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Hydatid Cyst of the Cardiac Interventricular Septum

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Cardiac hydatidosis is a rare condition, particularly when the cyst is localised in the interventricular septum. We describe this unusual presentation of echinococcosis in a 21-year-old man, who was admitted with chest pain, dyspnea and a history of two episodes of fever with chills and rigors. Echocardiographic evaluation revealed a cystic mass with multiple loculations in the interventricular septum of the heart, extending into posterior left ventricular wall. Magnetic resonance imaging showed a hypointense cyst in the interventricular septum. The haemogram showed an eosinophil count of 24%. The patient underwent surgery. The hydatid fluid was drained, daughter cysts and hydatid sand removed, and the cyst cavity was closed after instillation of 20% hypertonic saline. On gross examination of the material, glistening, multiple pieces of cystic membrane were seen. Microscopic examination showed acellular chitinous, laminated membranes, granular germinal layer and few degenerated brood capsules and protoscoleces. Post operatively, an echocardiogram showed a sclerosed cyst cavity. There was no septal defect and the patient was asymptomatic when discharged.

Key words: Hydatid, echinoccocosis, cardiac interventricular septum.

Cardiac echinococcosis is rare even in endemic areas. Cardiac implantation of a hydatid cyst is uncommon because cardiac contraction provides an unfavorable environment for the cysts. While cardiac echinococcosis may be asymptomatic in some cases, a number of serious and lethal complications have been described. [1,2] Diagnosis is difficult because specific clinical signs are absent.[3] The present report describes a case of hydatid cyst located on the interventricular septum of the heart.

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Case report

A 21-year-old man was admitted with chest pain, dyspnea and a history of two episodes of fever with chills and rigors. After admission he developed tachycardia, hypotension and breathlessness, which were suggestive of anaphylaxis. An electrocardiogram showed T wave inversion in leads II, III, avF and V4-V6, with a sinus rhythm. Chest X-ray was normal. Echocardiographic evaluation revealed a cystic mass with multiple loculations in the interventricular septum of the heart, extending into posterior left ventricular wall. There was no pericardial effusion and valves were normal. Magnetic resonance imaging showed a hypointense cyst in the interventricular septum. An ultrasonographic examination of the abdomen revealed no abnormalities. The patient underwent

surgery for removal of the cyst under cardiopulmonary bypass. The hydatid fluid was drained, and the daughter cysts and hydatid sand were removed. After having confirmed that there was no communication between the cyst cavity and the ventricular chambers, 20% hypertonic saline was instilled. The cyst cavity was then closed. The patient was started on albendazole (400mg twice daily). Post operatively, an echocardiogram showed a sclerosed cyst cavity. There was no septal defect and the patient was asymptomatic when discharged.

An ELISA test carried out on the serum of the patient was reactive for IgG antibodies to E.granulosus. The haemogram of the patient showed an eosinophil count of 24%. Gross examination of the cyst material showed multiple glistening pieces of cystic membrane. The largest membrane measured 5 x 1.5 cm. The cyst had the appearance of the white of a hard boiled egg (Fig. 1.). On incision, the membranes curled on themselves, Microscopic examination of the cyst material showed acellular chitinous, laminated membranes, with a granular germinal layer (Fig. 1.) and few degenerated brood capsules and protoscoleces. No adventitial layer (pericyst) was seen. The pericyst had not been removed due to its location in the interventricular septum. Gram stain of the fluid showed numerous pus cells and no organisms. The fluid was sterile on culture. A haematoxylin eosin stain of the fluid showed necrotic debris, acute inflammatory cells with eosinophilic exudate.

RESULTS AND DISCUSSION

Hydatidosis in humans occurs when the eggs of Echinococcus granulosus from faeces of definitive hosts (dog and allied animals) are ingested. In the duodenum, hexacanth embryos hatch out from the eggs. The embryos pass through the wall of the gut into the portal system and are carried to the liver where nearly 65% of the larval load is filtered. The remaining embryos may reach the pulmonary circulation, where 25% are trapped and filtered. Less than 10% reach various organs through the systemic circulation.[4] Wherever the embryo settles, an active cellular reaction occurs in the host tissue, which destroys many of the parasites. Some embryos escape destruction and develop into hydatid cysts. Fibroblasts appear around the cyst, and there is development of new blood vessels. Ultimately a fibrous layer is formed around the growing embryo, which is known as the pericyst. The parasite derives nourishment through it.

Cardiac hydatidosis occurs rarely, with a frequency of only 0.5-2%.[5] In the heart, the commonest site of involvement is the left ventricle.[6] The interventricular septum is involved only in 5-9% of all cases of cardiac hydatidosis.[7] Hence, a high level of clinical suspicion is required to reach a diagnosis. The cyst may remain asymptomatic in some cases. In others, it may cause obstruction in the chamber of the heart or induce conduction disturbances.[8] Rupture of the cyst may result in anaphylactic

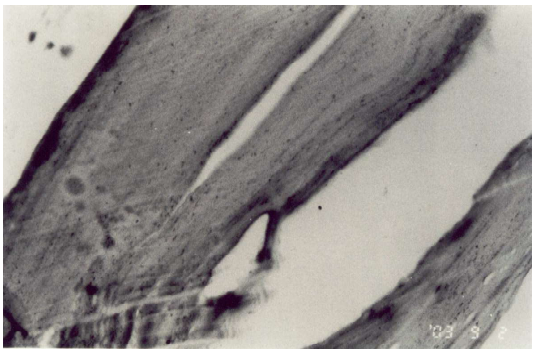

Fig. 1. Microphotograph showing acellular chitinous, laminated ectocyst, with a granular germinal layer (H&E, × 400).

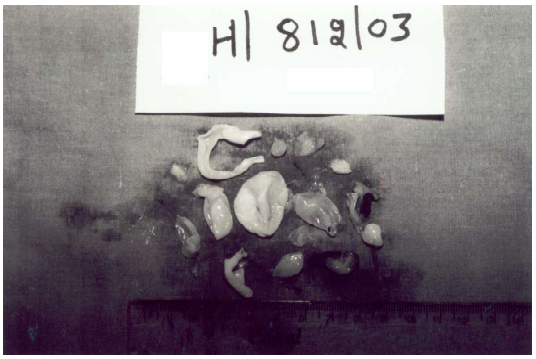

Fig. 2. Multiple glistening pieces of cystic membrane. Largest membrane measures 5 × 1.5cm

shock, pulmonary embolism and systemic metastasis.[8]

This patient had features of anaphylaxis pre operatively, during hospital stay. This may have occurred because of some leakage of the hydatid fluid from the cyst. Hydatid fluid is highly toxic and is known to cause anaphylaxis. The abnormal ECG findings can be attributed to conduction disturbances. The symptoms of chest pain and dyspnoea were probably due to obstruction in the chamber of the heart and some amount of myocardial ischaemia due to compromised vascularity.

CONCLUSION

In view of the high risk of lethal complications following cardiac hydatidosis, it is necessary to keep in mind a differential diagnosis of cardiac hydatidosis whenever there is a space occupying lesion in the heart. Since clinical signs and symptoms are often non specific, advanced imaging and serological investigations can indicate the possibility of hydatid disease pre operatively. A pre operative diagnosis is needed to ensure proper precautions to prevent spillage of hydatid fluid during surgery, as absorption of hydatid fluid can cause anaphylaxis.

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