Case report - Cardiac general

Intramyocardial hydatid cyst: a mistaken identity and its successful removal on a beating heart


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Abstract

Hydatid cyst of the heart is a rare but potentially fatal disease. There have been reports of the occurrence of such cysts, but we present here a unique experience of mistaken identity of a right ventricular intramyocardial hydatid cyst for a mediastinal hydatid cyst, leading to a dangerous intraoperative procedure.

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1. Case history

A 19-year-old female presented with severe retrosternal chest pain that had lasted for two months with a recent onset of dyspnoea, palpitation, syncope and low-grade fever. There was no history of rearing pet animals. On clinical evaluation, the heart rate, rhythm, systemic pressure and jugular venous pressure were normal. Heart sounds were normal, and there was no murmur. Bilateral breath sounds were normal. The abdomen was normal on clinical evaluation. Her haematological parameters, coagulation profile and routine renal and hepatic biochemical blood parameters were within normal limits.

The ECG was normal except for showing T-wave inversion in limb leads oriented to the inferior chest wall. The chest X-ray showed a clear bulge on the left border of the cardiac silhouette just below its apex (Fig. 1), with normal lung fields. A computed tomography (CT)-scan revealed a large, multiloculated cystic lesion, suggestive of a hydatid cyst, in the mediastinum just below the heart and displacing it upwards, causing external compression of the right ventricle and right atrium extending deep into the mediastinum, with normal lung fields and liver. Ultrasound evaluation of the abdominal organs was normal. Echocardiography showed a large extracardiac mass containing multiloculated cysts, compressing the right atrium and the right ventricular inflow, and causing a pressure gradient of 8 mmHg across the tricuspid valve. The heart valves were normal with normal ventricular function, and there was no enlargement of the cardiac chambers. Serological evaluation supported the diagnosis of a hydatid cyst, with indirect haemagglutination and Western blot tests being positive.

With the plan of enucleating the mediastinal hydatid cyst, a median sternotomy was carried out. A large cyst of 6 cm × 12 cm with a thick wall was found to be situated on the central tendon of the diaphragm, extending deep into the mediastinum and also to the right of the heart. The cyst was opened, and numerous daughter cysts were evacuated (Fig. 2). At the time of retrieval of the last few daughter cysts, the diaphragmatic surface of the right ventricle ruptured, with severe bleeding that was managed successfully with control by fingers and suturing of the ventricle with Teflon felts. On careful inspection, it was then realised that the main cyst wall was separable from the diaphragm but not from the undersurface of the heart, where thinned-out and stretched myocardial fibres were found in the bed of the cyst wall. The cyst wall on the diaphragm was separated and excised, but the part of the cyst wall incorporated into the wall of right ventricle was left behind. Cetrimide 1% was used as the topical scolicidal agent in the surrounding operative field. The sternum was closed after placing the chest drains.

There were no postoperative events. A postoperative ECG and echocardiogram ruled out myocardial ischaemia and ventricular dysfunction. The patient received oral albendazole (400 mg) twice daily continuously from two weeks prior to the operation until six months after surgery. A histopathological study of the specimen confirmed it to be a hydatid cyst. Echocardiographic evaluation during the follow-up period of three years revealed no evidence of recurrence of hydatids, and ventricular function remained normal.

2. Discussion

Hydatidosis, a parasitic infection caused by Echinococcus granulosus, is a zoonosis. The life cycle of this cestode/tapeworm involves dogs and other canids as definitive
hosts, and domestic and wild ungulates, usually sheep, as intermediate hosts. Human beings are only incidental intermediate hosts. The infection, often acquired in childhood during play with infected dogs, is most common in sheep-raising areas of the world [1].

Hydatid cyst of the heart is an uncommon lesion. The most frequent locations of hydatid cysts in humans are the liver (65%) and lungs (25%), with only 0.5–2% of cases located in the heart [2, 3]. The most common location of cardiac hydatid cysts has been reported in different series in varying locations, such as the left ventricle, interventricular septum and right ventricle, whereas hydatid cysts in the pericardium, right atrium or left atrium are very rare [2, 4–6]. After infection, the embryo usually reaches the myocardium via the coronary circulation from the left side of the heart. The cyst is then formed within a period of one to five years. Myocardial reaction consists of a fibrous adventitial pericyst layer surrounding the laminated membrane [7].

Cardiac hydatidosis tends to manifest in individuals over the age of 20 years [2, 8]. Clinical signs and symptoms vary according to the number, size, site and effect of the cysts. The usual manifestations reported are dyspnoea, chest pain and palpitations [4, 5]. Echocardiography remains the most reliable diagnostic measure [4]. The recommended treatment is enucleation of the cyst under cardiopulmonary bypass with topical scolicidal agents in the surrounding operative field [4, 5].

The experience that we have reported is unique in the literature as the cardiac hydatidosis was initially mistaken for mediastinal hydatidosis despite meticulous preoperative assessments including an echocardiogram and CT-scan. Even intraoperatively it could not be suspected as there was no need to open the pericardium, and the cardiac pulsations were not appreciated due to the presence of innumerable small cysts extending continuously from the diaphragm to the ventricular wall.

It is prudent to consider the possibility of cardiac hydatidosis whenever hydatidosis is found in the mediastinum, especially in the vicinity of the heart, so that resection can be undertaken with precautionary measures, such as preparation for the establishment of cardiopulmonary bypass.

References


