

A rarely Seen Mass In Atrioventricular Sulcus: Cardiac Cyst Hydatid

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ABSTRACT

Cardiac hydatid cyst is a rare manifestation of Echinococcus infestation. It is mainly located in left ventricle followed by right ventricle, left atrium, pericardium, pulmonary artery in case of heart involvement. Herein we report a hydatid cyst in atrioventricular sulcus which is an unusual and rare location for cardiac hydatid cyst as demonstrated by three dimensional transthoracic and cardiac magnetic resonance imaging.

Key Words: Hydatid Cyst, atrioventricular sulcus, cardiac mass, echocardiography, magnetic resonance imaging

Introduction

Hydatid cyst is a parasitic disease caused by Echinococcus granulosus that affects people by accidentally ingesting embryonated eggs (1). Hydatid cysts are usually located in liver followed by lung, muscle and other organs. However cardiac involvement occurs only 0.5-2% of patients infested with hydatid cyst. Cardiac hydatid cyst is often located in left ventricle followed by right ventricle, left atrium, pericardium, pulmonary artery (2). Herein we report a hydatid cyst in atrioventricular (AV) sulcus, an unusual and rare location for cardiac hydatid cyst, demonstrated by three dimensional transthoracic and cardiac magnetic resonance imaging.

Case Report

46 year old male patient with a history of renal and liver hydatid cyst was referred to our cardiology clinic due to a suspicion of cardiac cyst hydatid in chest tomography. He was asymptomatic in terms of cardiovascular system. In his physical examination, S1 and S2 was positive and there was a grade 3/6 systolic murmur at aortic notch and apex, pulse was rhythmic and pulse volume was normal. On his electrocardiogram, rhythm was sinus. Transthoracic echocardiography revealed normal ejection fraction of 60% with ascending aortic aneurysm a diameter of 55

mm and severe aortic and mitral insufficiency. Both on apical two chamber and three dimensional view, there was a 34×37 mm in size hypo echoic, well-circumscribed cardiac mass, localized at AV sulcus in left ventricle (figure 1). To confirm the diagnosis cardiac magnetic resonance imaging was performed and it showed an encapsulated, heterogenic, well-circumscribed, 45×36×5 mm in size cardiac mass which was comparable with hydatid cyst and it was closed to the left main and circumflexed artery (figure 2 and 3). Patient was evaluated by the heart team and then referred to cardiovascular surgery for the total excision of cardiac cyst. Before surgery, coronary angiography and aortography was performed and it revealed critical stenosis in right coronary artery (RCA), left anterior descending (LAD), and circumflex artery (CX) with severe aortic insufficiency respectively. Then the patient underwent complex cardiac surgery. The superficially located cyst was first aspirated with a needle and washed out with a hypertonic solution. Thereafter cardiac hydatid cyst was totally excised. Additional procedures during operation as follows; by-pass surgery including saphenous graft between aorta to the CX, RCA and diagonal artery and left internal mammarian artery to LAD coronary artery anastomosis, mitral repair and Benthal operation (composite graft replacement of the aortic valve, aortic root and ascending aorta, with re-implantation of RCA and left main coronary arteries). Patient was successfully recovered after

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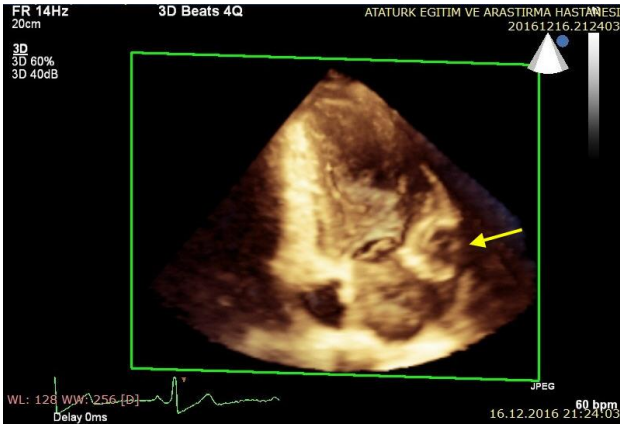


Fig.1. Three dimensional transthoracic echocardiographic imaging shows hypo echoic, well-circumscribed cardiac mass, localized at atrioventricular sulcus in left ventricle

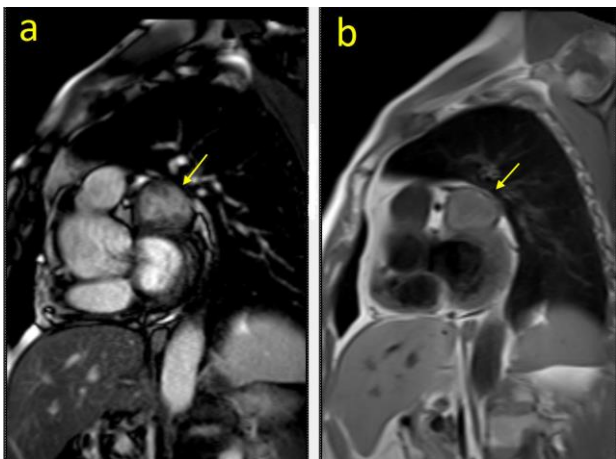


Fig. 2. A and B, Short-axis static image from cine true fast imaging with steady-state precession (a) and Turbo spin echo dark-blood MR image (b) show hydatid cyst originating left ventricle wall and growing to left anterior descending artery.

