

Cardiac hydatid cyst revealed by complete heart block

Komplet kalp blok'u ile seyreden kardiyak kist hidatik olgusu

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Cardiac hydatid cyst is an unusual disease. Although interventricular septal cysts are usually asymptomatic, in rare instances where cardiac echinococcal cysts involve the interventricular septum, they may cause symptoms related to compression of the conduction pathway such as atrioventricular (AV) block and syncopal attacks. Surgical removal of the cyst is the most favorable therapeutic method in this disease. In this article, we report a 43-year-old female case of cardiac hydatid cyst originating from interventricular septum presenting with AV block and managed by surgical removal and implantation of permanent pacemaker during the early postoperative period.

Key words: Heart block; hydatid cyst; interventricular septum.

Human hydatid disease caused by *Echinococcus granulosus* is endemic in sheep-raising regions of the world such as the Middle East, South America, and Mediterranean countries. On the other hand, cardiac hydatid cysts are unique and occur in 0.4-2% of patients with echinococcosis.^[1] Atrioventricular (AV) block due to interventricular septum localization of the cyst is an even rarer condition. Herein, we report the case of a cardiac hydatid cyst originating from the interventricular septum, that was causing AV block. The cyst was removed, but due to persistent AV block, a permanent pacemaker was also implanted.

CASE REPORT

A 43-year-old female was referred to our institution with near-syncope. She had a history of hydatid disease of the right lung which had been operated on nine years prior to her admission to our facility.

Kardiyak kist hidatik nadir görülen bir hastalıktır. İnterventriküler yerleşimli kistler genellikle asemptomatik olmakla birlikte, nadir olarak interventriküler septum tutulduğunda, iletim yollarının basısına bağlı olarak atrioventriküler (AV) bloklar veya senkop atakları gibi semptomlar görülebilir. Kistin cerrahi olarak çıkarılması, bu hastalıkta en çok tercih edilen tedavi yöntemidir. Bu yazıda interventriküler septumdan kaynaklanan, tam AV blok ile kendini gösteren ve cerrahi rezeksiyon ile erken ameliyat sonrası dönemde kalıcı pacemaker implantasyonu yapılan 43 yaşında bir kadın olgu sunuldu.

Anahtar sözcükler: Kalp blok'u; kist hidatik; interventriküler septum.

Her physical examination was normal, except for bradycardia (50 beats per minute). No abnormality was found on a posteroanterior (PA) chest X-ray, but an electrocardiographic analysis disclosed a complete AV block. All routine blood tests were normal; however, two-dimensional echocardiography revealed a cystic lesion without any calcification and septation with measurements of 24x22 mm originating from the interventricular septum (Figure 1).

A median sternotomy incision was performed. Following initiation of cardiopulmonary bypass (CPB) under mild systemic hypothermia, the heart was arrested with cold blood cardioplegia, and a right atriotomy was performed that revealed a 3x3 cm cyst stemming from the interventricular septum just under the septal leaflet of the tricuspid valve (Figure 2). After protecting the surrounding tissues with sheets that had been soaked in 30% hypertonic saline



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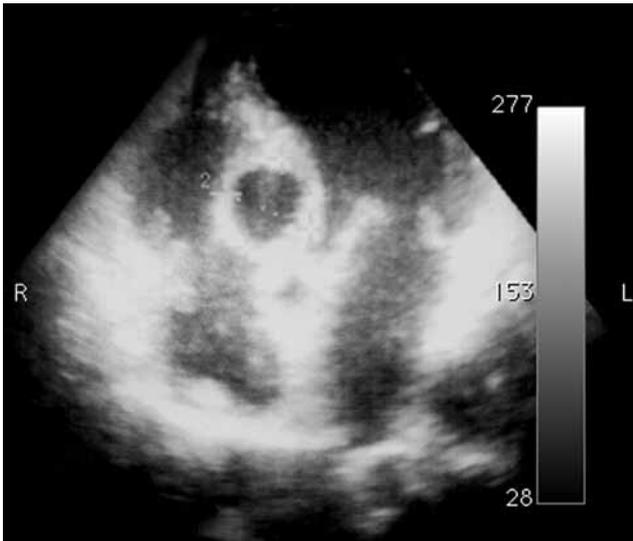


