



Huge Asymptomatic Isolated Hydatid Cyst in the Interventricular Septum

Maryam Aliramezany*

Cardiovascular Research Center, Institute of Basic and Clinical Physiology Sciences, Kerman University of Medical Sciences, Iran

Abstract

Hydatid cyst is an important zoonotic disease which is more common in areas where there is close contact with wild animals such as foxes or in areas where there are dogs. The most common sites of infection are liver and lungs but disease tend to spread in all organs. Furthermore, isolated cardiac cyst is very rare. This case report describes a patient who was suspected of having cardiac hydatid cyst in routine evaluations prior to cholecystitis surgery, and finally, he underwent successful surgery with a definitive diagnosis of hydatid cyst.

Keywords: Hydatid cyst; Interventricular septum; Isolated; Case report; Huge

Abbreviations

ECG: Electrocardiography; CMR: Cardiac Magnetic Resonance

Learning Objective

1. Huge isolated hydatid cyst in uncommon location in the heart.
2. It is important to note that even large cysts can be asymptomatic.
3. Serological tests can be negative and this issue does not rule out this disease.
4. Echocardiography is a sensitive tool for diagnosing cysts, but it is recommended to prove it with another diagnostic modality.
5. The mere presence of a cyst, even without any symptoms, is an indication for surgery.
6. Initiation of albendazole treatment prior to surgery is essential to prevent further complications if rupture occurs during surgery.

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*Correspondence:

Maryam Aliramezany, Cardiovascular Research Center, Institute of Basic and Clinical Physiology Sciences, Kerman University of Medical Sciences, Kerman, Iran, Tel: +98-9131961016; Fax: +98-3431325222;

E-mail: maliramezany@yahoo.com

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Introduction

Hydatid disease is an important zoonotic disease which is caused by *Echinococcus larvae* [1]. It is usually more common in areas that are in close contact with wild animals such as foxes or in areas where there are dogs. The most common sites of infection are usually the liver (>65%) and lungs (25%) [2], but the disease tends to spread throughout the body.

Cardiac involvement which was first reported in 1836 by Williams is very rare and usually observed in 0.5% to 2.5% of patients [2]. Even in areas where the disease is endemic the prevalence of isolated cardiac hydatid cyst is also rare [3,4]. In cases with cardiac involvement, the most common sites of involvement are myocardium and pericardium, respectively [4].

In this report, we describe a patient who was suspected of having cardiac hydatid cyst in routine evaluations during cholecystitis surgery consultation. He was finally diagnosed of having isolated cardiac cyst and successfully underwent excision.

Case Presentation

The patient was a 45-year-old man who was referred for cardiac consultation prior to cholecystitis surgery due to his age. He had no history of heart or lung diseases, diabetes or hypertension. He had no complaints of chest pain or shortness of breath, and his cardiac functional class was normal. Examination of the heart and lungs was normal and no murmur or additional sound was heard. His vital signs were stable. Because of his age, an ECG was taken, which was normal (Figure 1).

The chest X-ray showed no evidence of increased heart size and the lung parenchyma was

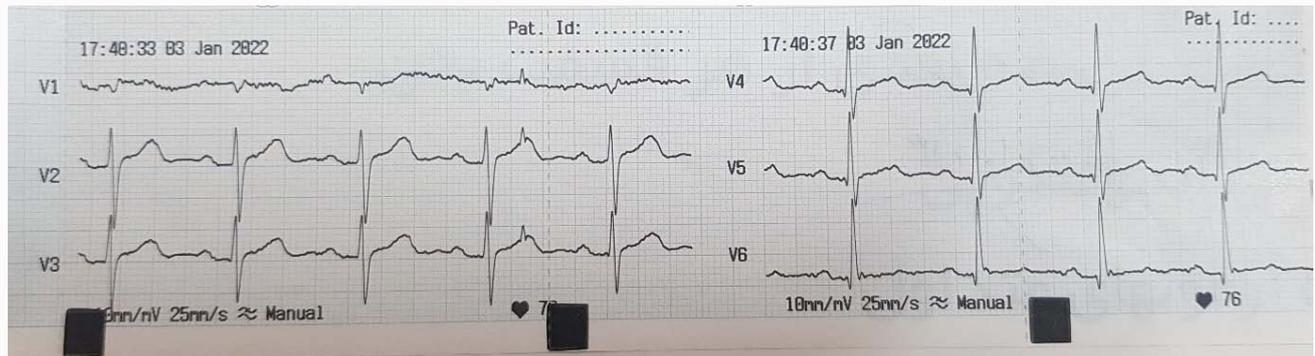


Figure 1: Normal ECG without block or ST-T change.



Figure 2: CXR showed round calcified mass in mid left ventricle.

completely normal. A round, calcified mass with relatively regular edges about 5 cm × 5 cm in size was seen in the mid left ventricle (Figure 2). The margins of the mentioned mass were not compatible with calcification of mitral annulus or ventricular aneurysm. For further evaluation, transthoracic echocardiography was performed. In echocardiography, the size of chamber and systolic and diastolic function of ventricles were normal. The heart valves were normal and there was no evidence of pericardial effusion. However, in the four-chamber view, a large dense and calcified mass was seen in the interventricular septum, which seemed to have slight compressive effects on the right ventricle (without increased gradient). This mass was also somewhat visible in the other views (Figure 3).

Since we doubted to hydatid cyst, serological tests were performed and, the level of antibody was checked, which was within the normal

range.

