

# Invasive pericardial hydatid cyst: Excision of multiple huge cysts



Jignesh Kothari<sup>a</sup>, Ketav Lakhia<sup>a,\*</sup>, Parth Solanki<sup>a</sup>, Sahil Bansal<sup>a</sup>, Hiren Boraniya<sup>a</sup>, Himani Pandya<sup>a</sup>, Himanshu Acharya<sup>a</sup>

<sup>a</sup>U.N. Mehta Institute of Cardiology and Research Center, (Affiliated to B.J. Medical College), Civil Hospital Campus, Asarwa, Ahmedabad

<sup>a</sup> India

Cardiac hydatid cyst is rare even in endemic countries, and poses a therapeutic challenge due to varying presentation and unpredictable pre-, peri-, and postoperative complications. We herein present a case of multiple, multifocal, huge pericardial hydatid cyst, with invasion into the left ventricle and main pulmonary artery in a young male patient, presented with atypical chest pain.

© 2016 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

**Keywords:** Albendazole, Cystectomy, Echinococcosis, Pericardial hydatid cyst

## Introduction

Cardiac hydatidosis is a rare though serious complication of hydatid disease caused by the larval stage of cystode tapeworms *Echinococcus granulosus* and *Echinococcus multilocularis*. Echinococcosis mainly involves liver (65%) and lungs (25%) with rare cardiac involvement even in endemic areas (0.05–2% of all registered echinococcosis cases) [1]. Diagnostic dilemma is due to the vague clinical scenario as the patient may be asymptomatic for a long period or may present with atypical chest pain, dyspnea, cough, or nonspecific symptoms. Around 10% of the

patients are symptomatic [2]. Cardiac hydatid cyst can be intramyocardial or pericardial with rare pericardial involvement. The most common site of cardiac involvement is the left ventricle (LV; 60%), followed by right ventricle (15%), interventricular septum (9%), left atrium (8%), and right atrium (4%) [1]. Echocardiography is usually diagnostic and computed tomography scan and magnetic resonance imaging may aid in the diagnosis. Prompt diagnosis and early surgical excision provide excellent outcome because of high chance of lethally dangerous complications e.g., cyst rupture into pericardial or ventricular cavity, cardiac tamponade, pulmonary embolism, and anaphylaxis. Invasion into major cardiac

**Disclosure:** Authors have nothing to disclose with regard to commercial support.

Received 16 March 2016; revised 28 April 2016; accepted 8 June 2016.  
Available online 16 June 2016

\* Corresponding author at: Department of Cardio vascular and Thoracic Surgery, U.N. Mehta Institute of Cardiology and Research Center, (Affiliated to B.J. Medical College), New Civil Hospital Campus, Asarwa, Ahmedabad 380016, Gujarat, India.  
E-mail address: [ketavtl@gmail.com](mailto:ketavtl@gmail.com) (K. Lakhia).



P.O. Box 2925 Riyadh – 11461KSA  
Tel: +966 1 2520088 ext 40151  
Fax: +966 1 2520718  
Email: [sha@sha.org.sa](mailto:sha@sha.org.sa)  
URL: [www.sha.org.sa](http://www.sha.org.sa)



1016–7315 © 2016 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer review under responsibility of King Saud University.  
URL: [www.ksu.edu.sa](http://www.ksu.edu.sa)  
<http://dx.doi.org/10.1016/j.jsha.2016.06.005>



Production and hosting by Elsevier

structures such as main pulmonary artery (MPA) and LV may give rise to unforeseeable perioperative difficulties and complications. We herein present a case of multifocal, multiple pericardial hydatid cyst, one compressing the LV posterolateral wall, and another compressing the superior vena cava (SVC) and aorta, presented with atypical chest pain in a young male patient.

### Case report

A 28-year-old man presented with complaints of gradual onset precordial chest pain without any comorbidities. At his physical examination, heart and lung auscultation were normal. A 12-lead electrocardiograph (ECG) was inconspicuous. Transthoracic two-dimensional echocardiography demonstrated a large extracardiac lobulated cystic mass compressing the LV posterolaterally with size of 9.2 cm × 9.6 cm. Further examinations with contrast enhanced computed tomography (CECT) scan of the thorax showed multiple hydatid cysts with daughter cysts within, in the anterior mediastinum (7 cm × 6 cm × 5.3 cm) and left lateral pericardium (12 cm × 11 cm × 10 cm), compressing the LV posterolateral wall on one side and extending up to the left lateral chest wall with compression of left lingula and lower lobe of left lung without any signs of rupture (Fig. 1).

