

A case of left ventricular hydatid cyst

Sol ventrikül yerleşimli kist hidatik: Olgu sunumu

Emin Alioğlu, M.D., Uğur Önsel Türk, M.D., İstemihan Tengiz, M.D., Ertuğrul Ercan, M.D.

Department of Cardiology, Central Hospital, İzmir

Cardiac hydatid disease is uncommon, occurring in 0.2% to 2% of patients with echinococcal disease. A 67-year-old farmer presented with fatigue, dyspnea, and palpitations. He had no previous history of heart disease. Cardiovascular examination, electrocardiography, chest X-ray, hematologic and biochemical tests were normal. Parasitic serology was negative. Transthoracic echocardiography showed a cyst, measuring 3.7x3.5 cm, in the posteroapical region of the left ventricle. Magnetic resonance imaging confirmed the cardiac cyst and showed another cyst in the liver. The patient underwent surgery through median sternotomy and the cyst was removed. Pathologic examination confirmed the diagnosis of echinococcosis. Postoperatively, the patient was treated with albendazole (800 mg/day) for four weeks. At three-month follow-up, the patient was asymptomatic, with improved functional capacity. Two-dimensional transthoracic echocardiography showed no signs of cystic formation.

Key words: Cardiomyopathies; echinococcosis/surgery; hydatid cyst.

Kardiyak hidatik hastalığı nadirdir ve ekinokokkosizli tüm hastaların %0.2-%2'sinde görülür. Altmış yedi yaşında bir çiftçi bitkinlik, nefes darlığı ve çarpıntı yakınmalarıyla başvurdu. Öyküsünde kalp hastalığı yoktu. Kardiyovasküler muayenesi, elektrokardiyografi, göğüs filmi, hematolojik ve biyokimyasal testleri normal bulundu. Parazitik serolojisi negatif idi. Transtorasik ekokardiyografide sol ventrikülün posteroapikal bölgesinde 3.7x3.5 cm boyutlarında bir kist görüldü. Kist varlığı magnetik rezonans görüntüleme ile doğrulandı ve karaciğerde ikinci bir kiste rastlandı. Hastaya median sternotomiyle cerrahi uygulanarak kist çıkarıldı. Patolojik incelemede ekinokokkosiz tanısı doğrulandı. Ameliyat sonrasında hastaya dört haftalık albendazol tedavisi (800 mg/gün) uygulandı. Üç aylık takip süresini hasta asemptomatik geçirdi, fonksiyonel kapasitesinde düzelme görüldü. İkiboyutlu transtorasik ekokardiyografide kist oluşumunu düşündürür bir bulgu yoktu.

Anahtar sözcükler: Kardiyomiyopati; ekinokokkosiz/cerrahi, hidatik kist.

Echinococcosis is a tissue infection in humans caused by the larval stage of *Echinococcus granulosus* and *E. multilocularis*. Canines are the hosts for *E. granulosus*. Hydatid disease is endemic in cattle-raising areas of the world including Mediterranean countries and the Middle East. The incidence of hydatidosis in the Turkish population has been reported as 1:20,000.^[1] Theoretically, echinococcosis can involve any organ, the liver being the most common, followed by the lungs. These two organs account for 90% of all cases. Cardiac involvement is infrequent, accounting for 0.2% to 2%. It is caused by the invasion to the

myocardium via the coronary arteries and may be either confined solely to the heart or associated with involvement of other organs.^[2] The left ventricular wall is the most frequent site, but the interventricular septum, right ventricle, and left or right atrium may also be involved.^[3] Major complications of cardiac hydatid disease result from rupture of the cyst either into the heart or pericardium and death may occur subsequent to anaphylactic shock, cardiac tamponade, and systemic or pulmonary embolization. When echinococcosis is diagnosed, surgery is the treatment of choice for even asymptomatic cases due to the risk for cystic rupture.^[1]

Received: December 8, 2006 Accepted: January 24, 2007

Correspondence: Dr. Emin Alioğlu, İzmir Central Hospital, 1644 Sok., No: 2/2, 35050 Bayraklı, İzmir.
Tel: 0232 - 341 67 67 Fax: 0232 - 341 68 68 e-mail: dreminalioglu@yahoo.com

CASE REPORT

A 67-year-old farmer complained of fatigue, dyspnea, and palpitations. He had no previous history of heart disease. Cardiovascular examination revealed no abnormal findings. His electrocardiogram and chest radiograph, and hematologic and biochemical tests were normal. Parasitic serology was negative. Transthoracic two-dimensional echocardiography showed a cyst, measuring 3.7x3.5 cm, localized in the posteroapical region of the left ventricle (Fig. 1a). Magnetic resonance imaging confirmed the cardiac cyst and showed another cyst in the liver (Fig. 1b). Transesophageal echocardiography showed an ovoid cavitated mass with internal areas of calcification and confirmed the absence of additional cysts in the cardiac chambers. Selective coronary angiography revealed no significant lesions. The patient underwent surgery through median sternotomy. Standard cardiopulmonary bypass techniques were used with moderate hypothermia and cardioplegic arrest. The cyst was reached via a left ventriculotomy and removed (Fig. 2). Hypertonic saline (10% NaCl) was used as a scolicial agent. Pathologic examination confirmed the diagnosis of echinococcosis. The patient was discharged on the sixth postoperative day and treated with albendazole (800 mg/day for 4 weeks). At three-month follow-up, the patient was asymptomatic, with improved functional capacity. Two-dimensional transthoracic echocardiography showed no signs of cystic formation.

