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Surgical excision of the right ventricular hydatid cyst: a case report

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ABSTRACT

Hydatid cyst is described as an endemic situation predominantly observed in different undeveloped regions of the world which is caused by Echinococcus granulosus tapeworm. This disease usually affects the lungs or liver. Cardiac location is reported in less than 2 % to 0.5% of patients in all cases and as in our case the intraventricular location is seen seldomly. A 38-year-old female patient with diagnosed systemic hydatid cyst disease was consulted with chest pain, palpitation, and shortness of breath. Transthoracic echocardiography and cardiac computerized tomography imaging showed the location of the cardiac hydatid cyst was the right ventricle. She underwent elective surgery swiftly and was discharged uneventfully.

Keywords: Cardiac hydatid cyst, right ventricle, surgical excision

Cardiac Hydatid Cyst (CHC) is an endemically seen disease which is caused by Echinococcus granulosus tapeworm. Lungs and liver are the most seen localizations when compared to cardiac involvement (2% to 0.5%) CHC is a well-known disease that has been reported for a long period [1]. Right ventricle localization may result with severe arrhythmias, infectious metastasis, multi-organ insufficiencies, and sudden death. Diagnostic tools are transthoracic echocardiography, computerized tomography (CT), and/or cardiac magnetic resonance imaging. The treatment method for cardiac CHC is surgery [2].

CASE PRESENTATION

A 38-year-old female patient with CHC was consulted to our department for surgery due to worsening complaints of chest pain, shortness of breath, and palpitation. She was living in a rural area. CT Images showed pulmonary hydatid cyst disease in multiple localizations besides CHC large as 8×8×8 cm (Fig. 1A). There were no signs of further disease in the liver and cranium. A transthoracic echocardiography also supported the diagnosis by revealing CHC in the right ventricle as 8×8 cm in diameter (Fig. 1B). On her physical examination, a 4/6 systolic murmur was auscultated on the left chest precordial area. With a sinus rhythm electrocardiogram showed a rate of regular 90 beats and the routine laboratory tests were within normal limits except for a raised eosinophil count. Her medical history recorded neither a prior surgery nor serious diseases. We discussed the diagnostic images and the clinical conditions by radiological presentation with radiologists, preoperatively. Cystic mass with

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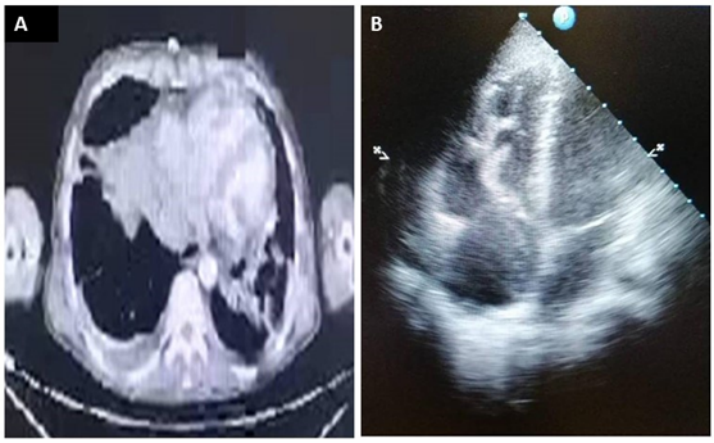

Fig. 1. (A) Computed tomographic images of cardiac cydatid cyst, (B) Transthoracic echocardiography images of cardiac hydatid cyst.

thin and regular walls was reported as almost filling the right ventricle chamber.

After general anesthesia, a median sternotomy was performed. After opening the pericardium, the structure of the cyst was palpable over the right ventricle (Fig. 2A). Conventional cardiopulmonary bypass and cardiac arrest were applied via aorta-bicaval cannulation and antegrade cardioplegia. The polyvinyl-iodine-soaked towels were placed into the pericardial area to avoid further local contamination. The cardiac ventriculotomy incision was applied parallel to the interventricular septum and left anterior descending coronary artery (Fig. 2B). The cyst was reached by performing some blunt dissection on both sides. CHC