Since the patient had no history of echinococcal infestation of any other organs and inconclusive treatment history; we gave albendazole 200 mg twice daily for 21 days. As the cyst was adherent to the LV posterior wall, cystectomy was planned with midline sternotomy and cardiopulmonary bypass (CPB). After sternotomy, a superior cyst was found to be firmly adherent to the SVC and aorta, and completely surrounding the MPA. During dissection, however, the MPA was accidentally injured, so emergency CPB was established between femoral artery, SVC, and right atrium. As the cyst was adherent to the aorta, femoral artery cannulation was done. The MPA was repaired. Normothermic CPB was maintained and the heart was not arrested. All daughter cysts were removed, the germinal layer was detached, and marsupialization was done. Another large cyst was found posterolaterally to the LV extending to left lateral chest wall, which was densely adherent to posterior LV wall without any signs of rupture (Fig. 2). The cyst was isolated with hypertonic saline packs. The cyst cavity was opened and debrided, all daughter cysts were removed with the germinal membrane; washed with 3% hypertonic saline and marsupialized (Fig. 3). In view of diffuse bleeding, packing was done and the chest kept open. Chest closure was done on the next day. The patient had smooth

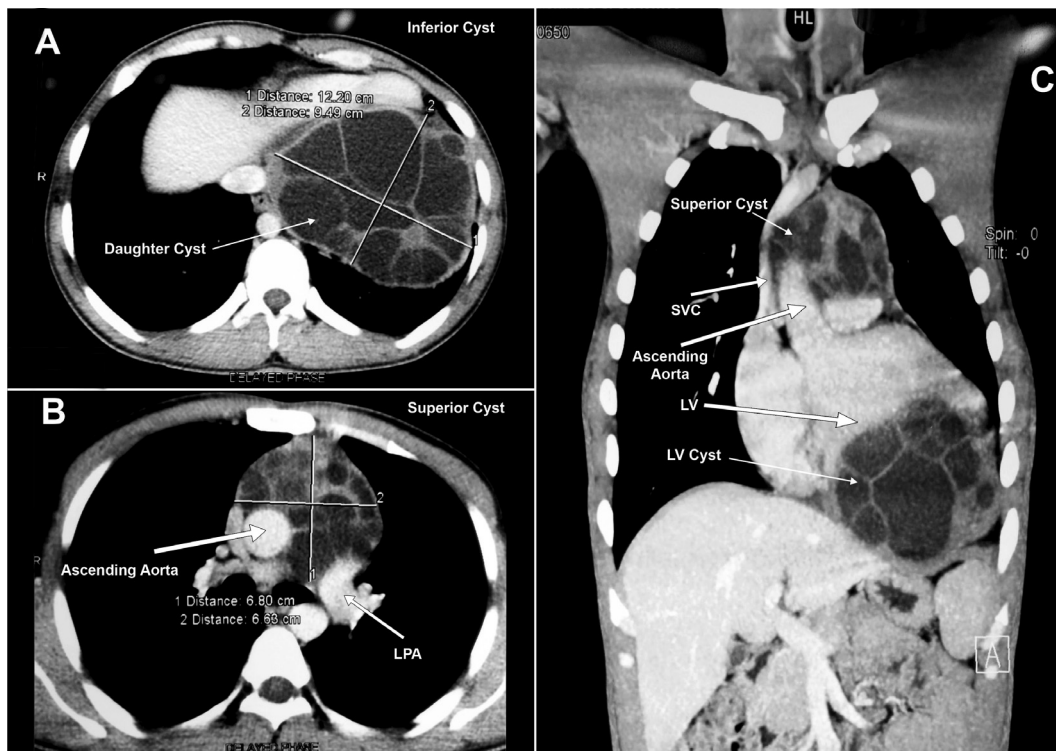


Figure 1. (A) Large cyst compressing left ventricular posterolateral wall with multiple daughter cysts within. (B) Superior cyst compressing superior vena cava (SVC) and aorta. (C) Coronal section showing both the cysts. LV = left ventricle.

