Not Everything is as it Seems at First Glance: Multimodal Imaging in Heart Cyst Evaluation

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Abstract

Cardiac masses, though rare, can lead to significant hemodynamic and arrhythmic issues, even if benign. Improved multimodal imaging has refined the diagnosis and understanding of these masses. We present an 85-year-old woman with New York Heart Association class II-III dyspnea for six months. Echocardiography showed a mass in the basal inferolateral wall of the left ventricle, along with severe left atrial dilation and moderate mitral regurgitation. Initially thought to be a pericardial cyst, further cardiac magnetic resonance (CMR) imaging identified an intramyocardial mass, and computed tomography (CT) suggested a hydatid cyst. Given the non-limiting symptoms and high surgical risk, the decision was made for expectant management. This case illustrates the rarity of cardiac cysts and the essential role of multimodal imaging in diagnosis and treatment planning.

Introduction

Cardiac masses, despite uncommon, are relevant due to their potential to cause hemodynamic and arrhythmic complications, even when benign.[1] The availability of multimodal imaging has increased the detection of these masses and provided more precise insights into their etiology and relationship with other cardiac structures.[1,2]

However, diagnosing and treating these masses remains a clinical challenge, underscoring the importance of considering local epidemiology.[2] A case is described of an elderly female patient with dyspnea, where multimodal imaging, combined with clinical analysis, offered precise etiological guidance for a cardiac mass and informed the therapeutic approach.

Case report

An 85-year-old woman presented with dyspnea of New York Heart Association class II-III lasting for six months. A transthoracic echocardiogram revealed a left ventricle of normal dimensions and function, severe dilation of the left atrium, moderate mitral regurgitation, and a mass in the basal inferolateral wall of the left ventricle. The suggested diagnosis was a pericardial cyst. Cardiac magnetic resonance (CMR) imaging was requested, revealing an intramyocardial mass. Tissue characterization pointed towards a probable diagnosis of a hydatid cyst (Figure 1). Computed tomography (CT) showed a mass with a calcified wall and hypodense content, findings suggestive of a hydatid cyst (Figure 2). The course of action was discussed with the attending cardiologist and cardiac surgeon. Given the non-limiting symptoms and high surgical risk, a joint decision with the patient was made to pursue an expectant management approach.

Discussion

Cystic hydatid disease is caused by the larval stage of *Echinococcus granulosus* or *Echinococcus multilocularis* that may affect various organs of the body. Cardiac cysts are rare in adults and present a broad differential diagnosis encompassing both congenital and acquired conditions.[1,3] Pericardial cysts are the most common and distinguishing them from a hydatid cyst can be challenging, especially when the transthoracic ultrasound window is limited.[2,3]

Cardiac involvement in hydatid disease is observed in less than 2% of cases.[4,5] After invading the myocardium through the coronary artery, the left ventricle, which has the highest blood flow, is most frequently affected (50-60%). The interventricular septum is reported to be involved in 10-20% of cases.[5,6]

Typical characteristics of a hydatid cyst include mixed hypointensity on T1-weighted magnetic resonance imaging (MRI), mixed hyperintensity on T2-weighted MRI, cyst wall enhancement with gadolinium on MRI, along with variable hypodensity and wall calcification on CT.[7,8]

Cyst involution and/or complete calcification have been reported in 12% of cases; however, the cyst generally exhibits gradual expansion.[6,9] Ruptured intracardiac cysts can have potentially fatal consequences. In the treatment of hydatid disease, surgery remains the method of choice.

In this case, multimodal imaging played a crucial role in both diagnosing and locating the cyst, influencing the therapeutic decision.

Conclusion

Cardiac masses are rare, and cardiac hydatid cysts are particularly uncommon. However, they can be found in