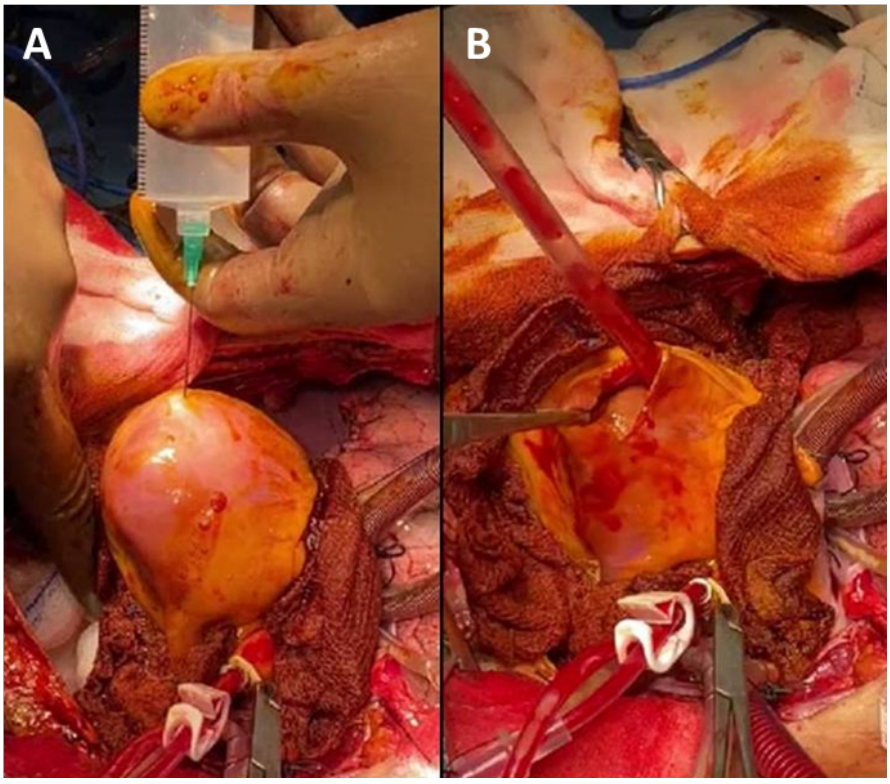

Fig. 2. (A) Cardiac hydatid cyst palpable in the right ventricule, (B) Right ventriculotomy incision.

opened via a direct approach. The cyst content was aspirated almost totally by a syringe with hypertonic NaCl solution and replaced with adequate amounts of polyvinyl iodine, oppositely. The germinal cyst membranes were removed with utmost care (Fig. 3A). Afterwards, the cavity was washed with hypertonic and iodinated solutions again, after a total removal of the cyst. The right ventriculotomy incision was closed by cappitonage technique, and the area was secured with a fibrin sealant agent (Fig. 3B). Rest of the surgery was achieved conventionally without any complication. Then, the patient was transferred to the cardiovascular surgery intensive care unit. The postoperative period and necessary specific hydatid cyst medical treatment continued with a multi-disciplinary approach with the infectious diseases department. She was discharged on postoperative day eleven with albendazole treatment aside from our cardiac postoperative medical protocol.

DISCUSSION

Cardiac echinococcosis is rare. Among all cases, it is observed by a rate of lower than 2%. Parasites may present themselves by the larval stages in any organ as in the pleural cavity, pulmonary areas, intra-cranially, or abdominal cavity. The parasite larvae may gain access to blood and/or portal circulation after it is taken by contaminated food as a primary source [3].

Diagnosis is an indication for surgery for CHC cases. Severe and life-threatening complications may occur by cyst rupture. Several medical studies report that distally embolism to the brain and other visceral areas may have relevant complications such as epilepsy and internal organ acute insufficiencies that lead to death are well known to occur. For these reasons and cardiac tamponade, cardiac vulvar dysfunctions, acute carotid vessel occlusion, and pulmonary risks due to CHC, surgery should not be delayed.