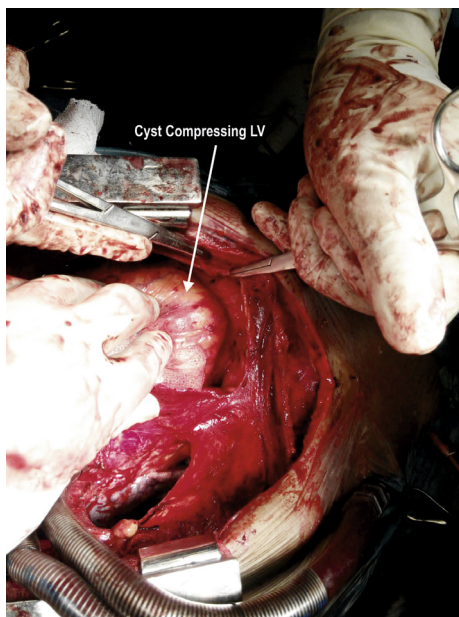


Figure 2. Large pericardial cyst adherent to and compressing left ventricular posterolateral wall. LV = left ventricle.



Figure 4. Coronal section showing postoperative complete removal of cysts.

postoperative course, and was discharged on the 8<sup>th</sup> postoperative day. On the 7<sup>th</sup> postoperative day CECT was done, which showed complete removal of the cyst (Fig. 4). The patient was given

oral albendazole 200 mg twice daily on discharge. The last follow-up examination was in mid-April around 2 months after surgery. The patient was asymptomatic and doing well and on albendazole therapy (200 mg once daily). All ECG, chest X-ray, and two-dimensional echocardiography investigations were inconspicuous.

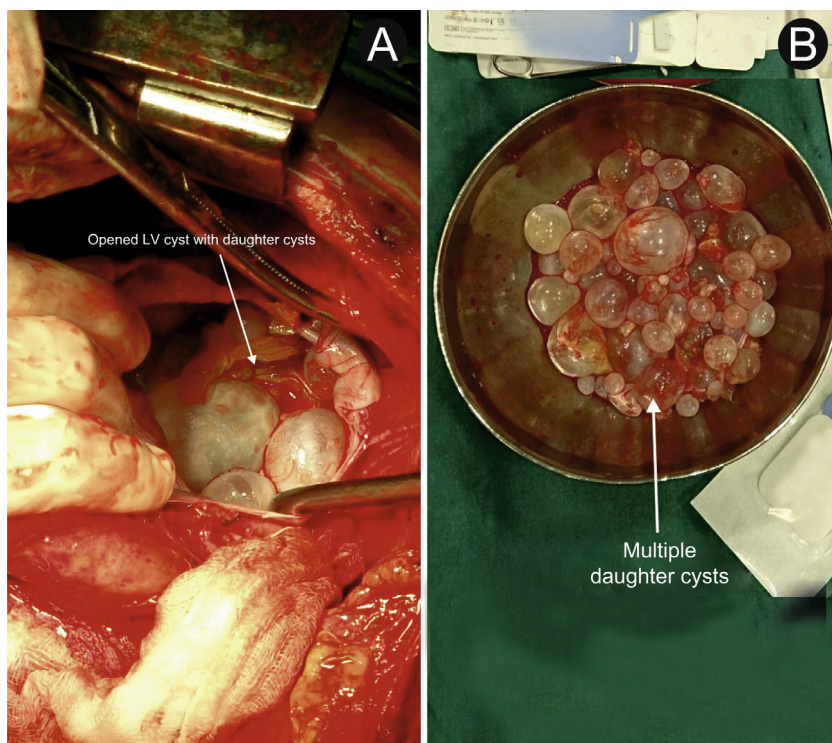


Figure 3. (A) Left ventricle (LV) cyst opened, daughter cyst removed and marsupialized with 3% hypertonic saline. (B) Removed multiple daughter cysts.

## Discussion

Cardiac involvement is mainly seen in the LV (60%). Intramyocardial hydatid cysts are unifocal, while pericardial hydatid cysts are usually multifocal. Pericardial involvement is extremely rare seen in only 2–10% of total cardiac hydatid cases [3].

Diagnosis usually arises from high clinical suspicion due to a vague clinical scenario. Cardiac hydatid cyst may present with dyspnea, cough, atypical, or nonspecific precordial pain and nonspecific symptoms. Chest pain occurs because of compression of the coronary artery due to the cyst. Occasionally, it mimics typical angina, which may lead to the misdiagnosis of coronary artery disease, especially in elderly patients, where coronary angiography is essential.