Based on the appearance of the mass on chest X-ray and echocardiography, and with doubt to hydatid cyst, CT angiography was done and showed large (5 × 5) calcified mass in posterior part of the heart in the interventricular septum which was compatible with hydatid cyst. This finding was confirmed with CMR. The patient was then examined for cysts in other organs. Ultrasound of the abdomen and pelvic as well as the CT imaging of brain, abdomen and thorax were normal.

After the final diagnosis and completion of the evaluations, albendazole tablets (10 mg/kg for 10 days) were prescribed for the patient and he was referred for cardiac surgery. Finally, the patient was discharged with good general condition and without any complications. Pathologist confirmed the same diagnosis.

Discussion

Hydatid cyst is a zoonosis disease caused by adult cestodes or *Echinococcus larvae* and usually caused by larval growth in the intermediate host. There are two known main types of *Echinococcus* (*E. multilocularis* and *granulosus*), the *Granulosus* of which usually grows in the liver and rarely in the heart [5].

As mentioned, cardiac involvement is usually less common in this disease but the most common sites for cardiac cysts are the left ventricle (55% to 60%); right ventricle (15%); the interventricular septum (5% to 9%); left atrium and pericardium (8%); pulmonary artery (7%), respectively, and finally the right atrium (3% to 4%), which depends on the amount of blood supply [6].

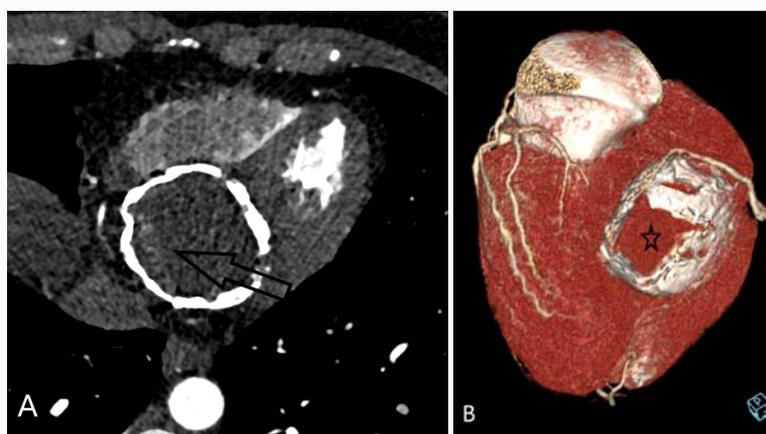


Figure 3: A) Large calcified mass (arrow) in posterior surface of the heart. B) Large septated calcified mass (star).

The signs and symptoms of the disease depend on the size of the cyst and its location [5]. Chest pain, shortness of breath, and palpitations are usually the first signs of cardiac involvement [7] and is seen in only 10% of patients with large cysts [5].

Furthermore, symptoms such as heart failure and arrhythmia, valvular involvement, anaphylactic shock and tamponade have been reported in some cases [8]. In cases where the cyst is located in the interventricular septum, due to its size, it may cause compressive effects on the cardiac conduction system or obstruction of the ventricular outflow site [9,10]. Similar study reported Q wave and inverted T wave in inferior lead [11]. Our patient was completely asymptomatic with normal ECG despite having a relatively large cyst located in the interventricular septum (rare site) and was diagnosed accidentally in routine evaluations.

Considering that sole isolated heart involvement is rare, it is better to check for involvement of other organs. Our patient did not have any signs of involvement of other organs in abdominal ultrasound and pelvic and thorax CT scan.

Diagnosis of the disease is usually based on clinical symptoms and serological test as well as various imaging procedures. A chest X-ray that is initially taken is usually not diagnostic, but may show a shadow in the heart as well as calcification and may be a guide for further evaluation [12]. In such cases, other diagnoses such as mitral valve annulus calcification and left ventricular aneurysm are also considered, but due to the fact that the margin of the mass seen in our patient's chest X-ray did not match the above problems, increased the likelihood of hydatid cyst.

Although, an indirect hemagglutination test is a sensitive and specific method for diagnosing the disease, we should remember that a negative test does not rule out the disease as our patient test was negative [4]. Transthoracic echocardiography is also a non-invasive diagnostic tool that easily shows the size, location and number of cysts [13]. According to the classification provided by the World Health Organization (WHO) expert group, echocardiography is preferred in these patients due to its low cost and availability of diagnostic equipment, although in some cases it is not sufficient for initial diagnosis [14].

CT scan is a more preferred method than other diagnostic modalities, as it shows accurate anatomy and calcification. Another method is CMR, which is the most reliable diagnostic method for hydatid cyst and shows the exact location of the cyst and its external and internal structure [12]. In our patient, the final diagnosis was made by CT angiography and confirmed by MRI. In addition, the condition of the coronary arteries was examined and was normal.

Finally, the important issue in dealing with these patients is that due to the possibility of adverse and sometimes fatal complications, in almost all articles it is recommended that even in patients who have no symptoms, the cyst should be operated and completely evacuated [15].

In general, as mentioned, the prevalence of isolated and asymptomatic cardiac hydatid cysts is very rare. Furthermore, location of cyst in interventricular septum is even rarer. Similarly, Fennira et al. [11], showed only 45 cases of hydatid cyst in interventricular septum of which five cases were asymptomatic.

Conclusion

Isolated cardiac hydatid cyst is one of the very rare manifestations of the disease. Furthermore, the presence of the asymptomatic cyst in the interventricular septum is very rare case that should always be considered in the differential diagnosis of cystic masses seen in chest X-ray. Early detection and treatment are crucial to avoid fetal complications.

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