

# Cardiac hydatid cyst in interventricular septum- A rare case report

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## Abstract

Hydatid cyst results from infection from larval or adult form of echinococcus granulosus tapeworm. Cardiac involvement is seen in 0.5 to 1 % of patients with this infection. We report a rare case with interventricular septal involvement with hydatid cyst and its surgical treatment. 54 years old female presented with NYHA class III dyspnea. 2D-TTE was suggestive of large cyst in apical part of IVS. Thoracic CT revealed cystic lesion in IVS extending into Right ventricular cavity. Cardiac MRI showed presence of large cystic lesion in IVS with laminations within suggestive of hydatid cyst. ELISA was suggestive of presence of echinococcus antibodies. Patient underwent surgical excision under cardiopulmonary bypass. Contents of the cavity were carefully aspirated, germinative membrane was removed and whole pericardial cavity washed with 20% hypertonic saline solution. Patient was given pre and postoperative albendazole treatment. The patient recovered uneventfully. Combined treatment with surgery, wash with hypertonic saline and albendazole gives excellent results in cardiac hydatid cyst.

**Keywords:** Albendazole, cardiac involvement, Hydatid cyst, Surgery.

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## INTRODUCTION

Hydatid disease is an endemic disease which has become rare at present. Most common site of hydatid disease is liver.<sup>1,2,3</sup> Heart is very rare organ to be involved. It can give rise to symptoms because of cavity obliteration, vessel compression, wall motion restriction or dissemination in other organs. We hereby present a case of a female who presented with New York Heart Association (NYHA) functional class III dyspnoea. On TTE, Cardiac MRI, thoracic CT, there was a cystic lesion in IVS extending into RV cavity, diagnosed as hydatid cyst. She underwent successful excision of the cyst with uneventful intra and postoperative course.

## CASE REPORT

54-year-old female patient presented with dyspnoea of NYHA functional class III. Physical examination revealed nothing abnormal and the results of routine laboratory tests were normal. An electrocardiogram was normal. A chest radiograph had no abnormal cardiac or respiratory findings. TTE revealed a large cyst in the apical part of the IVS extending in RV cavity (Figure 1a). Cardiac MRI showed cyst measuring 6.3 X 4.8 cm in four chamber view and 4.3 X 4.8 cm in short axis view, extending almost from base to apex with lamination within suggestive of membranes, probably hydatid cyst (Figure 1). Thoracic CT showed a cystic lesion in IVS extending into RV cavity measuring 5.9 X 8.4 X 4.3 cm with membrane within which was communicating with pericardial cavity through left ventricular (LV) apex (Figure 1b). It confirmed diagnosis of hydatid cyst. An enzyme-linked immunosorbent assay (ELISA) was positive for echinococcus antibodies. As imaging showed significantly large size of IVS and RV cavity causing mechanical complication, we decided to excise cyst by open thoracotomy. We subjected patient to coronary angiography (CAG) before cyst excision. All the coronary arteries were normal except compression of distal part of left anterior descending coronary artery (LAD) by hydatid cyst causing distal faint antegrade flow (Figure 1c).

Cardiovascular thoracic surgeon's reference was taken. Patient was posted for surgical excision of cyst by surgeon. With all the aseptic precautions, median sternotomy was done and patient was placed on cardiopulmonary bypass. On visualising heart, there was pearly white out pouching arising from RV apex and densely adherent to pericardium (Figure 1d). There were two cavities which were communicating with each other through RV apex. Contents in the cavity were aspirated carefully taking care not to burst it. Then germinative layer of the cavity was removed and cavity was washed with 20% hypertonic saline solution. Capitonnage (closure of a cyst by applying sutures to approximate the opposing surfaces of the cavity) was performed. Whole thoracic cavity was washed with 20% hypertonic saline. The thoracic cavity was closed properly. The postoperative period was uneventful. TTE done 7 days later showed no evidence of the remnant of the cysts with ejection fraction of 50-55% with mild IVS hypokinesia. Histopathological examination showed necrotic myocardial cells with scolices and hooklets surrounded by granulomatous tissue confirming diagnosis of hydatid cyst. The patient was started on tablet *albendazole* (400 mg twice daily) 5 days before surgery and continued with this therapy postoperatively for 12 weeks. At the routine follow-up examination 3 months postoperatively, patient was in New York Heart Association functional class I.

