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Arterial Embolism Caused by a Ruptured Hydatid Cyst in the Heart: Report of a Case

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Abstract
Cardiac hydatid cysts are extremely rare and, although patients may remain asymptomatic for many years or have only minor nonspecific symptoms, they are associated with life-threatening complications. We report the case of a 32-year-old woman with an acute arterial embolism caused by a ruptured hydatid cyst in the heart. An emergency operation revealed that the embolism originated from the left cardiac chamber caused by a cyst in the left ventricle. There were also three cystic lesions in the right lung. The patient underwent surgery to remove the hydatid cysts from the right lung on the 13th day after the first operation. Her postoperative course was uneventful and she was discharged from hospital on the 27th day after admission.

Key words Arterial embolism · Ruptured cardiac hydatid cyst

Introduction

Hydatid disease is frequently encountered in the sheep- and cattle-raising regions of the world, being most common in Australia, New Zealand, South Africa, South America, and the Mediterranean countries of Europe, Asia, and Africa.[1] Echinococcosis is endemic to Turkey and a very important disease.[2] However, cardiac hydatid cysts are rarely reported, accounting for less than 3% of all hydatid cysts.[2–5]

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Case Report

A 32-year-old woman was admitted to our clinic with a 7–8 h history of severe pain in the bilateral lower extremities. On examination she had an arterial pressure of 110/70 mm Hg, and a pulse rate of 94 beats/min. She had pallor, pain, and paresthesia, and the bilateral lower extremity pulses were not palpable. Ultrasonic duplex scanning detected no arterial flow patterns in the lower extremities.

A diagnosis of acute arterial embolism was made and bilateral embolectomy was performed as an emergency procedure. We found that the embolism was a saddle embolus of the aortic bifurcation responsible for acute abdominal aortic occlusion. The material from the embolectomy was pathologically confirmed as a ruptured hydatid cyst membrane (Fig. 1). Intra-arterial irrigation was carried out during the operation. The patient was commenced on a 3-month course of albendazole, 10 mg/kg per day, and investigations were done to detect the presence of hydatid cysts in any other organs. The indirect hemagglutination test was positive, and echocardiography (ECHO) showed a suspicious lesion in the left ventricular wall, which could have been a cardiac hydatid cyst. However, it had disappeared on a control ECHO. A chest X-ray showed multiple cystic lesions in the right lung. A computed tomography scan showed a sharply demarcated image of three cystic lesions adjacent to each other in the apical-posterior segment and the lower lobe superior segment of the right upper lobe. The diameters of these cystic lesions were 94–69, 61–71, and 60–50 mm, respectively (Fig. 2). Abdominal ultrasonography revealed no abnormalities. The hydatid cysts in the right lung were completely resected by cystotomy and capitonnage 13 days after the embolectomy. The patient's condition improved and she was discharged from the hospital 27 days after admission. At her 12-month follow-up, she was healthy, an ECHO was normal, and there were no signs of recurrence.

Discussion

Hydatid disease of the heart accounts for only 0.2%–3% of all cases of hydatid disease,[2–7] and it is most often seen in the left ventricle (75%), followed by the right ventricle (18%), interventricular septum (7%), and occasionally in the right atrium.[4–7] The signs and symptoms of these cysts vary according to their location, growth, and rupture. Hydatid disease of the heart may cause disturbances in valvular function, ischemic events, and can simulate ventricular aneurysms, atrioventricular conduction anomalies, acute pericarditis with effusion and cardiac tamponade, or a pericardial mass. Patients with cardiac hydatid cysts may remain asymptomatic for many years or have only minor nonspecific symptoms, but they are associated with a high risk of lethal complications if left untreated.[6,8] Apart from anaphylaxis, if a cyst ruptures into the left side of the heart, peripheral and/or cerebral embolism may occur, whereas if it ruptures into the right side of the heart, pulmonary emboli may be seen.[2,4,7] Our patient suffered a peripheral embolism, caused by a cyst rupturing into the left ventricle of the heart.

A diagnosis can be made by the combined assessment of clinical, radiologic, laboratory, and anamnesis data. Casoni's intradermal test, the Weinberg complement fixation test, and the indirect hemagglutination test are useful for establishing the diagnosis,[1] although we only use the indirect hemagglutination test because of its high specificity. The other two tests are no longer recommended because of their lack of specificity. The indirect hemagglutination test was positive in our patient. Electrocardiography and chest radiography do not show specific evidence of cardiac cysts. Echocardiography is the most sensitive imaging modality and is preferred because it is noninvasive, but in

