

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SciVerse ScienceDirect

journal homepage: [www.elsevier.com/locate/ihj](http://www.elsevier.com/locate/ihj)

## Case Report

# Giant cardiac hydatid cyst in the interventricular septum protruding to right ventricular epicardium<sup>☆</sup>

Yuksel Besir<sup>a</sup>, Arif Gucu<sup>a</sup>, Suleyman Surer<sup>a</sup>, Orhan Rodoplu<sup>b</sup>, Mehmet Melek<sup>c</sup>, Omer Tetik<sup>d,\*</sup>

<sup>a</sup> Chief Resident, Bursa Yuksek Ihtisas Training and Research Hospital, Department of Cardiovascular Surgery, Bursa, Turkey

<sup>b</sup> Resident, Bursa Yuksek Ihtisas Training and Research Hospital, Department of Cardiovascular Surgery, Bursa, Turkey

<sup>c</sup> Associate Professor of Cardiology, Bursa Yuksek Ihtisas Training and Research Hospital, Department of Cardiology, Bursa, Turkey

<sup>d</sup> Associate Professor of Cardiovascular Surgery, Bursa Yuksek Ihtisas Training and Research Hospital, Department of Cardiovascular Surgery, 16330 Bursa, Turkey

## ARTICLE INFO

## Article history:

Received 3 July 2012

Accepted 19 December 2012

Available online 31 December 2012

## Keywords:

Cardiac mass

Hydatid cyst

Interventricular septum

Syncope

## ABSTRACT

Cardiac hydatid cyst is a rare condition, and the location of a hydatid cyst in the interventricular septum is exceptional. A 54-year-old female was admitted to our hospital with complaints of chest pain, shortness of breath and malaise. Transthoracic echocardiography defined a cystic mass lesion of 50 × 59 mm originating from apex of the heart protruding into and compressing the interventricular septum. The cyst was excised surgically and the patient was discharged on the 8th postoperative day without symptoms. In our case, localization of the cystic mass was within interventricular septum which is an uncommon site. It limited both ventricular volumes significantly. In addition, this cyst was extensively protruding to the right ventricular epicardium.

Copyright © 2012, Cardiological Society of India. All rights reserved.

## 1. Introduction

Echinococcus granulosus is an important parasitic infection that leads to a significant health problem in undeveloped and developing countries.<sup>1</sup> Although cases are found sporadically in Western countries, most of those occur in immigrants from areas where echinococcosis is endemic. Cardiac hydatid cyst is a rare condition, and the location of a hydatid cyst in the interventricular septum is exceptional.<sup>1,2</sup> We present the case of a 54 years-old woman who had a giant hydatid cyst in the

interventricular septum protruding to the right ventricular surface and limited both ventricular volumes.

## 2. Case report

A 54-year-old female was admitted to our hospital with complaints of chest pain, shortness of breath and malaise. The patient had syncopal attacks two months prior to hospital admission. Complete blood count showed eosinophilia. Serologic tests were positive for hydatid cyst. Chest X-ray was

<sup>☆</sup> The abstract of this paper was presented at Annual Meeting of Asian Society for Cardiovascular & Thoracic Surgery (20th) May 26–29, Nusa Dua, Bali, Indonesia, (2012).

\* Corresponding author. Tel.: +90 532 4724436; fax: +90 2243605055.

E-mail address: [omer\\_tetik@hotmail.com](mailto:omer_tetik@hotmail.com) (O. Tetik).

0019-4832/\$ – see front matter Copyright © 2012, Cardiological Society of India. All rights reserved.

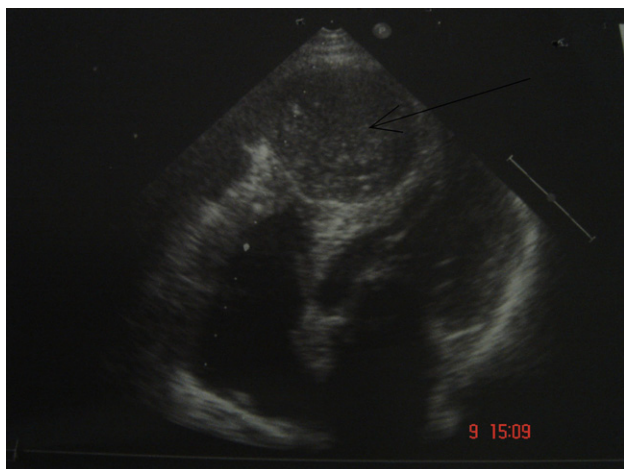
<http://dx.doi.org/10.1016/j.ihj.2012.12.014>

normal. Transthoracic echocardiography defined a cystic mass lesion of 50 × 59 mm originating from apex of the heart protruding into and compressing the interventricular septum (Fig. 1). Cardiac magnetic resonance imaging (MRI) identified a mass lesion of 55 × 64 mm at interventricular septum, from mid-ventricular level to the apex, consistent with hydatid cyst. Coronary angiography and hepatic ultrasound were normal. **Albendazol was started to allow preoperative sterilization of the cyst.**