Chest X-ray and ECG are usually noncontributing. Echocardiography is usually diagnostic as it may show pericardial effusion and size, location, and characteristics of the cyst, but is unable to differentiate between mass and hydatid. Findings can be confirmed by CECT or magnetic resonance imaging.

Cardiac hydatid cyst may present with potentially lethal complications such as pericardial tamponade, acute pericarditis due to cyst rupture into pericardial cavity or may end up causing pulmonary embolism or anaphylaxis, if the cyst ruptures into ventricular cavity [4,5]. Cyst perforation is most fatal of all and has high mortality of 75% due to septic shock and embolism and may cause sudden death.

Surgical excision even if asymptomatic yields excellent results because of high risk of perforation if left untreated. Surgical treatment depends on the size, location, and number of the cysts. Perioperative difficulties and risk of cyst rupture often arise due to the invasive nature of the cyst to surrounding cardiac structures [6]. The cyst in our case was adherent to the SVC, aorta, and MPA, which created unpredictable complications and difficult intraoperative course. Therefore, unpredictable perioperative difficulties should be borne in mind due to the invasive nature of huge cysts. The main principle of surgical treatment is to empty the cyst, remove daughter cysts and the germinative membrane, excise the pericyst, and then obliterate the residual cavity with sutures (capitonage) [2]. The use of local scolicedal solution such as hypertonic saline solution is obligatory after cystopericystectomy with or without CPB in order to minimize the risk of dispersion of cystic content. Postoperative oral albendazole therapy 200 mg twice daily for a minimum of 2 years gives good

therapeutic outcome [7]. The surgical field should be isolated with packs soaked in scolicedal agents, such as 3% hypertonic saline or 10% Savlon, to avoid dissemination and to prevent recurrence. The second option is medical therapy for a limited time (minimum of 2 years). In the long term, medical therapy is indicated in inoperable disease, after incomplete resection of lesions or after transplantation [7].

## Conclusion

Cardiac hydatid cyst is rare and may present with a variety of signs and symptoms. Because of the nonspecific clinical picture, a high index of clinical suspicion is necessary for accurate diagnosis. When diagnosed treatment of choice for even asymptomatic patients is surgical ablation due to a high risk of associated complications. During the operation, measures should be taken to prevent perioperative embolization of germinative membrane. Surgical excision under CPB is the treatment of choice for cardiac hydatid cyst. One should be ready for unforeseeable intraoperative complications due to the invasive nature of cardiac hydatid cyst into the surrounding cardiac structures.

## Conflict of interest

The authors have declared that no conflict of interest exists.

## References

- [1] Yaliniz H, Tokcan A, Salih OK, Ulus T. Surgical treatment of cardiac hydatid disease: a report of 7 cases. *Tex Heart Inst J* 2006;33:333–9.
- [2] Charfeddine S, Mallek S, Gueldiche M, Triki F, Jmâa HB, Frikha I, et al. A huge cardiac hydatid cyst: an unusual cause of chest pain revealing multi visceral hydatidosis in a young woman. *J Saudi Heart Assoc* 2015;27:286–91.
- [3] Yural M, Sayin B, Pasaoglu L, Koparal S, Elverici E, Dede D. Isolated pericardial hydatid cyst in an asymptomatic patient: a remark on its radiologic diagnosis. *Clin Imaging* 2007;31:37–9.
- [4] Demircan A, Keles A, Kahveci FO, Tulmac M, Ozsarac M. Cardiac tamponade via a fistula to the pericardium from a hydatid cyst: case report and review of the literature. *J Emerg Med* 2010;38:582–6.
- [5] Bayraktaroglu S, Ceylan N, Savaş R, Nalbantgil S, Alper H. Hydatid disease of right ventricle and pulmonary arteries: a rare cause of pulmonary embolism—computed tomography and magnetic resonance imaging findings. *Eur Radiol* 2009;19:2083–6.
- [6] Acikel S, Kiziltepe U, Turkvatan A, Cakici M, Koroglu DB, Sahpaz A, et al. Intracavitary cardiac hydatid cysts with a high risk of thromboemboli. Invasive nature of cardiac echinococcosis. *Herz* 2014;39:882–6.
- [7] World Health Organization Guidelines for treatment of cystic, and alveolar echinococcosis in humans. WHO Informal Working Group of Echinococcosis. *Bull World Health Organ* 1996;74:231–42.