operation and followed in intensive care unit. Pathologic specimen also confirmed the diagnosis of hydatid cyst. Then he was followed in outpatient clinic and discharged with albendazole, warfarin, acetylsalicylic acid and atorvastatin treatment.

Discussion

Hydatid cyst is a parasitic infestation usually seen in endemic areas such as South America, the Mediterranean coast, the Middle East, Australia, New Zealand, and some regions of Russia, Asia, and Africa. Turkey is one of the endemic areas for hydatid cyst (1). Hydatid cyst usually affects people by eating or drinking the embryonated eggs of *Echinococcus granulosus*. Embryos are released from intestinal system and enter to the bloodstream. It can affect any organ yet usually locates in liver followed by lung and muscle. Cardiac hydatid cyst is a rare complication of hydatid cyst infestation which is seen in 0.5-2% of

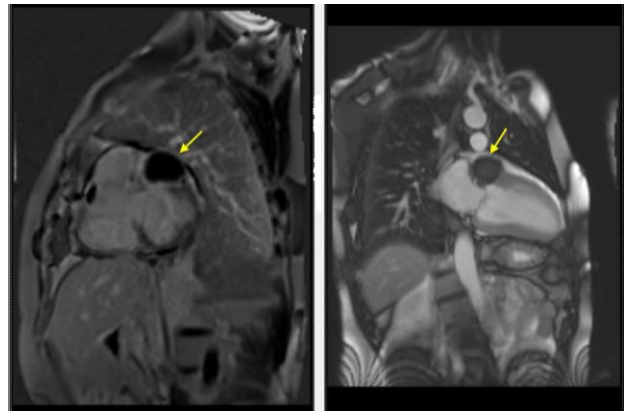


Fig. 3. Two-chamber white-blood inversion recovery T1-weighted phase sensitive inversion recovery magnetic resonance image and axial image with intravenous contrast show hydatid cyst in spleen

affected patients. Cardiac hydatid cyst is mainly located in left ventricle (60%) followed by right ventricle (10%), left atrium (8%), pericardium (7%), pulmonary artery (6%) (2). To our knowledge hydatid cyst localization in left AV groove has not been reported thus far. The differential diagnosis of AV groove masses is quite wide. These are tumors, inflammatory diseases (Erdheim-Chester disease, IgG4-related disease, Sarcoid), vascular (coronary aneurysm, coronary fistula and cardiac chamber lesions (cardiac chamber aneurysm or pseudo aneurysm), AV groove fatty proliferation and caseous mitral annular calcification (3). Although a very rare entity hydatid cyst may be one of the causes of AV groove masses.

Transthoracic echocardiography is a quite sensitive and specific imaging tool to diagnose hydatid cysts regarding the location, size, and the presence of scolices and the mechanical pressure on the vital parts of heart. Transesophageal echocardiography (TEE) is also useful (4). However we did not consider using TEE in our case because it would not give additional information about the characteristics of the hydatid cyst over TTE, instead we preferred to use MR imaging which clearly demonstrate the demarcation and lineation of the cyst. As in our case MR imaging successfully demonstrates the close relationships with coronary arteries. Typical finding of hydatid cyst on MR imaging is an oval shaped hypointense nature on T1 weighted images and hyperintense nature on T2 weighted images. Also characteristic appearance on T2 weighted imaging is a hypointense peripheral ring defined as pericyst. Furthermore the multivesicular nature of the cyst content and detachment remark the true diagnosis (5,6).

Patients with cardiac hydatid cyst are usually asymptomatic. Our patient was also asymptomatic. However it can cause many complications including

left ventricular outlet flow obstruction, acute coronary syndrome, cardiac arrhythmias, pericardial effusion and pericarditis (7,8). Given the different anatomical and pathological development, we consider that additional cardiac pathologies such as coronary artery disease and valvular pathologies were not related the hydatid cyst. Removal of cysts through open-heart surgery is crucial for patient survival (9). Albendazole or mebendazole twice a day treatment is recommended after surgery.

Cardiac hydatid cyst is a rare cause of cardiac mass in AV groove. However it should be keep in mind in differential diagnosis especially in endemic areas. Besides conventional diagnostic methods, three dimensional cardiac imaging and cardiac MR imaging are quite sensitive and specific imaging tools in diagnosing hydatid cysts.

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