Case Report / *Olgu Sunumu*

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# Cardiac Hydatid Cysts: A Diagnostic Challenge in Patient with Chest Pain

## Göğüs Ağrısı ile Başvuran Hastada Nadir Bir Tanı: Kardiyak Kist Hidatik

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**Abstract**

Hydatid cyst is a parasitic infection that occurs when *Echinococcus granulosus* infects various organs following contact with humans. In endemic areas, such as Türkiye, the causative agent mostly involves the liver and lungs, while cardiac involvement is exceedingly rare. We present a patient who recovered completely with a successful surgical intervention and albendazole treatment. The case emphasizes the importance of considering cardiac hydatid cysts in the differential diagnosis of patients with a history of hydatid cysts who present with chest pain and abnormal electrocardiogram findings. Furthermore, it highlights the necessity of appropriate imaging and the implementation of both pharmacological and surgical treatment modalities for the successful management of this rare condition.

**Keywords:** Hydatid cysts, cardiac, chest pain

**Öz**

Kist hidatik, *Echinococcus granulosus*un insanla teması sonucu çeşitli organlara yerleşerek ortaya çıkan paraziter bir enfeksiyondur. Türkiye gibi endemik bölgelerde sık görülmekle birlikte, etken genellikle karaciğer ve akciğere yerleşirken kardiyak yerleşimi oldukça nadirdir. Uygun cerrahi müdahale ve albendazol tedavisi ile tam iyileşme sağlanan bu vakayı literatüre katkı sağlamak amacıyla sunmak istedik. Kist hidatik öyküsü bulunan hastalarda göğüs ağrısı ve elektrokardiyogram bulguları gözlendiğinde, kardiyak kist hidatik ihtimalinin akılda tutulması gerektiğini vurgulamak istiyoruz. Bu durumda gerekli görüntüleme yöntemleriyle tanı konulmalı ve farmakolojik ile cerrahi tedavi yaklaşımlarının gerekliliği göz önünde bulundurulmalıdır.

**Anahtar Kelimeler:** Kist hidatik, kardiyak, göğüs ağrısı

## Introduction

Hydatid cysts, caused by the larval stage of the tapeworm *Echinococcus granulosus*, are transmitted to humans through the fecal-oral route, primarily via contact with infected canids. The clinical presentation of *E. granulosus* infection depends upon the site of the cysts and their size (1). In endemic regions like Türkiye, the incidence rates of hydatid cysts can be high, reaching up to 50 cases per 100.000 inhabitants. While hydatid cysts are most commonly observed in the liver (60-70%) and lungs (20-30%), they can also develop, albeit less frequently, in the spleen, kidneys, central nervous system, and heart (2). Treatment strategies for hydatid cysts involve a combination of pharmacological and surgical interventions, tailored to the

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cyst's location. For cardiac cystic echinococcosis, surgical removal is the preferred treatment, combined with antiparasitic therapy in active stages (3). This report aimed to present a rare case of a pediatric patient with a cardiac hydatid cyst and outlines the successful treatment approach employed.

**Case**

A 12-year-old female patient, who underwent surgery four years ago for a pulmonary hydatid cyst in the right lower lobe, presented with persistent chest pain that had persisted for several days. Her previous surgery involved the removal of a giant, intact hydatid cyst membrane containing 600 cc of rock water-like fluid. Following the surgery, the patient received albendazole treatment for three months in a continuous intermittent protocol. Physical examination revealed normal vital signs and decreased respiratory sounds in the area of the previous operation, while other system examinations were unremarkable. Biochemical parameters, including hemogram, biochemistry, creatine kinase, and troponin, were within normal limits. Chest radiography was normal, except for sequelae related to the patient's surgical history. Electrocardiography (ECG) demonstrated T-wave inversions in leads D2, D3, aVF, and V3-6, while other findings were within normal limits.