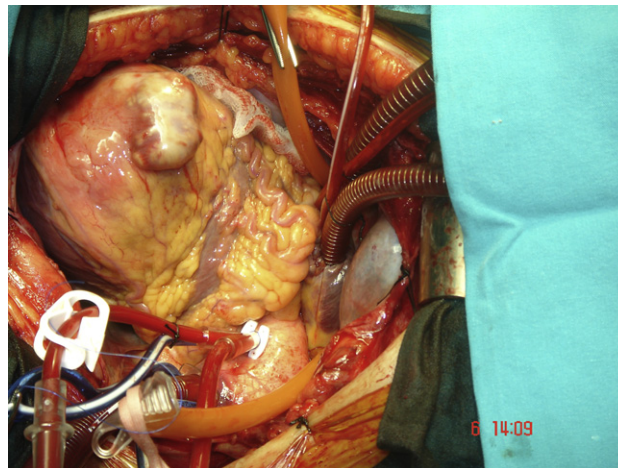
Intraoperative examination revealed that this cyst was protruding to the right ventricular surface with impending rupture (Fig. 2). Hypertonic solution of 20% NaCl was introduced into cystic sac. Povidone iodine-embedded sterile gauzes were placed around the sac before opening the cyst. Cyst was exposed after surgical incision. Cystic content was aspirated carefully draining the viscous fluid. **Then, cystectomy was performed and the remaining cyst contents and germinative membrane were removed.** The cystic cavity was again irrigated by 20% NaCl solution. It was observed that the cavity was quite large limiting both ventricular volumes. Ventriculotomy was closed with Teflon felt-supported sutures. The cystic material was examined histopathologically, which confirmed the surgical observation of hydatid cyst. The postoperative period was uneventful, and the patient was discharged from the hospital on the 8th postoperative day. **The patient was treated with albendazole to prevent recurrence.**

### 3. Discussion

Echinococcosis is a tissue infestation. In human beings, it is caused by the larva of *Echinococcus granulosus*. Most often, the sheep is the intermediate host and the dog the definitive host, but man is a common accidental host. Adult helminths mature in the intestinal mucosa of the final host, who ate the uncooked, cyst-containing meat from the intermediate host. Larvae usually reach the myocardium through the coronary circulation, although the intestinal lymphatic vessels, the thoracic duct, the superior and inferior vena cavae, and the



**Fig. 1 – Transthoracic echocardiographic appearance of the interventricular septal cyst (arrow).**



**Fig. 2 – Operative view of the interventricular septal cyst protruding to the right ventricular surface.**

hemorrhoidal veins of the large intestine may also be pathways. Cardiac involvement through pulmonary veins has also been reported.<sup>1–3</sup>

Cardiac echinococcosis is not frequent, accounting for only 0.5%–2% of all hydatid infestations.<sup>1,2,4,5</sup> The distribution of echinococcosis in the heart depends, of course, on the blood supply to that part of the heart. The left ventricle, the part of the heart that has the most abundant blood supply, is involved most frequently (55–60%). Involvement of the interventricular septum is reported in 5–9% of cardiac cases. The right atrium is involved in 3–4% of cases, and the right ventricle in 15%. Distribution in the left atrium, pulmonary artery, and pericardium occurs in 8%, 7%, and 8% of cardiac cases, respectively.<sup>1</sup>

Clinical signs and symptoms vary according to the number, size, site and effect of the cysts.<sup>3</sup> Chest pain, palpitations, and dyspnea are the primary symptoms associated with cardiac echinococcosis. Chest pain is a common symptom and mostly does not resemble angina pectoris.<sup>6</sup> Cysts growing toward the epicardium can compress the small coronary arteries, disturbing blood flow. This may lead to the misdiagnosis of coronary artery disease.<sup>3</sup> In the rare instances in which cardiac echinococcal cysts involve the interventricular septum, they can cause symptoms related to compression of the conduction pathway (atrioventricular block and syncopal attacks) and obstruction of the right or left ventricular outflow tract.<sup>2,4,7–9</sup> Other cardiovascular manifestations of cardiac echinococcosis are arrhythmia, valvular dysfunction, pericardial reaction, pulmonary or systemic embolism, pulmonary hypertension, and anaphylactic reactions. Patients who have a history of echinococcosis and who are admitted with these symptoms and signs must be evaluated for cardiac involvement. Because the condition can mimic a number of cardiac diseases, the differential diagnosis includes all other cardiac tumors and cysts, mediastinal tumor, pericardial cyst, and ventricular aneurysm. This last is the most common finding, but it is easily differentiated by angiography.<sup>2</sup> Rupture is a serious complication of cardiac hydatid cyst and risk of intracavitary rupture is higher in right heart cysts.<sup>10</sup> In our

case, localization of the cystic mass was within interventricular septum which is an uncommon site. It limited both ventricular volumes significantly. In addition, this cyst was extensively protruding to the right ventricular epicardium. Pericystic layer on ventricular surface was very thin and the cyst was close to rupture. The patient also had a syncopal attack two months before hospital admission.