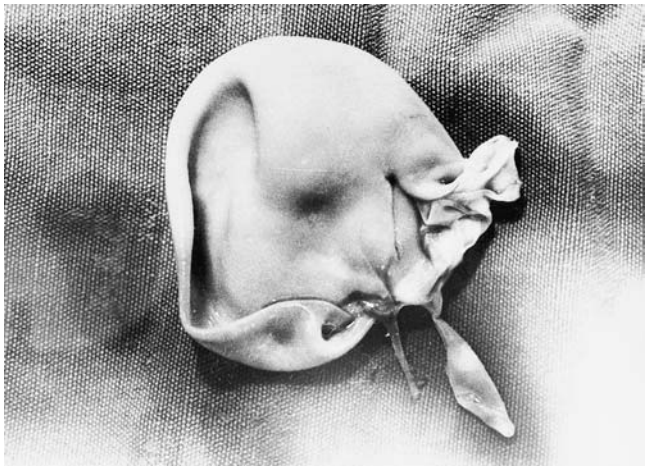

Fig. 1. Material from the embolectomy, showing a ruptured hydatid cystic membrane

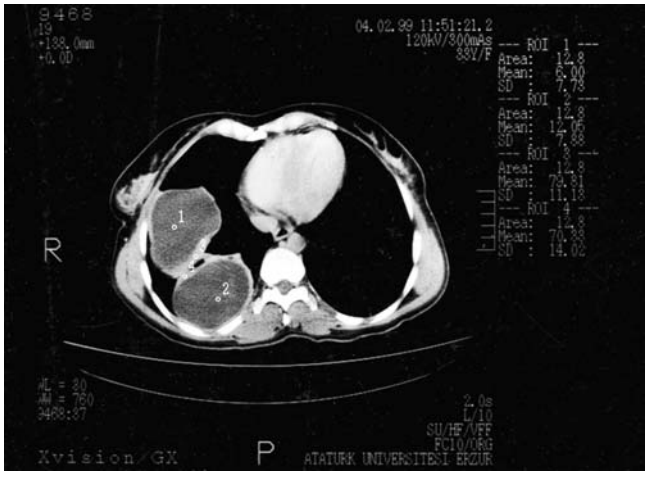

Fig. 2. Computed tomography scan showed a sharply demarcated image of two cystic lesions adjacent to each other in the apical-posterior segment of the right upper lobe of the lung

Table 1. Clinical characteristics of five patients operated on for cardiac hydatid cysts

Patient no.	Age (years)	Sex	Diagnostic methods used	Cyst localization/ surgical procedure performed	Follow-up (years)
1	23	M	ECHO, CT	3 × 5 cm anterior RVW/ right ventriculotomy, cystotomy-capitonnage, closure with PTFE patch, CPB (multiple lung lesions)	10
2	29	M	ECHO, CT	4 × 5 cm apical, 3 × 4 cm pericardial/ left ventriculotomy, cystotomy-capitonnage, CPB	7
3	40	F	ECHO, CT	5 × 7 cm lateral LVW/ left ventriculotomy, cystotomy-capitonnage, CPB	3
4	24	F	ECHO, CT, MRI, CA	5 × 6 cm septum-apex-LVW/ left ventriculotomy, cystotomy-capitonnage, CPB	1
5	32	F	ECHO, CT	Ruptured cyst-LVW, peripheral embolism/ embolectomy (multiple lung lesions)	2

ECHO, echocardiography; CT, computed tomography; MRI, magnetic resonance imaging; CA, coronary angiography; PTFE, polytetrafluoroethylene; RVW, right ventricular wall; CPB, cardiopulmonary bypass; LVW, left ventricular wall

some cases, the echoluscent and multiseptate nature of echinococcal lesions may be absent.[3,7] Echocardiography showed a suspicious lesion in the left ventricular wall in our patient, which could have been a ruptured cardiac hydatid cyst, but it had disappeared on the control ECHO, leading us to believe it had improved. Computed tomography, magnetic resonance imaging, and cardiac catheterization may also be used in the diagnosis, but cardiac catheterization might not be recommended because of the risk of the cyst being ruptured.[1,3,7]

Our patient experienced symptoms mainly related to acute arterial embolism. Therefore, emergency surgery was performed, which clarified the cause of the embolism as originating from the left ventricle of the heart. Systemic hydatid disease was investigated in the postoperative period, and a diagnosis of hydatid disease of the right lung was subsequently confirmed.

Treatment usually involves surgical intervention for acute arterial embolism caused by a ruptured hydatid cyst of the heart. In addition, medical treatment with benzimidazoles, such as mebendazole or albendazole, should be given as postoperative prophylaxis.[1,3] We have performed cystotomy and capitonnage for cardiac hydatid cysts in five patients, four of whom had cysts in the left side of the heart[4,9] (Table 1).

In conclusion, although hydatid disease of the heart is very rare, our case report demonstrates that this cause of peripheral embolism should be taken into consideration, with systemic investigation of other organs especially in patients living in endemic areas.

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