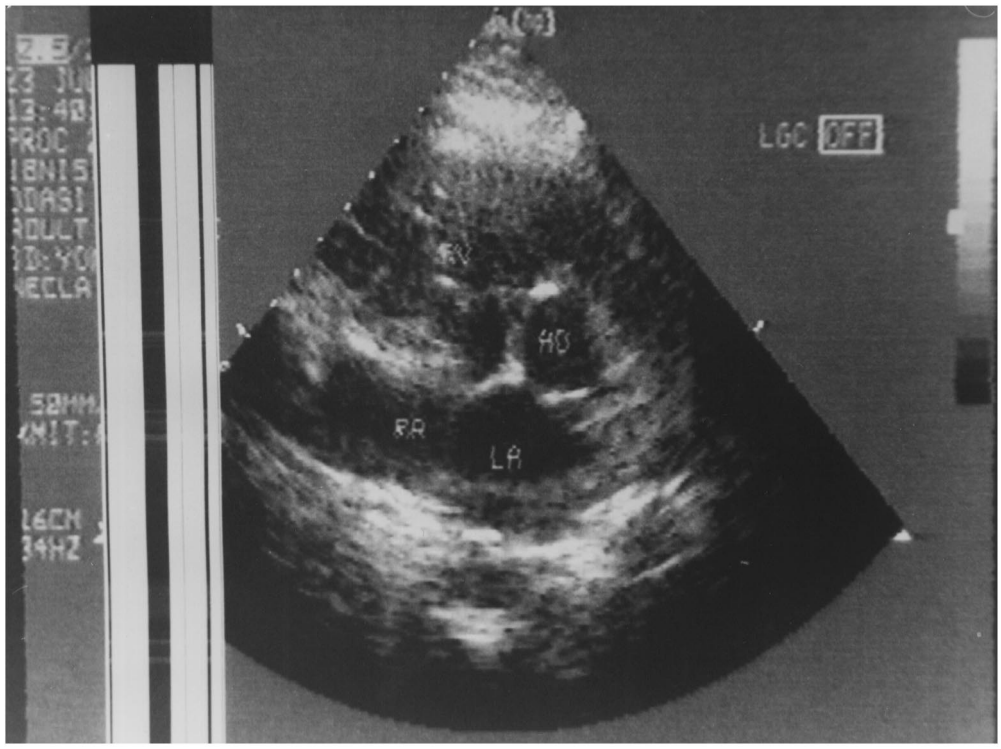


Fig. 1. Echocardiogrpahic view of the cardiac hydatid cyst.

cyst space was plicated following the wash with hypertonic saline (3% NaCl). The diaphragm was sutured with interrupted sutures. The tricuspid valve was intact. Ventriculotomy incision was sutured with Teflon strengthened 3/0 Prolene. CPB was terminated and the patient was transferred to the intensive care unit.

The patient was discharged on the 8th day post-operation, without any complication. After 3 months, she had under-

