A Case of Cardiac Hydatid Cyst Localized on the Interventricular Septum and Causing Pulmonary Emboli

Cardiac hydatid cyst is rarely encountered. In this article, a case of hydatid cyst localized in multiple organs including the ventricular septum and causing pulmonary emboli is reported.

Ömer Bayezid, M.D.
Ahmet Öcal, M.D.
Ömer Işık, M.D.
Tuğrul Okay, M.D.
Mehmet Özkan, M.D.
Cevat Yakut, M.D.

Cardiac hydatid cyst is seen infrequently, even in regions where hydatid cysts are endemic. The rate of incidence is 0.2-3.0% of all the hydatid cyst patients.

The clinical evaluation and surgical procedures under taken for a case of hydatid cyst localized in multiple organs including the ventricular septum and causing pulmonary emboli is going to be presented.

From: Koşuyolu Heart and Research Hospital.

Address for reprints:
Ö. Bayezid, M.D.
Koşuyolu Heart and Research Hospital.

Case report

In January 1987, a 32 year old female patient hospitalized with complaints of severe coughing, dyspnea, hemoptysis and pain in the right chest. The complaints began ten months ago. On examination arterial blood pressure was 90/60 mmHg. The patient's heart rate was 86 beats/min. In auscultation of the mesocardiac focus a midsystolic murmur of 3/6 intensity was audible. A hepatomegaly of 3 cm. and minimal abdominal ascites were present. There was sensitivity in the right hypocondrium by palpation. ECG revealed complete right bundle branch block and right axis deviation. Chest radiography revealed a dome shaped opacity with relatively distinct borders. Two dimensional echocardiography showed thinning of the basal septum and bulging to the right ventricle and mobile membrane with paradoxical motion (Fig. 1). Cardiac catheterization and angiography revealed a cystic mass on the interventricular septum with complete occlusion of right pulmonary artery and pulmonary hypertension (Figs. 2 a,b).

Fig. 1: Two-dimensional echocardiography revealed thinning of the basal septum and mobile membran.

Perfusion scintigraphy demonstrated hydatid cyst in the liver, complete occlusion of the right pulmonary artery due to cyst emboli and a cystic lesion on the interventricular septum with elongations especially to the left side. Ultrasonic examination of the abdomen verified the diagnosis of hydatid cyst in the liver. In the laboratory examinations there were no pathologic findings except for eosinophilia. The Weinberg test was shown to be positive in serological examination.

Operative procedure

On November 17, 1987 surgical intervention primarily to the car- diac hydatid cyst was performed. From the anterolateral region of the left ventricle, an incision parallel to the left anterior descending coro- nary artery was made. Right under the septal leaflet of mitral valve, the cyst causing a tumefaction in the septum was incised. The cyst was empty, except for a few germinative membrane remnants which were excised. However, a connection with the right ventricle was seen (Fig. 3), therefore an incision was made into the right atrium. Through the tricuspid valve the opening of the cyst to the right ventricle was seen on the tumefaction in the ventricular septum right under the septal and posterior leaflets. Marsupialization was performed first in the left ventricle and subsequently in the right ventricle. The septal defect in the interventricular septum was closed with primary suturing. Since a complete A-V block developed, a transitory pacemaker was installed before closing up. There were no complication in the postoperative period. She was discharged temporarily to perform the second operation later on. The pathological examination of the biopsy specimen taken from the interventricular septum was diagnosed as the germinative membrane of hydatid cyst.

On January 8, 1988; the patient was admitted to the hospital for the second time with the clinical picture of congestive heart failure. Ascites, 8 cm. hepatomegaly and pretibial oedema were present. S3 and crepitant rales in the basis of the lungs were audible. There was pain in the chest and pericardial frictional rubbing. This clinical picture improved with decongestive therapy.

On January 14, 1988; surgical intervention was performed to the hydatid cyst in the patient's liver. The abdominal cavity was reached through a paramedian incision. Cystotomy and marsupialization were performed. The cyst was localized to the dome of the liver and measured up to 10x10x10 cm. in dimension. The offspring vesic-

Fig. 2 a, b: Angiocardiography showed complete occlusion of the right pulmonary artery.

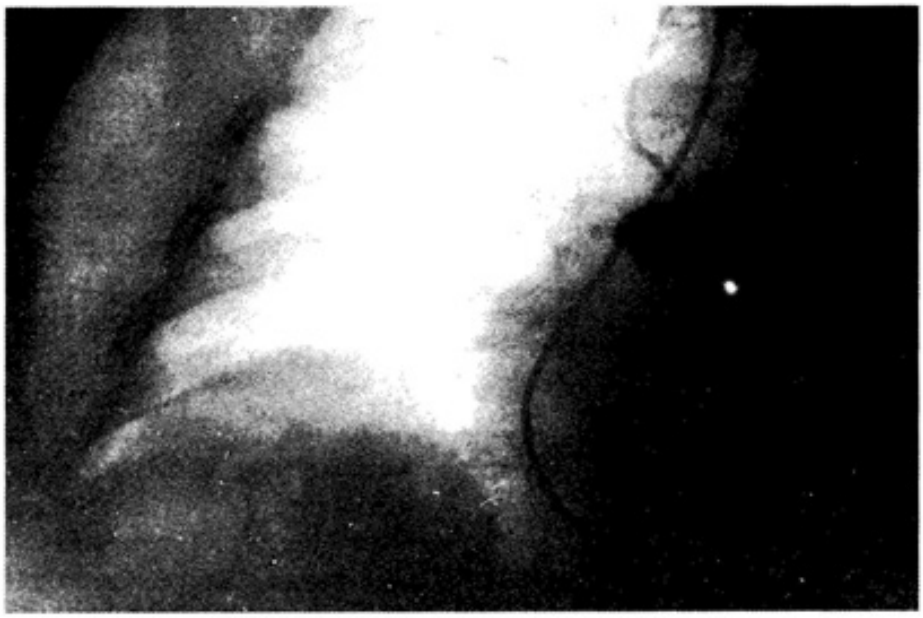

Fig. 3: A connection between left and right ventricles was seen in the operation.