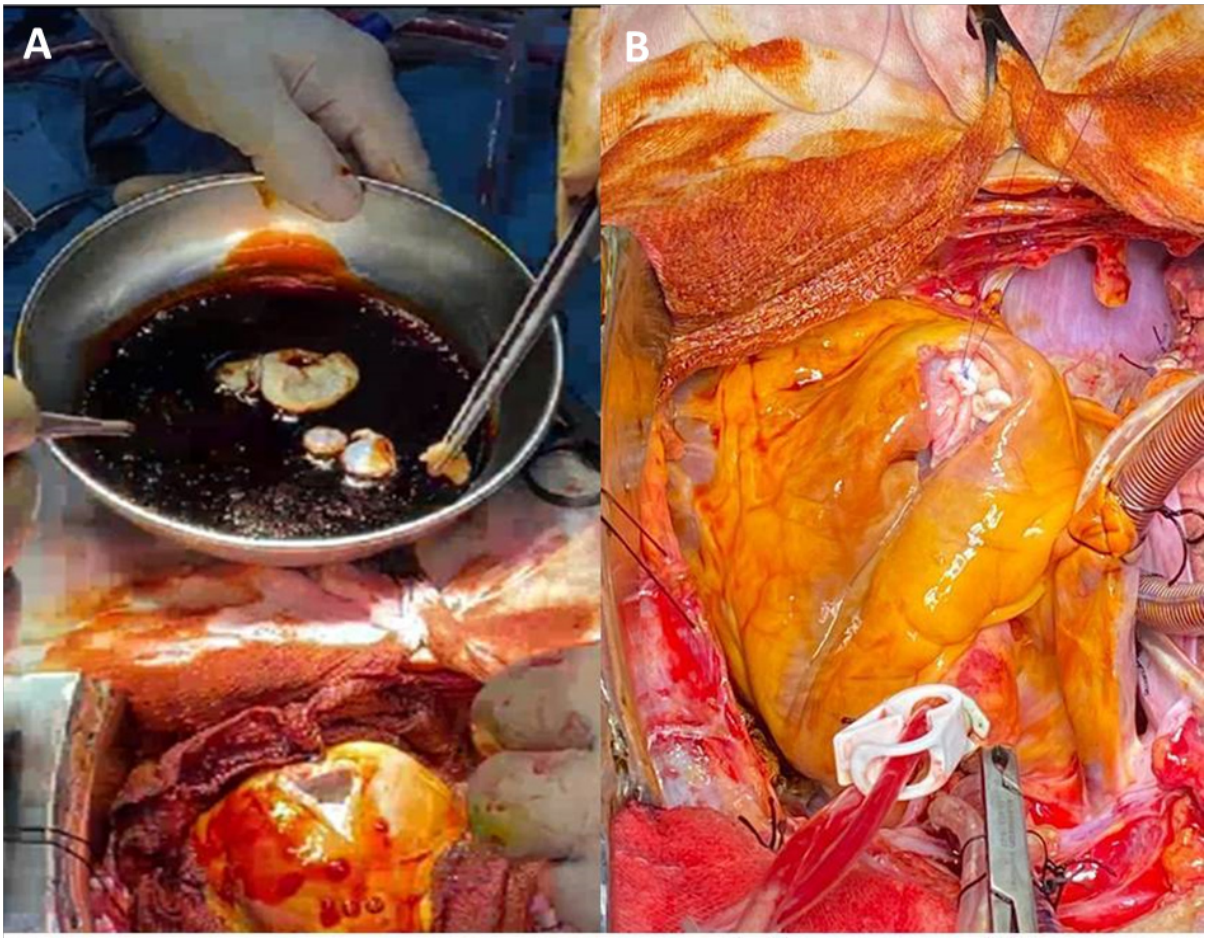

Fig. 3. (A) Germinal membrane removal and excision of cardiac hydatid cyst, (B) Right ventriculotomy closure.

Furthermore, a differential diagnosis of cardiac tumors and myxomas should always be excluded before CHC surgery [4, 5].

In our opinion, the majority of the symptoms of this patient may be due to rhythm irregularities, which may be associated with hemodynamic changes induced by this large hydatic cyst.

CONCLUSION

CHC is a rare medical condition and may present with various clinical observations. Although dyspnea, palpitations, shortness of breath with exertion, and heart murmur primarily suggest heart valve disease, the cause of this whole picture may also be a hydatid cyst. After a clinical suspicion, definite diagnosis is possible by CT and echocardiography. Early diagnosis should lead to a quick surgical treatment. Preoperative prolonged medical treatment may result in mortality. Accordingly, diagnosis is an indication without delay for surgery.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying pictures or data.

Authors' Contribution

Study Conception: MA, MY, ST, CM; Study Design: MA, MY, ST, CM; Supervision: MA, MY, ST, CM; Funding: N/A; Materials: MA, MY; Data Collection and/or Processing: MA, MY, ST, CM; Statistical Analysis and/or Data Interpretation: MA, MY, ST, CM; Literature Review: ST, CM; Manuscript Preparation: ST and Critical Review: MA, MY, ST, CM.

Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

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