Echocardiographic examination, performed due to the patient's previous history of hydatid cysts, continued exposure, non-specific chest pain, and ECG findings, revealed a 37 x 28 mm cystic lesion with hypoechoic foci located behind the left ventricle in the posterior part of the heart. The lesion had a smooth border and affected the posterior wall, causing mild pericardial effusion (Figure 1A, B). While previous visits showed negative indirect hemagglutination values, the patient's current admission revealed a positive hydatid cyst indirect hemagglutination test and an IgE level of 116 IU/mL. Thoracic computed tomography examination showed a hypodense, approximately 4 x 3 cm, oval mass lesion with

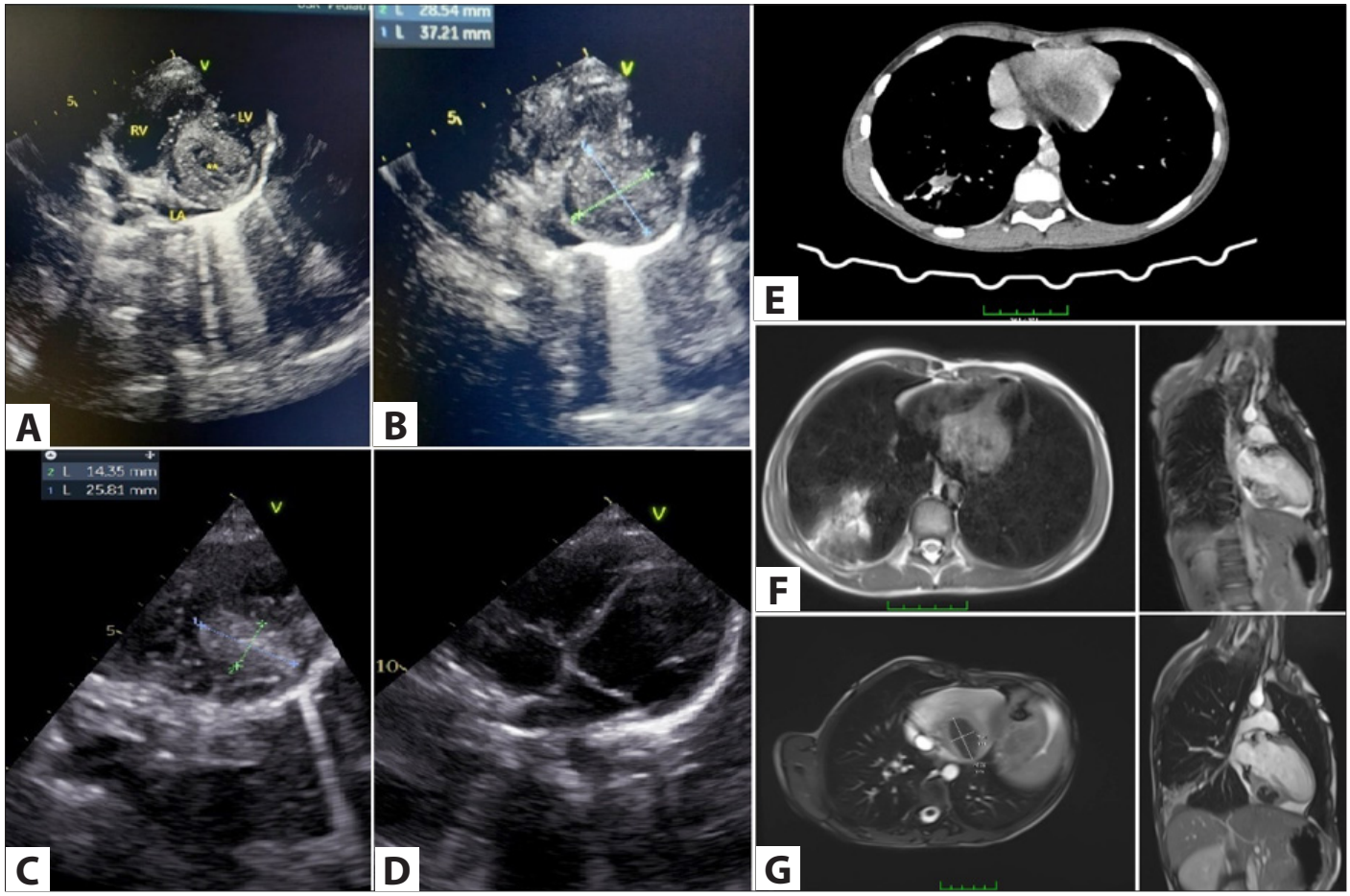


**Figure 1.** Echocardiographic examination: Echocardiography revealed a 37 x 28 mm cystic lesion with hypoechoic foci located posteriorly to the left ventricle. The lesion exhibited a well-defined border, involved the posterior wall, and induced mild pericardial effusion **(A,B)**. Three months post-operatively, follow-up echocardiography demonstrated marked shrinkage of the lesion following implosion ablation. The central cystic appearance had resolved, the circumference was clearly demarcated, and the left ventricular cavity was unrestricted **(C,D)**. Cardiac CT examination showed normal cardiothoracic ratio and heart chambers, but a hypodense oval mass lesion with septation, compatible with hydatid cyst was observed at the left ventricular-diaphragm border **(E)**. Cardiac MRI examination showed a circumferential contrast-enhancing lesion located in the left ventricular myocardium, approximately 4 x 2 cm in size, hypointense on T1 and T2A sequences after IVKM injection **(F,G)**.

septation at the ventricle-diaphragm border, compatible with a hydatid cyst (Figure 1E). Preoperative cardiac magnetic resonance evaluation revealed a hypointense, circumferential, contrast-enhancing lesion in T1 and T2A sequences, with an increased cardiothoracic ratio and a size of approximately 4 x 2 cm, located in the left ventricular myocardium (Figure 1F, G). Preoperative albendazole treatment (15 mg/kg) was initiated, and the patient was counseled on the importance of adherence. The surgical procedure was subsequently performed by cardiovascular surgeons. During the operation, it was observed that the diaphragm had an eroded appearance on the diaphragmatic side of the heart. Approximately 30 cc of rock water-like fluid was aspirated from the face of the ventricle, compatible with the cyst. The lesion was then washed with saline solution, and a mini ventriculotomy was performed to further clean the lesion by washing it again with lung batticon and saline. In the control echocardiographic examination performed three months after the operation, it was observed that the lesion, ablated by internalization, had shrunk, the cystic appearance in the center had disappeared, the surrounding area was well circumscribed, and the left ventricular cavity was open. Albendazole treatment was discontinued after a total of eight months (Figure 1C, D).

