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Cardiac Echinococcosis

Maryam Esmaeilzadeh, Arezou Zoroufian and Hossein Ali Bassiri
Department of Echocardiography, Shahid Rajaei
Cardiovascular Medical Center, Tehran, Iran

Abstract: Hydatid disease is a parasitic infestation caused by the larvae of the tape form Echinococcus. Cardiac involvement is rare, with a reported occurrence between 0.02- 2%. Primary involvement of the heart usually occurs via coronary arteries. Secondary involvement of the heart occurs from hydatid disease of adjacent organs, such as lungs or liver. Cardiac localization usually seen in adults and carries a significant risk of potentially lethal complications. Cardiac hydatid cysts are mostly intramyocardial. We present a 34-year-old woman with a hydatid cyst in the right ventricle. The diagnosis confirmed by echocardiographic, radiologic, serologic and histologic findings. Following albendazole therapy for 3 weeks, she was operated and a large alive cyst was removed.

Key words: Hydatid cyst, cardiac echinococcosis

INTRODUCTION

A 34-year-old lady presented to our Hospital for more diagnostic evaluation of probable cardiac mass. She suffered from atypical chest pain for a long time. A limited echocardiographic study on another center showed a cardiac mass. She had previous history of three times surgery for brain and liver hydatid cysts 15 and 6 years ago, respectively. On physical examination there was elevated jugular venous pressure, normal S_1 and S_2 with no heart murmur. Laboratory data was unremarkable except for 10% eosinophilia. ECG was normal.

Transesophageal echocardiography was done and a very large (45 x 37 mm) intramural heterogeneous sessile mass was detected in posteromedial side of the right ventricular free wall with bulging into the cavity without hemodynamic disturbance. There is also a large (20 x 21 mm) cystic echolucent septated space with small echodense mobile particles within the mass (Fig. 1). Right Ventricle (RV) was mild to moderately enlarged with mild dysfunction and minimal localized pericardial effusion around it.

CT-angiography was performed and a round, well defined septated, soft tissue density mass (38 mm) in RV was detected causing septal deviation and right ventricular dilation. Fine calcified rim, loculated pericardial effusion with thickening of pericardium (pericarditis), calcified hydatid cyst in the liver also was evident in computed tomography. In abdominopelvic sonography a large cystic lesion (44x40 mm) with echogenic debris was seen in right ovary. After a short time treatment with albendazole, off pump cardiac surgery was done and after

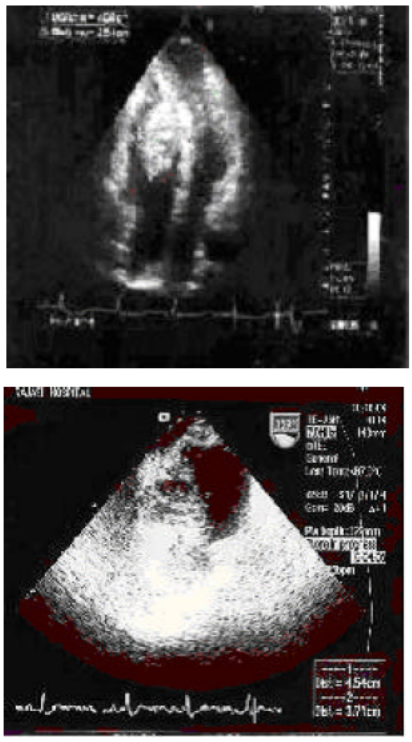

Fig. 1: Left: Transthoracic apical 4 chamber view show large intramural nonhomogenous RV mass which occupies RV cavity. Right: Transesophageal view show large septated echolucent cystic RV mass with small echodense masses within it (daughter cyst)

Corresponding Author: M. Esmaeilzadeh, Shahid Rajaei Cardiovascular Medical Center, Tehran, Iran