DISCUSSION

Cardiac hydatid disease is very rare, occurring in approximately 0.2% to 2% of patients with hydatid disease.^[4] Cardiac hydatid cysts develop in many parts of the heart such as the left ventricle (55-71%), right ventricle (13-18%), interventricular septum (5-13%), right atrium (2-4%), and left atrium (8%).^[5,6] Several hypotheses have been proposed for the predilection for left ventricular location, including dominance of the left coronary artery, better conditions of the left ventricular myocardial mass for parasitic development, and different pressure regimens.^[7]

Clinical manifestations of cardiac cysts are broad, ranging from asymptomatic patients to sudden death. Symptoms depend on the location, size, and integrity of the cyst. Embolization, anaphylactic shock, and cardiac tamponade are the most serious and often lethal complications.^[8] Cysts have the potential for intracardiac or intrapericardial ruptures. Although hydatid cysts are more frequently located in the left

ventricle, right ventricular hydatid cysts have a higher propensity to rupture.^[9]

Other manifestations of cardiac echinococcosis may result from mechanical compression exerted by the cyst on neighboring tissues, including myocardial

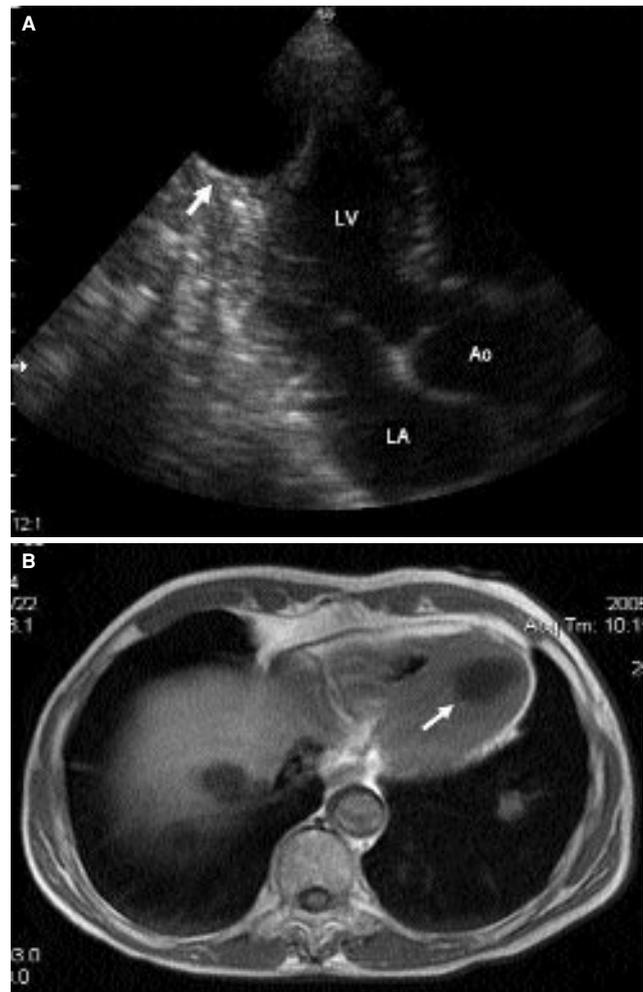


Figure 1. (A) Transthoracic echocardiographic apical view. (B) Magnetic resonance image showing hydatid cysts located in the left ventricular apex and in the liver.



Figure 2. Macroscopic view of the excised hydatoid material from the left ventricle.

ischemia; disturbances of the cardiac rhythm; and valve malfunction. Three main symptoms that suggest the presence of an uncomplicated cyst are chest pain, dyspnea, and palpitations. With chest pain, the severity and the site are variable, although it is often a permanent or recurrent precordial pain. Sometimes the pain resembles angina pectoris suggesting coronary disease, or myocardial infarction when it is severe. These palpitations may arise from ventricular extrasystoles, paroxysmal ventricular tachycardia, and conduction disorders that may lead to a complete atrioventricular block with bradycardia and Adams-Stokes attack, which are typical of the septal location of a cyst.

The diagnosis of a cardiac cyst is probable in patients with a history of echinococcosis in another organ. In the absence of any diagnostic sign, routine investigations by specific cardiac imaging procedures are necessary.