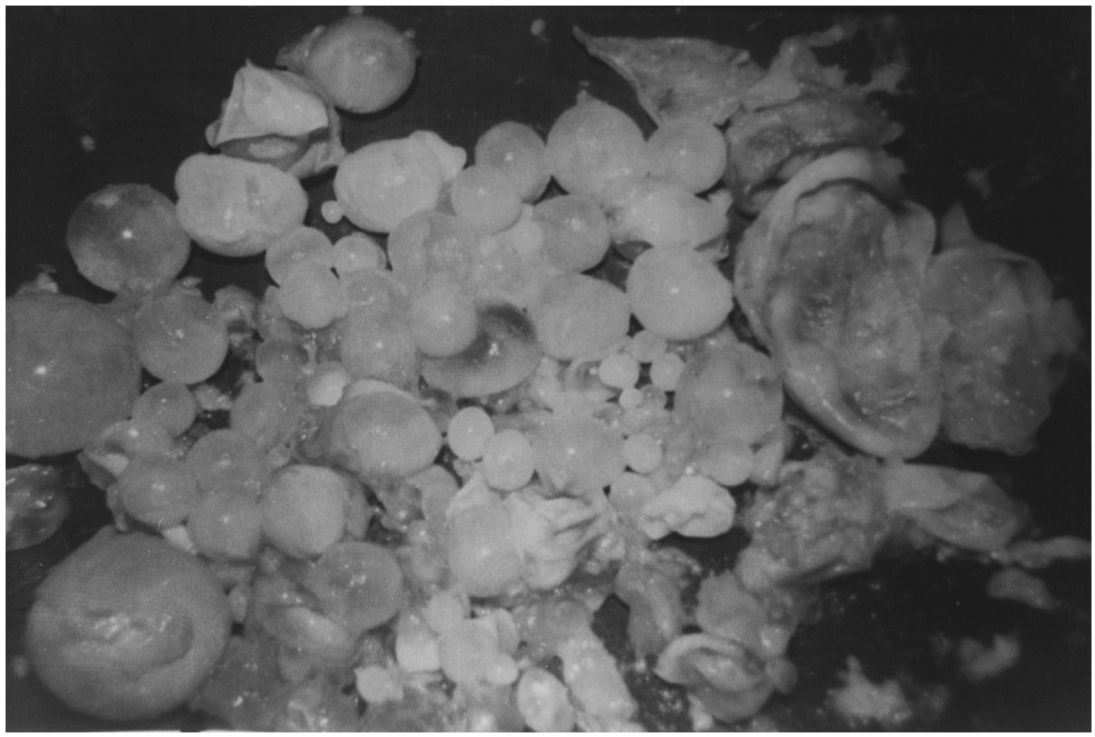


Fig. 2. Cyst material removed by the operation.

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gone hepatic cyst operation. She is now one year post-operation, without any problems, and control echocardiograms and abdominal USG were reported to be normal.

2. Discussion

Hydatid cysts have been known since Hippocrates. The first surgical excision attempt on an *Echinococcus* cyst was done by Marten and DeCrespigny in 1921. In 1932, Long performed the first successful cyst operation [8,9].

Among 12 reported types of *Echinococcus*, *Echinococcus granulosus* is the most common in humans [1,2]. In the usual natural setting, the dog and the goat or sheep serve as definitive and intermediate hosts, respectively. Man is only an accidental and incidental host in nature [7].

In humans the most frequent location of the helminth is the liver (55–70%) [2,8]; it can be also seen in the lungs, peritoneum and, very rarely, in other tissues. There are many reports of cardiac *Echinococcus granulosus* (0.4–2%) [1,2]. Clinical signs of cardiac echinococcosis depend on the location of the parasite, and its growth, in the organ [8].

The helminth usually reaches the heart with the coronary circulation [2]. It grows slowly in the myocardial tissue and, within 1–5 years, forms the actual cyst [2,7,8]. The cyst contains of an outermost protective membrane called the pericyst layer, a laminated membrane and a germinal layer containing hydatid fluid [1,7]. Sometimes, while a unilocular hydatid cyst is growing unnoticed in the intermediate host, something quite unique and distinctive takes place in the interior of the cyst; small replicas of the original hydatid cysts are formed with a typical outer laminated membrane and inner germinative layer, viable scolices and regular hydatid fluid. These miniature hydatid cysts range in size from a few millimeters to several centimeters. There are two theories regarding daughter cyst formation, one is trauma and the other is separation of parasite from host. If cyst contains no daughter cyst, it is termed 'univesicular'; if it contains one or more daughter cysts it is then termed 'multivesicular' [7]. Here we report a 'multivesicular cardiac hydatid cyst with hepatic involvement'.

The pericystic growth of a viable hydatid cyst may determine the outcome, such as rupture into the heart chambers or pericardial cavity, compression of the coronary vessels with resultant myocardial ischemia, disturbances of the conducting mechanism of the heart, obstruction of the ventricular outflow tract and pulmonary emboli [2,5,6,10].

Although we have published a pediatric case, cardiac hydatid cysts are reported to be rare in those under 20 years of age [1,2,8].

Echocardiography is the popular non-invasive method in the diagnosis of cysts before operation [4].

Surgery performed with CPB is urged because there is no safe way to predict the necessity of bypass during removal of such a cyst. In superficial cysts, excision can be performed in beating hearts after emptying the heart by CPB. In other situations, cyst excision will be safer with ischemic arrest of the heart by topical hypothermia and cold hyperpotasemic cardioplegic infusion.

Though successful results are reported with mebendasole and albendasole; surgical therapy is the most favorable method in cardiac hydatid cysts since medical treatment is not safe for rupture and embolization.

Some authors suggest using albendasole as supportive therapy for surgery, to decrease the recurrence incidence [1,2,4,6,8,9]. We used albendasole in this case.

The heart is not the primary organ affected by hydatid cysts. Cardiac hydatid cysts are usually univesicular, multivesicular cardiac hydatid cysts are rarely seen. Diagnosis can be easily made with non-invasive methods, especially with echocardiography.

In conclusion, cardiac hydatid cyst should be kept in mind in multivisceral hydatidosis in sheep-raising areas of the world.

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