Figure 1. Cystic lesion originating from the interventricular septum.

solution, we injected this solution into the cystic cavity. Next, aspiration of the solution was carried out, and a cystotomy was performed, with the cystic material being totally removed (Figure 3). We did not observe any septal defect. The residual cavity was then washed with 30% hypertonic saline solution and closed with interrupted sutures featuring Teflon-pledgeted support. In addition, no abnormality was detected on the tricuspid valve after closure. Complete AV block was recorded following the termination of CPB, and a temporary pacing wire was implanted in the right ventricular epicardium. After this, the

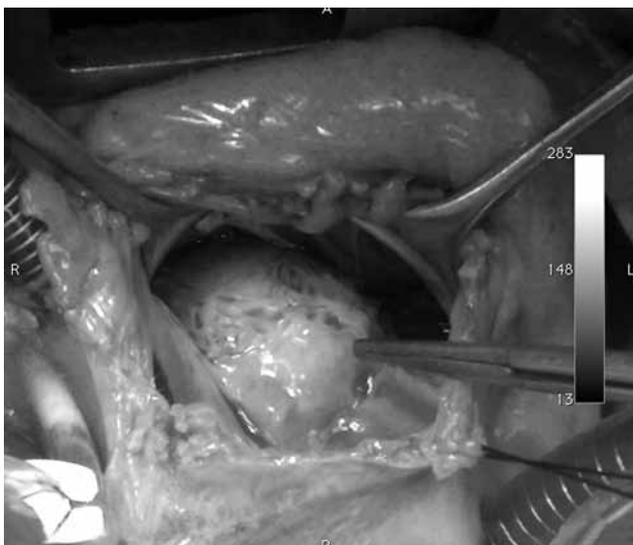


Figure 2. Cyst stemming from the interventricular septum just under the septal leaflet of the tricuspid valve.

patient was transferred to the intensive care unit (ICU) with pacemaker support. During postoperative follow-up, since the patient's spontaneous cardiac rhythm was observed as 40 beats per minute on the postoperative third day, a permanent dual-chamber AV sequential (DDD) cardiac pacemaker (Medtronic, Inc., Minneapolis, Minnesota, USA) was implanted with the transvenous electrode catheters placed in the right atrium and right ventricle. The patient was then discharged on the postoperative seventh day with albendazole treatment.

DISCUSSION

Humans are accidental and incidental hosts in the life cycle of *Echinococcus granulosus*. The helminths usually reach the heart via the coronary circulation, and the lesions are most commonly found within the left ventricle because of its rich coronary blood flow, although they can be found in other parts of the heart as well. Furthermore, the intraventricular septum is the site for 5-9% of cysts.^[2]

Some particular locations are normally symptomatic in cardiac hydatid disease. Cysts can lie near the ventricular and atrial openings and have effects similar to those produced by a valvular disease. Sometimes chest pain, dyspnea, and palpitations may also occur. A ruptured cardiac hydatid cyst may cause more serious complications such as pericardial tamponade, pulmonary-systemic embolization, pulmonary hypertension, and anaphylactic reactions.^[1-3] Ulgen et al.^[4] reported a case in which the patient died from recurrent cerebral embolization of a ruptured cardiac hydatid cyst. Interventricular septal cysts are usually asymptomatic; however, in rare instances in which cardiac echinococcal cysts involve the interventricular septum, they can



Figure 3. Removed cystic material.

cause symptoms related to obstruction of the right or left ventricular outflow tract and/or compression of the conduction pathway (AV block and syncopal attacks), as in our case.^[2,5-7] Recently Bennis et al.^[8] reported the case of a patient with a cardiac hydatid cyst located in the interventricular septum that was revealed by a complete heart block, and they removed it under CPB. In our case, the AV block persisted, and the patient's heart rate declined after removal of the cyst. Therefore, we decided to implant a permanent pacemaker postoperatively.