Chest radiographic findings are usually reliable. The chest X-ray may reveal localized or global deformations and calcifications of the cardiac outline. The typical image is a calcified, well-limited, and sessile lobular mass with clear edges.^[10] Nonspecific electrocardiographic abnormalities such as T-wave inversion, ST-depression, premature ventricular beats, incomplete or complete bundle branch block, and supraventricular tachycardia are present in more than 80% of patients.^[8] In older patients, it is often more difficult to establish the differential diagnosis between acute coronary disease and cardiac hydatid cyst disease. In young patients, especially in the presence of a Q wave of necrosis the diagnosis of a cardiac hydatid cyst should be considered. This Q wave is due to the electrical window formed by a transmural cyst. Conduction disorders may also be associated with a cardiac hydatid cyst.

Hematology may reveal eosinophilia of a varying degree. Serological tests including indirect hemagglutination and latex agglutination tests are useful if positive, but many cyst carriers will not develop an immune response.^[11] Diagnosis of cardiac hydatid cysts is often made using transthoracic echocardiography. Transesophageal echocardiography provides details of the cyst.^[12] Computed tomography and magnetic resonance imaging may provide valuable information, but two-dimensional echocardiography is thought to be the best choice.^[1]

Surgical excision is the definitive method of treatment for cardiac hydatid cysts, even for

asymptomatic patients in order to prevent rupture. However, surgical intervention may result in serious complications.^[13] Whether the treatment should be medical or surgical remains controversial.^[14] It is important to consider the localization, number, and size of the cysts in choosing the treatment method. Medical therapy with albendazole results in disappearance of extracardiac hydatid cysts in up to 48%, and reduction in size in 24%. However, the specific efficacy of albendazole against cardiac hydatid cysts has not been established. Anthelmintics have been recommended in inoperable cases or as adjuvant therapy^[15] when there is risk for dissemination.

Surgical approach is not recommended for pericardial hydatid cysts. Percutaneous aspiration and instillation of ethanol or silver nitrate after pretreatment with albendazole (800 mg/day for 4 weeks) is safe and effective.^[15]

REFERENCES

1. Salih OK, Celik SK, Topcuoglu MS, Kisacikoglu B, Tokcan A. Surgical treatment of hydatid cysts of the heart: a report of 3 cases and a review of the literature. *Can J Surg* 1998;41:321-7.
2. McManus DP, Zhang W, Li J, Bartley PB. Echinococcosis. *Lancet* 2003;362:1295-304.
3. Kardaras F, Kardara D, Tselikos D, Tsoukas A, Exadactylos N, Anagnostopoulou M, et al. Fifteen year surveillance of echinococcal heart disease from a referral hospital in Greece. *Eur Heart J* 1996;17:1265-70.
4. Eckert J, Deplazes P. Biological, epidemiological, and clinical aspects of echinococcosis, a zoonosis of increasing concern. *Clin Microbiol Rev* 2004;17:107-35.
5. Sensoz Y, Ozkokeli M, Ates M, Akcar M. Right ventricle hydatid cyst requiring tricuspid valve excision. *Int J Cardiol* 2005;101:339-41.
6. Kunt AS, Aydin S, Demir D, Selli C, Andac MH. Left ventricle wall hydatid cyst. *Kalp Damar Cer Derg* 2006;14:325-7.
7. Thameur H, Abdelmoula S, Chenik S, Bey M, Ziadi M, Mestiri T, et al. Cardiopericardial hydatid cysts. *World J Surg* 2001;25:58-67.
8. Bashour TT, Alali AR, Mason DT, Saalouke M. Echinococcosis of the heart: clinical and echocardiographic features in 19 patients. *Am Heart J* 1996;132:1028-30.
9. De Paulis R, Seddio F, Colagrande L, Polisca P, Chiariello L. Cardiac echinococcosis causing coronary artery disease. *Ann Thorac Surg* 1999;67:1791-3.
10. Tengiz I. Cardiac hydatid cysts. *J Card Resc* 2006;1:1-5.
11. Charet E, Roudaut R, Lafitte S, Laffort P, Madonna F, de Mascarel A. Echocardiographic demonstration of rupture

- of intraseptal hydatid cyst. *J Am Soc Echocardiogr* 2000; 13:955-8.
12. Tufan Tükek, Şeref Demirel, Dursun Atılğan, Ertan Onursal, Ferruh Korkut. Kardiak kist hidatik tanı ve tedavisinde transözofageal ekokardiyografinin önemi: iki vaka nedeni ile literatürün gözden geçirilmesi. *Türk Kard Dern Arş* 2000;28:131-3.
 13. Kaplan M, Demirtas M, Cimen S, Ozler A. Cardiac hydatid cysts with intracavitary expansion. *Ann Thorac Surg* 2001;71:1587-90.
 14. Akar R, Eryilmaz S, Yazicioglu L, Eren NT, Durdu S, Uysalel A, et al. Surgery for cardiac hydatid disease: an Anatolian experience. *Anadolu Kardiyol Derg* 2003;3: 238-44.
 15. Simeunovic D, Seferovic PM, Ristic AD, Petrovic P, Maisch B. Pericardial cysts: incidence, clinical presentations and treatment. In: Seferovic PM, Spodick DH, Maisch B, editors. *Pericardiology: contemporary answers to continuing challenges*. Belgrade: Science Publishers; 2000. p. 203-12.