## Discussion

Cardiac involvement in hydatid cyst infections is uncommon, with few documented cases. Unlike infections in other organs, cardiac hydatid cysts necessitate surgical removal at all stages (with possible selective exceptions) because they can impair cardiac performance and lead to long-term sequelae. A comprehensive review by Fennira et al. analyzed 45 cases published prior to 2019, revealing that approximately one-third of the patients originated from Türkiye. The majority of these patients presented with chest pain and ECG abnormalities, which is consistent with the findings in our case (1,2). However, our case is distinctive due to the patient's young age and presentation with non-specific symptoms. Surgical intervention via mini-ventriculostomy was elected as the treatment approach, which is in line with the frequently reported strategies in the literature (4).

In our patient's case, preoperative albendazole treatment was initiated as an adjunct to surgical intervention. This approach aimed to reduce secondary transmission by decreasing hydatid cyst viability, aligning with existing literature (5,6). While surgical treatment combined with albendazole is highly effective for various hydatid cyst locations, the optimal treatment duration remains a subject of debate (7). Given the patient's previous history, atypical cyst location, and ongoing potential for exposure, we extended the treatment to eight months. Follow-up involved echocardiography and clinical assessments, although indirect hemagglutination monitoring was not recommended by relevant guidelines (8,9).

Besides, this case highlights the importance of follow-up in surgically treated hydatid cyst patients to monitor for potential local recurrence or iatrogenic secondary cyst formation. While cardiac involvement is not typically the primary concern in hydatid cyst infections, echocardiography is recommended in patients with a history of hydatid cysts who present with chest pain, abnormal ECG findings, or new cardiac murmurs. However, we currently lack sufficient evidence to support routine echocardiography in this population (9).

In conclusion, the case emphasizes the necessity of considering cardiac hydatid cysts when evaluating patients with cardiac masses, especially within endemic regions. While rare, maintaining clinical suspicion based on symptoms like chest pain and ECG abnormalities enables prompt diagnosis. Our case demonstrates the successful outcomes achievable through a multidisciplinary approach that incorporates pharmacological therapy and surgical intervention.

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