

Cardiac Hydatid Cyst Causing Right Ventricular Outflow Tract Obstruction: Case Report

Sağ Ventrikül Çıkım Yolunda Daralmaya Sebep Olan Kardiyak Kist Hidatik

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ABSTRACT We present a case of a hydatid cyst placed on the right ventricular outflow tract and applying compression on the pulmonary valve. Thirtythree years old female patient with complaints of dyspnea, palpitation and fatigue was admitted to the cardiology outpatient department. Transthoracic echocardiography revealed a septated cystic mass with the dimensions of 40X56 mm, accusing gradient on the right ventricle outflow tract, adjacent and on the same plane with the pulmonary valve, representing a hydatid cyst. Cyst resection was performed on cardiopulmonary bypass. Severe tricuspid insufficiency was observed after cyst resection. Tricuspid annuloplasty was performed using an annuloplasty ring. Because of the fatal complications of cyst rupture, in places where epidemic Echinococcus cases are seen, cardiac cysts should also be remembered, its early and correct diagnosis is of vital importance.

Key Words: Echinococcus; echinococcosis, pulmonary; pulmonary valve stenosis

ÖZET Bu yazıda sağ ventrikül çıkım yolunda yerleşimli ve pulmoner kapak üzerine bası yapan kist hidatik olgusunu takdim ediyoruz. Dispne, çarpıntı ve çabuk yorulma şikayetleriyle kardiyoloji kliniğine başvuran 33 yaşındaki kadın hastanın yapılan transtorasik ekokardiyografisinde 40x56 mm boyutlarında septalar içeren kistik kitlenin sağ ventrikül çıkım yolunda gradiyent oluşturduğu ve pulmoner kapak üzerine bası yaptığı saptandı. Kardiyopulmoner baypas ile kist rezeksiyonu yapıldı. Kist rezeksiyonu sonrası saptanan ciddi triküspit yetmezliği anuloplasti ringi ile tamir edildi. Kardiyak kist hidatik, mortalitesi yüksek komplikasyonlara sebep olabildiğinden, Ekinokokus'un yaygın görüldüğü yerlerde kardiyak kist hidatiğin hatırdta tutulması erken ve doğru tanı açısından hayati önem arz etmektedir.

Anahtar Kelimeler: Ekinokok; ekinokokkozis, pulmoner; pulmoner kapak darlığı

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H ydatid cyst is a cystic-parasitic infection caused by the larvae of the *Echinococcus granulosus* in human being. The disease is found endemically in South America; Africa; Turkey; New Zeland; Australia and India where sheep and goat are fed for agriculture.¹ Most of the patients (55-85%) show multivisceral disease; such as pulmonary, hepatic and other visceral involvements. Symptoms may change according to the localization in the involved viscera and size of the cyst.² Cardiac hydatid cysts are seldom seen and the incidence is about 0.5-2% of all hydatid cysts.³ In most cases the cyst is single.

The most common localizations of the hydatid cysts in the heart are the free wall of the left ventricle and the interventricular septum.⁴ In this report we represent a case of a hydatid cyst placed in the outflow tract of the right ventricle and pulmonary artery, which is very rare in the literature.

CASE REPORT

Thirtythree years old female patient with complaints of dyspnea, palpitation and fatigue was admitted to the cardiology outpatient department. On her physical examination a systolic murmur was heard in all auscultation zones, augmented especially on the tricuspid and pulmonary zones. There were no pathological signs in her electrocardiograms and chest radiographs. Transthoracic echocardiography revealed a septated cystic mass with dimensions of 40x56 mm, causing gradient on the right ventricle outflow tract, adjacent and on the same plane with the pulmonary valve, representing a hydatid cyst (Figure 1a,1b). There was 3-4 degrees of tricuspid valve insufficiency. Her abdominal ultrasonography was non-pathological. Computerised tomography of the chest revealed an ovoid shaped hypodense cystic lesion adjacent and in contact with the left ventricle imposing primarily a hydatid cyst. According to the results of these examinations it is assumed that there was no primary zone except the cardiac involvement.

An informed consent form for the planned operation was obtained from the patient before the surgery.