Echocardiography is the most popular method for diagnosing cardiac hydatid cysts because it is noninvasive, highly sensitive, and easily performed. Computed tomography (CT) and magnetic resonance imaging (MRI) should primarily be used for differential diagnosis.^[9]

Surgical therapy under CPB is the most favored method for the treatment of cardiac hydatid cysts. Since medical therapy is not considered to be safe enough or sufficiently effective, surgical excision remains the only viable remedy. Extirpation of the lesion is recommended under CPB. The cystic content should be aspirated carefully, and with the addition of the hypertonic saline solution or other agents, the cystic content should be rapidly and completely sterilized.^[10,11] It is best, of course, to avoid creating a septal defect when treating septal cysts. Therefore, the remaining cyst cavity should be carefully inspected. We observed no septal defect in our case.

Almost 10% of all hydatid cysts tend to recur after surgery. Albendazole alone or in combination with praziquantel can be used as prophylactic chemotherapy.^[12] However, most surgeons prefer not to use combined chemotherapy unless the surgical field is contaminated with the cystic material.

In conclusion, clinical manifestations of cardiac hydatid disease are nonspecific and can imitate various cardiac diseases depending on the localization of the cyst. Hence, cardiac hydatid disease should be kept in mind in patients with a history of hydatid disease, especially in regions where this disease is endemic. We believe that surgical intervention following an early and accurate diagnosis is mandatory to prevent frequent and serious complications.

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REFERENCES

1. Uysalel A, Yazicioglu L, Aral A, Akalin H. A multivesicular cardiac hydatid cyst with hepatic involvement. *Eur J Cardiothorac Surg* 1998;14:335-7.
2. Tetik O, Yilik L, Emrecan B, Ozbek C, Gurbuz A. Giant hydatid cyst in the interventricular septum of a pregnant woman. *Tex Heart Inst J* 2002;29:333-5.
3. Thameur H, Abdelmoula S, Chenik S, Bey M, Ziadi M, Mestiri T, et al. Cardiopericardial hydatid cysts. *World J Surg* 2001;25:58-67.
4. Ulgen MS, Alan S, Karadede A, Aydinalp O, Toprak N. Cardiac hydatid cysts located in both the left ventricular apex and the intraventricular septum: case report. *Heart Vessels* 2000;15:243-4.
5. Omay O, Celebi S, Kumbasar U, Babaoglu K, Gunay I. Interventricular hydatid cyst imitating pulmonary stenosis. *Heart Surg Forum* 2008;11:E30-1.
6. Yilmaz M, Senkaya I, Kaderli A, Ener S. Complete atrioventricular block due to a hydatid cyst located in the interventricular septum: a case report. *Heart Surg Forum* 2007;10:E9-E11.
7. Beselia K, Nachkepia M, Gigilashvili K, Keshelava G, Janashia G, Imnadze G. Surgical treatment of an Echinococcus cyst of the interventricular septum complicated by septic endocarditis, complete atrioventricular block, and rupture into the Valsalva sinus. *Gen Thorac Cardiovasc Surg* 2010;58:248-50.
8. Bennis A, Darif A, Mehadji BE, Chraibi N. Cardiac hydatid cyst revealed by complete heart block. *Heart Vessels* 2000;15:46-8.
9. Macedo AJ, Magalhães MP, Tavares NJ, Bento L, Sampayo F, Lima M. Cardiac hydatid cyst in a child. *Pediatr Cardiol* 1997;18:226-8.
10. Paşaoğlu I, Doğan R, Hazan E, Oram A, Bozer AY. Right ventricular hydatid cyst causing recurrent pulmonary emboli. *Eur J Cardiothorac Surg* 1992;6:161-3.
11. Gula G, Luisi VS, Machado F, Yacoub M. Hydatid cyst of the heart. Clinical and surgical implications. *Thorac Cardiovasc Surg* 1979;27:393-6.
12. Gormus N, Yeniterzi M, Telli HH, Solak H. The clinical and surgical features of right-sided intracardiac masses due to echinococcosis. *Heart Vessels* 2004;19:121-4.