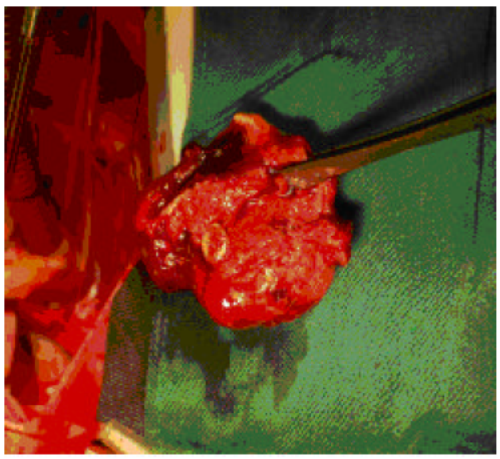

Fig. 2: Surgical view of resected RV hydatid cyst

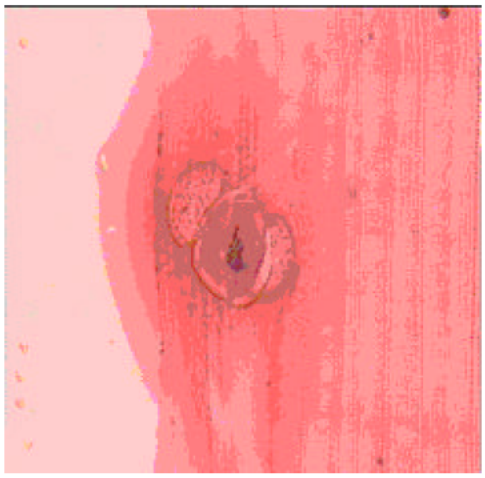

Fig. 3: Microscopic examination of removed hydatid cyst

injection of hypertonic saline solution within the cyst, it was removed from inferior (diaphragmatic) aspect of the heart (Fig. 2).

In gross pathology the specimen consist of multiple fragments of membranous, smooth and white tissue. Microscopic findings show fibrous, laminar land of germinative layer with areas of fibrosis and inflammatory cells infiltration composed of eosinophils, lymphocytes and giant cells which confirmed the cardiac hydatid cyst Fig. 3. Post operative course was uneventful and the patient was discharged on continued medical therapy.

DISCUSSION

Hydatid disease is a parasitic infestation caused by the larvae of the tape form Echinococcus. *Echinococcus granulosus* is the species that most commonly infects humans. The parasite requires two hosts in its life cycle-a definitive host (usually a dog) and an intermediate host (humans). Humans are infected by direct contact with an infected dog or by ingestion of contaminated food. Echinoccocal embryos migrate through the intestinal venule and lymphatic and arrive the liver in 60-70% of cases[1]. If embryos bypass the liver, they reach the systemic circulation and carried by the bloodstream to any organ in the body. Cardiac involvement is rare, with a reported occurrence between 0.02- 2% of all hydatid disease[2-5]. Primary involvement of the heart usually occurs via coronary arteries. Secondary involvement of the heart occurs from hydatid disease of adjacent organs, such as lungs or from the dome of the liver in which abdominal cysts prolapse through the diaphragm[1,2]. The left ventricle is affected most often (50-70%), followed by right ventricle, pericardium (15-20%) and interventricular septum (5-15%)[1,3,5].

Symptoms, signs and potential complications depend on the location of the cysts[2]. In the early period, cysts grow slowly between cardiac fibers without causing any symptoms. As the cysts reach a reasonable size, fever, palpitation, arrhythmias and heart failure can occur. One of the major complications is tamponade caused by rupture of the cyst into pericardium. Other complications are cardiac block, myocardial infarction and aneurysm of the left ventricular wall[2,3,6]. Therefore early and prompt diagnosis is crucial.

In the radiologic diagnosis of cardiac hydatid disease, echocardiography, CT, MRI might be used. Echocardiography shows the cystic nature of the mass. It also may define the internal septa. Echocardiography has a limited field of view (especially of lesions located behind the sternum) and may fail to indicate whether the lesion is pericardial or myocardial or sometimes the echo lucent and multi-septated nature of echinoccocal lesions may be absent. Also, echocardiography cannot be used to differentiate hydatid cysts from congenital pericardial lesions. Computed tomography and MRI are superior to surrounding tissues. Calcifications are best seen on CT[2,6,7]. Detecting small calcifications may be important in providing a clue for diagnosis of hydatid cyst. Calcifications may occur when the parasite is still alive[2,6]. On the other hand, calcification of the cyst itself indicates the death of the cyst[4].

The differential diagnosis of cardiac hydatid disease, other cystic masses and tumor-like lesions of the heart such as myocardial aneurysms, pericardial cysts and pleuropericardial masses always should be considered[6,7].

The curative management of echinococcus granulosus is surgical removal. However medical management can be very helpful and supportive if started before surgery. Medical treatment may be initiated with

albendazole by using five cycles of thirty days (10mg/kg/day with rest periods of two weeks between cycles). Surgical removal usually includes sterilization of the cyst before enucleation by injection 30% hypertonic saline solution, 1% iodine solution or 2% formalin. This precautionary measure is performed to prevent dissemination of the infection in case of ruptured cyst. Fortunately, mortality is relatively low. Routine echocardiographic screening may be useful in endemic regions and in cases of hydatidosis of other organs[1,4].

CONCLUSION

In cardiac hydatid disease, echocardiography is especially useful for the detection of the cystic nature of the lesion. Computed tomography best shows the wall calcification and may provide the differential diagnosis of calcified cardiac and pericardial masses, MRI depicts the exact anatomic location of the cyst and the nature of both internal and external structures.

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