SURGERY

A median sternotomy was performed under general anesthesia. After aortobicaval cannulation and establishing cardiopulmonary bypass a mild hypothermia was obtained (32-34°C). The cross clamp was applied. The pulmonary artery was incised longitudinally. The germinal membrane was seen after incising the endocardium transversally beneath the left cusp of the pulmonary valve using a size 15 surgical blade. Care was taken to keep the cyst intact and avoid perforation. A 16G cannula was inserted into the cyst and the cystic fluid was

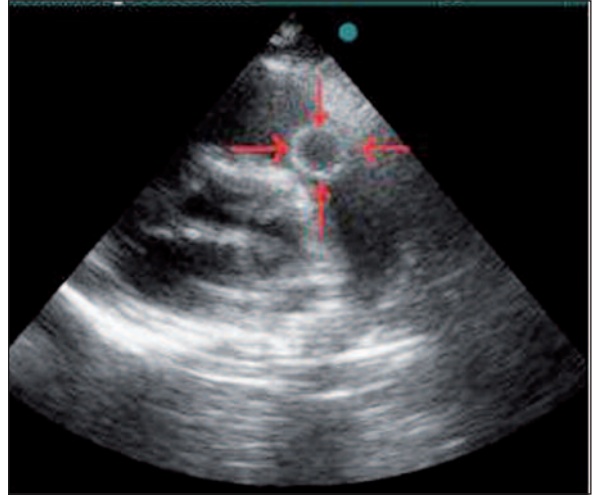


FIGURE 1a: Preoperative echocardiographic view of the cardiac cyst.
(See color figure at <http://cardiovascular.turkiyeklinikleri.com/>)

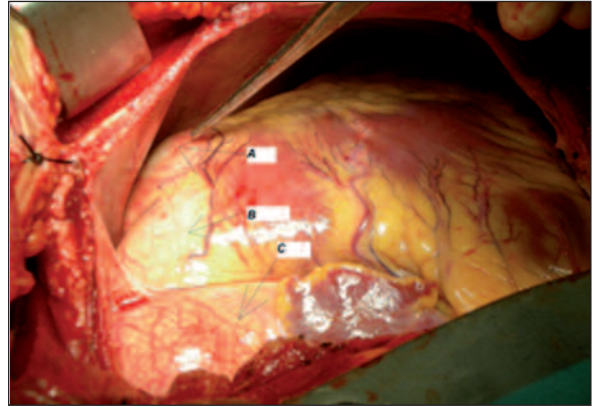


FIGURE 1b: View of the cyst after pericardiotomy.
A: Hydatid Cyst, B: Pulmonary Artery, C: Aorta.
(See color figure at <http://cardiovascular.turkiyeklinikleri.com/>)

aspirated via 50 cc syringe, irrigating the cyst with hypertonic saline solution at the same time. After aspirating the whole cystic fluid, the germinal membrane was removed from the endocardium without disruption (Figure 2a,2b). The remaining defect was sutured primarily using 5/0 polypropylene suture material. Severe tricuspid insufficiency was observed while examining the tricuspid valve through the right atrium. Tricuspid annuloplasty was performed using a biodegradable ring size 26 (Kalangos Biodegradable Tricuspid Ring, Bioring SA, Lonay, Switzerland). Aortic cross clamp was removed after suturation of the pulmonary arteri-

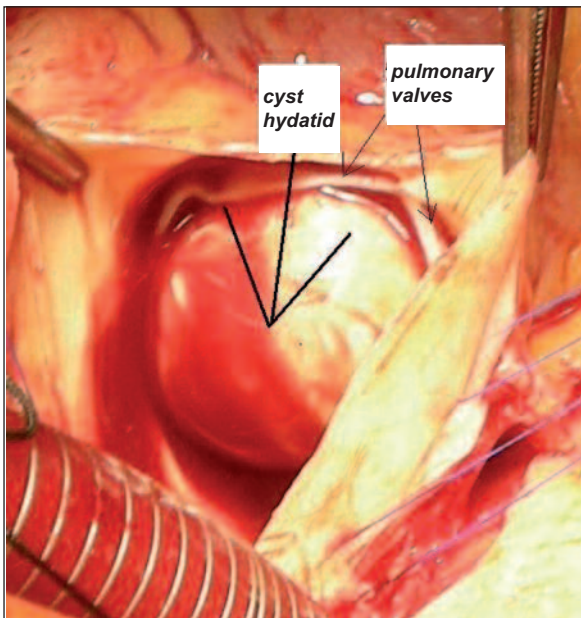


FIGURE 2a: View of the cyst after pulmonary arteriotomy.
(See color figure at <http://cardiovascular.turkiyeklinikleri.com/>)