## DISCUSSION

Hydatid disease is endemic disease transmitted by parasite called *Echinococcus granulosus*. The most common sites of hydatid cysts are the liver (in 50%–70% of cases), lungs (5%–30%), muscles (5%), bones (3%), kidneys (2%), spleen (1%) and brain (1%).<sup>1,2,3</sup> Cardiac hydatid cysts are rare.<sup>4,5,6</sup> The coronary circulation is the main pathway by which the parasitic larvae reach the heart.<sup>7</sup> Left ventricle is most common site (55% to 60%). Less frequently involved are the right ventricle (10%–15% of cases), pericardium (7%), pulmonary artery (6%–7%), left atrium (6%–8%), right atrium (3%–4%) and interventricular septum (4%).<sup>1,6,7,8</sup> Patient may present with cough, dyspnea, chest pain, palpitations. Chest radiographs usually shows a normal cardiothoracic ratio as cyst is intracardiac.<sup>9</sup> TTE is simple and useful in the screening and diagnosis of cardiac hydatid cyst.<sup>6</sup> CT and CMR provide further information such as the extent and anatomic relationships of the cysts.<sup>1,6</sup> Various serological tests to detect antibodies are Enzyme Linked

Immunosorbant assay (ELISA), Western blot test, Polymerase Chain Reaction (PCR) etc.<sup>10</sup> Serologic tests can be false negative in 10% to 20% of patients with hepatic hydatid cysts, 40% with pulmonary cysts and 50% with cardiac cysts.<sup>5,6,11</sup> However ELISA is one of the most specific serologic tests that can be used.<sup>6</sup> Surgical excision is the treatment of choice except in small cysts without mechanical complication and in inoperable cases (eg. High anaesthesia risk).<sup>8,12,13,14</sup> During surgery, the contents of the cyst must be entirely aspirated and the germinative membrane should be removed.<sup>8,13</sup> Although many scolicidal agents have been introduced, none is ideally effective and safe for intraoperative use. 20% hypertonic saline solution is most effective, relatively nontoxic scolicidal agents.<sup>14</sup> Capitonnage can also be performed.<sup>15</sup> Albendazole therapy (400 mg twice daily) is typically prescribed for at least 4 days preoperatively and for 4 to 12 weeks postoperatively.<sup>8,9,14</sup> In the present case the patient was symptomatic due to cardiac hydatid cyst. TTE, CT, Cardiac MRI diagnosed and characterised the cyst. CAG showed compression of distal LAD by cyst. So it was decided to excise the cyst by open thoracotomy. Meticulous dissection, use of scolicidal agent and capitonnage was done during surgery. The surgery was successful and patient was stable after surgery.

## CONCLUSION

Cardiac hydatid cysts are rare and often asymptomatic in their early stages. Therefore clinical suspicion is important for early diagnosis. Echocardiography, CT and CMR are useful in the diagnosis and characterisation of the cysts. Surgical removal is treatment of choice. During surgery, meticulous dissection, washout of the remaining cavity with scolicidal solution, removal of cavity completely and concurrent albendazole therapy typically yield excellent results.

## ABBREVIATIONS

CAG- Coronary angiography, CT-Computed tomography, ELISA- Enzyme linked immunosorbant assay, IVS-Interventricular septum, LAD-Left anterior descending, MRI-Magnetic resonance imaging, NYHA-New York Health Association, TTE-Transthorasic echocardiography.

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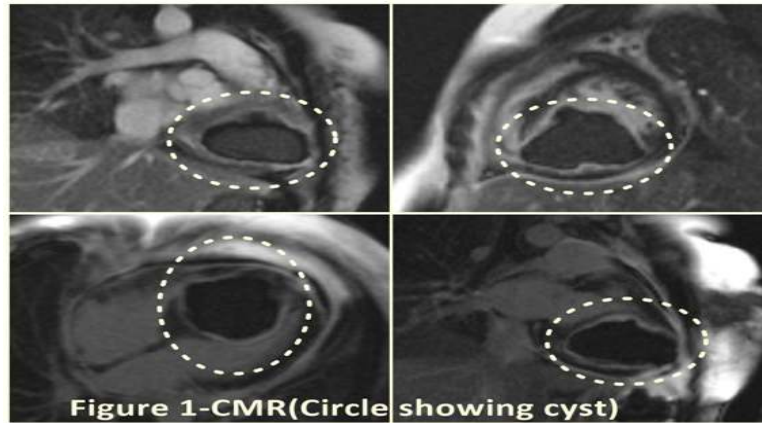


Figure 1: CMR (circle showing cyst)

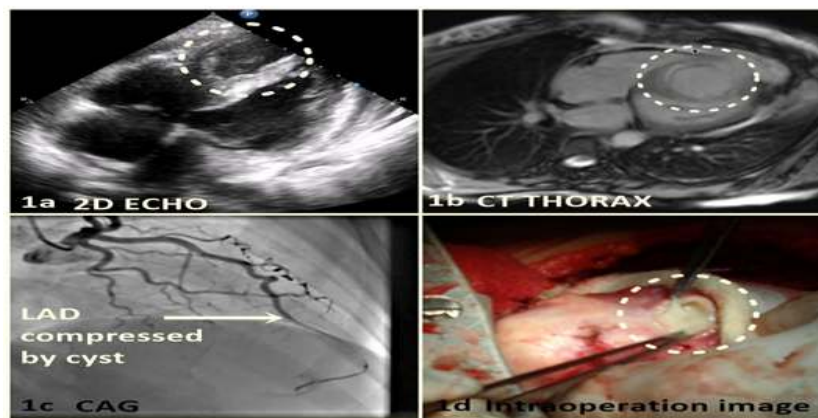


Figure 1: a) 2 D echo b) CT thorax c) Cag d) Intraoperation image

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