Diagnosis of cardiac hydatid cyst is simple, reliable and sensitive when transthoracic echocardiography is used. However, computed tomographic scan and magnetic resonance imaging are complementary tools to rule out multivesicular cyst.<sup>4</sup> Eosinophilia is a common finding in patients with parasitic infections, but it is not always seen. Thus, especially in endemic areas, clinical suspicion is very important for the accurate diagnosis. Computed tomography is also important in the diagnosis, but especially in case of cyst rupture into the myocardium, the patient can be misdiagnosed as left ventricular aneurysm. If hydatid cyst is indistinguishable by other techniques, cardiac MRI can provide conclusive information.<sup>6</sup> In our patient, we made the diagnosis by transthoracic echocardiography, confirmed by magnetic resonance imaging and serologic tests. Serologic tests are a helpful supplement, but false-negative results are possible.

Because there is still no medical treatment effective for cardiac cysts, surgical excision remains the only remedy. Fortunately, cystectomy is associated with a high rate of complete recovery.<sup>2</sup> In deciding upon an operative technique, the location of the cyst is of great importance.<sup>11</sup> It is important to consider the location, number and size of the cysts when choosing the operative approach and deciding whether to use cardiopulmonary bypass or to perform surgery on the beating heart.<sup>3</sup> Most cysts in the ventricular myocardium can be resected under cardiopulmonary bypass (while the heart is arrested), because they are difficult to approach.<sup>11</sup> When a hydatid cyst is going to be removed, it should be sterilized before enucleation by injection or instillation of a helminthicide: 2% formalin, 0.5% silver nitrate solution, 20% hypertonic saline solution, 1% iodine solution, or 5% cetrimonium bromide solution. The use of substances toxic to the patient (such as formalin and absolute alcohol) should be reserved for application in areas where they cannot enter the bloodstream. We injected 20% hypertonic saline solution. Pads soaked in an aqueous sodium chloride solution can also be used to good effect in protecting the surgical field.<sup>2</sup>

Current guidelines for the management of hepatic hydatid cyst indicate that surgery must be combined with neoadjuvant and adjuvant medical treatment with albendazole, which allows preoperative sterilization of the cyst and therefore a lower risk of intraoperative dissemination, and some authors have suggested that postoperative treatment also allows a reduction of recurrences.<sup>12</sup> We also used

albendazole for preoperative sterilization and postoperative period up to six months to prevent recurrence.

In conclusion, the treatment of hydatid cyst disease is surgical and should not be delayed and early surgery should be performed to reduce the risk of life-threatening complications.

---

## Conflicts of interest

All authors have none to declare.

---

## REFERENCES

1. Tetik O, Yetkin U, Yazıcı M, Tulukoglu E, Gurbuz A. A case with giant hydatid cyst localized in right ventricle wall. *Turkish J Thorac Cardiovasc Surg.* 2004;12:265–267.
2. Tetik O, Yılık L, Emrehan B, Ozbek C, Gürbüz A. Giant hydatid cyst in the interventricular septum of a pregnant woman. *Tex Heart Inst J.* 2002;29:333–335.
3. Tuncer E, Gezer S, Mataraci I, et al. Surgical treatment of cardiac hydatid disease in 13 patients. *Tex Heart Inst J.* 2010;37:189–193.
4. Mohsen T, El Baharry N, Maree T, Akl ES. Cardiac echinococcosis of the interventricular septum in early childhood: report of two cases. *J Thorac Cardiovasc Surg.* 2009;137:e14–e16.
5. Sai Chandran BV, Prasad RD, Reddy PS, et al. Intramyocardial hydatid cyst: a mistaken identity and its successful removal on a beating heart. *Interact Cardiovasc Thorac Surg.* 2011;13:208–210.
6. Canpolat U, Yorgun H, Sunman H, et al. Cardiac hydatid cyst mimicking left ventricular aneurysm and diagnosed by magnetic resonance imaging. *Arch Turk Soc Cardiol.* 2011;39:47–51.
7. Maroto LC, Carrascal Y, Lopez MJ, Forteza A, Perez A, Zavanella C. Hydatid cyst of the interventricular septum in a 3.5-year-old child. *Ann Thorac Surg.* 1998;66:2110–2111.
8. Darcin OT, Kazaz H, Celkan A. Hydatid disease of the interventricular septum causing pulmonary dissemination. *Acta Cardiol.* 2003;58:431–433.
9. Shehatha J, Alward M, Saxena P, Konstantinov IE. Surgical management of cardiac hydatidosis. *Tex Heart Inst J.* 2009;36:72–73.
10. Ilic S, Parezenovic V, Djukic M, et al. Ruptured hydatid cyst of the interventricular septum with acute embolic pulmonary artery complications. *Pediatr Cardiol.* 2008;29:855–857.
11. Yilmazkaya B, Yondem OZ, Gürkahraman S, et al. Direct approach to hydatid cyst of the interventricular septum. *Tex Heart Inst J.* 2009;36:174–176.
12. Henaine R, Mathevet JL, Rouviere H, et al. Coronary artery bypass in myocardial ischemia of the young due to hydatid cyst. *J Cardiovasc Surg.* 2008;23:573–575.