vesicles were inactivated with Betadine (poly-vidin-iodine). There were no comp- lication in the postoperative period and the patient was discharged with full recovery.

Discussion

Hydatid cyst, which is an infection caused by the organism Echinococcus Granulosus, is endemic in tropical and subtropical regions such as the Mediterranean basin, South America, Africa and Australia. The route of infection is the ingestion of contaminated water or food washed in this water and close contact with dogs, the organisms thus reaching the gastrointestinal system are carried to the liver via the portal vein from where they may reach the right heart, the lungs via the pulmonary artery and by way of the systemic circulation the spleen, muscles and even settle in the eye. Cardiac hydatid cyst is rarely encountered (0.2-3.0%). The most frequent localization of the hydatid cyst in the heart is the wall of the left ventricle[1,2,3,4]. The clinical picture of the cardiac hydatid cyst disease depends on the localization, age, size, number of the cyst and whether it is calcified or not. There is usually a long asymptomatic stage. The symptoms that develope are generally due to the pressure exerted on the myocardium by an enlarging cyst or to the rupture of the cyst. A rupture into the pericardium may cause acute pericarditis and tamponade or chronic constrictive pericarditis[5,6]. A rupture into the right ventricle, as it was in our case, can cause acute or chronic pulmonary hypertension or metastatic pulmonary artery Echinococcus emboli. A rupture into the left ventricle may cause systemic emboli[2,7]. It may also cause fatal complications such as sudden rupture, suppuration, anaphylactic shock, arrythmias and emboli. It may cause a murmur due to the obstruction of the outflow of the right ventricle, or malfunction of the papillary muscles. Cyst hydatid cases localized in interventricular septum have been reported with an enlargement towards the inflow tract of the right ventricle resulting in a tricuspid stenosis, and towards the inflow tract of the left ventricle causing a mitral stenosis[2].

In the surgery of cystic lesions located on the interventricular septum, the major complications expected are right and left branch block and different degrees of blocks up to complete A-V block[8,9]. In cases where a complete A-V block develops, it is mandatory to install a transitory pacemaker before closing up. In fact

this was the situation in our case, however, in the early postoperative period the patient's heart resumed its own rhythm and was free of a pacemaker depen- dency.

The surgical technique proposed for the cardiac hydatid cyst is the marsupialization method[10], which we applied in our case. To prevent the occurence of pulmonary or systemic cystic emboli and their fatal complications, in the early postoperative period especially in cases where the cyst is localized on the interventricular septum, the inactivation of the offspring vesicles after cystotomy and the removal of all the germinative membrane and vesicular remnants from the afflicted ventricle after marsupialization are factors of prime importance.

References

1- Tellez G, Nojek C, Juffe A, Rufilanches J, O'Connor F, Figuera D: Cardiac echinococcosis. Report of 3 cases and review of the literature. Ann Thorac Surg 1976;21:425-30.

2- Mancuso L, Bondi F, Salvatore M, Iacona MA, Guarnera S, Patane L: Cardiac hydatid disease with clinical features resembling tricuspid stenosis. Am. Heart J 1987;113:1234-6.

3- Shakibi JG, Safavian MH, Azar H, Siassi B: Surgical treatment of echinococcal cyst of the heart: report of two cases and review of the world literature. J Thorac Cardiovasc Surg 1977;74:941-6.

4- Malouf J, Saksouk FA, Alam S, Rizk GK, Dagher I: Hydatid cyst of the heart: Diagnosis by two-dimensional echocardiography and computed tomography. Am Heart J 1985;109:605-7.

5- Di Bello R, Abó JC, Borges L: Hydatid constrictive pericarditis: A new case and review of the literature. J Thorac Cardiovasc Surg 1970;59:530-2.

6- Halliday JH, Jose AD, Nicks R: Constrictive pericarditis following rupture of a ventricular hydatid cyst. Brit Heart J 1963;25:821-5.

7- Oliver JM, Benito LP, Ferrufino O, Sotillo JF, Nunez L: Cardiac hydatid cyst diagnosed by two-dimensional echocardiography. Am Heart J 1982; 104:164-9.

8- Ottino G, Villani M, De Paulis R, Trucco G, Viara A: Restoration of atrioventricular conduction after surgical removal of a hydatid cyst of interventricular septum. J Thorac Cardiovasc Surg 1987;93:144-7.

9- De los Arcos E, Madurga MP, Perez Leon J, Martinez JL, Urquia M: Hydatid cyst of the interventricular septum causing left anterior hemiblock. Br Heart J 1971; 33:623-5.

10- Ayuso AL, Peralta GT, Lazaro RB, Stein AJ, Sanehes A, Aymerich DF. Surgical treatment of pulmonary hydatidosis. J Thorac Cardiovasc Surg 1981;82:569-75.