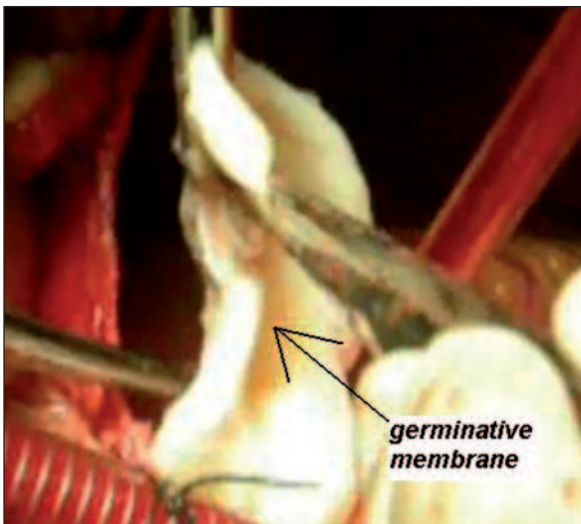


FIGURE 2b: The germinative membrane extracted.
(See color figure at <http://cardiovascular.turkiyeklinikleri.com/>)

otomy completed. The patient was safely weaned from cardiopulmonary bypass and the operation was terminated after suturation of all the anatomical layers. The cyst was vanished in the postoperative echocardiograms. The patient was discharged with minimal tricuspid insufficiency on the fifth day after operation.

The bright glossy white specimen was defined as a 9 cm sized germinative membrane of a hydatid cyst in the pathological evaluation report.

DISCUSSION

Echinococcus is a disease known for centuries, the first cardiac hydatid cyst case was reported by Williams in 1836. The first antemortem diagnosis was made by Ceme et al. in 1905.⁵ Primary echinococcosis of the heart is exceptionally uncommon and is reported 0.5% to 2% in comparison with liver (70%) or lung (20%) involvement.^{6,7} Cardiac cysts are more common in patients with multivisceral disease.

The echinococci reach the heart through coronary circulation, pulmonary circulation, or via foramen ovale. After reaching the heart the larvae becomes a mature cyst in about 1 to 5 years. An adventitial pericystic layer forms as a counter reaction of the myocardium to the cyst.² The left ventricle seems to be the mostly invaded localisation because of its dense vascular structure, but they also lodge on the right ventricle and any other localisation. Erentug et al. reported cardiac hydatid cysts in right ventricle (3 cases), left ventricle (1 case) and interventricular septum (2 cases).⁸ Cysts can cause obstruction if they settle on the right ventricle outflow tract. They can rarely lodge on the septum. Cardiac conduction blocks can be seen if the site of the cyst is related with the conduction system. Superficial cardiac and pericardial cysts can rupture spontaneously. Pericarditis and pericardial effusions can be seen by the irritation of the superficially localised cysts. Perforation into the cardiac chambers are possible. Pulmonary embolies due to rupture into the right chambers are not uncommon and are usually fatal.⁹

In our case the cyst was lodged on the right ventricle outflow tract causing compression on the pulmonary valve.

Cardiac hydatid cysts have no special clinical features, signs depend on the age; mass and calcification of the cyst.¹⁰ Though the most common symptoms of the cardiac hydatidosis are precordial chest pain, cough, fever, hemoptysis, dyspnea,

anaphlactic shock, arrhythmias, acute myocardial infarction, pericarditis, valvular dysfunction, pulmonary hypertension, pulmonary and systemic embolism and death are also seen.^{2,4} It should be kept in mind that cardiac hydatid disease may mostly be asymptomatic.

The mostly evident method in diagnosing cardiac hydatid cysts is two-dimensional echocardiography.⁴ Computerised Tomography and Magnetic Resonance inspections are more useful in extracardiac involvement. A round shaped thin walled multilocular mass on the echocardiography is of diagnostic value for the cyst. Echocardiography also helps to differentiate other cardiac masses as thrombi, vegetations, primary and metastatic solid tumours from cysts. Benign epithelial tu-

mours are usually small in size and are commonly settled around the atrioventricular node. Pericardial cysts are commonly unilocular.

The accepted method of treatment is emergency surgery, because complications like the rupture of the cyst into the cardiac chambers and pericardium may be fatal.³ Surgery should be performed under cardiopulmonary assistance to avoid fatal complications.¹¹ But in a study of 14 patients reported by Birincioğlu et al., 5 of the patients operated without cardiopulmonary bypass.¹² No recurrences are seen in most of the cases. In places where epidemic *Echinococcus* cases are seen, cardiac cysts should also be remembered because early and correct diagnosis is of vital importance.

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