Keywords

Heart Neoplasms; Echinococcosis; Cardiac Imaging Techniques

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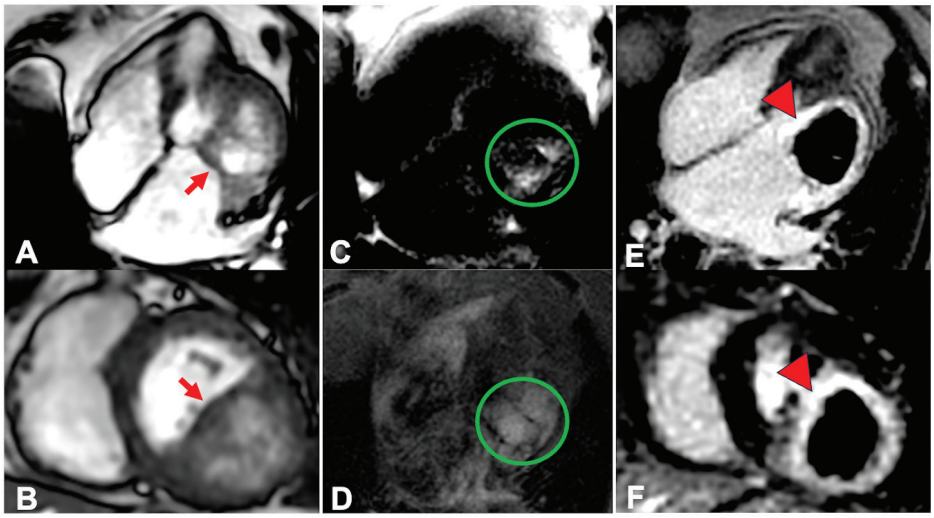

Figura 1 – *Imagem por RMC mostrando uma massa intramiocárdica em sequências cine SSFP (A: apical de quatro câmaras e B: eixo curto) ao nível do sulco intraventricular esquerdo, estendendo-se para o átrio esquerdo e o ventrículo esquerdo (seta vermelha). As sequências de imagens ponderadas em T1 (C) e T2 (D) mostram hipointensidade e hiperintensidade variável, respectivamente (círculo verde). A captação do gadolínio pela parede do cisto é visualizada nos painéis E e F (ponta da seta vermelha).*

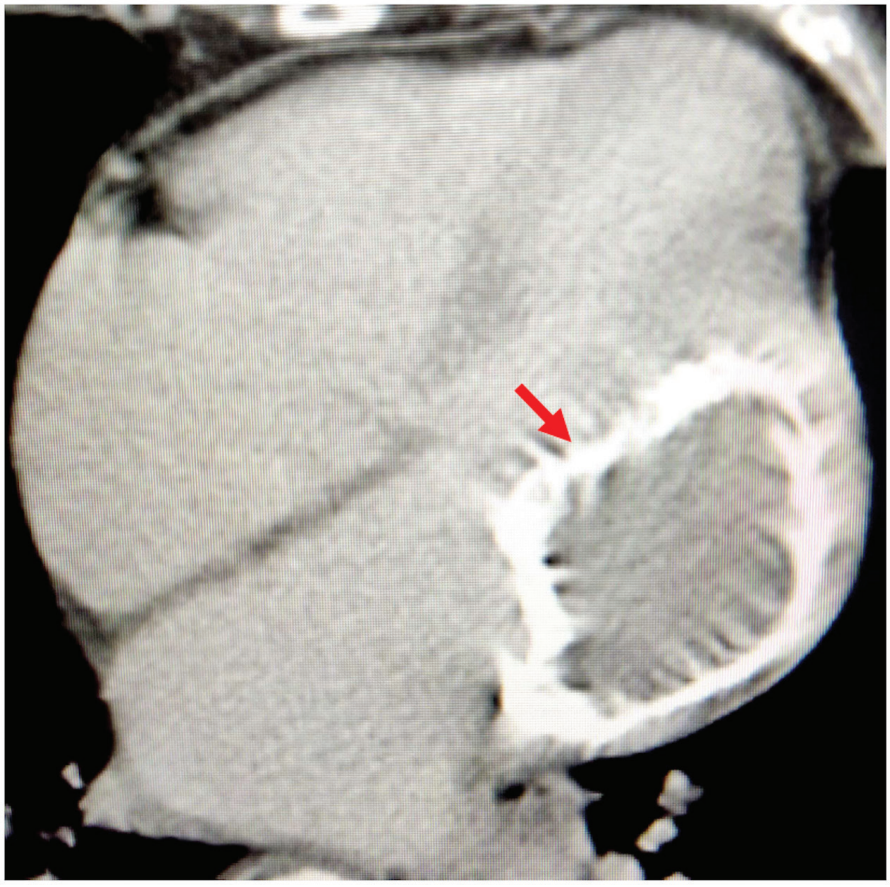

Figura 2 – *TC cardíaca mostrando calcificação circunferencial da parede do cisto (seta vermelha).*

countries with high prevalence of hydatidosis, such as those in Latin America, making it important to recognize their characteristics. Multimodal imaging plays a crucial role in identifying the etiology, locating the cyst, and planning surgical intervention. In the presented case, multimodal imaging was instrumental in determining the optimal approach based on the patient's vital prognosis.

Author Contributions

Conception and design of the research, acquisition of data, analysis and interpretation of the data and critical revision of the manuscript for intellectual content: Guaman-Valdivieso C, Aramburu J, Lluberas N, Huart N, Parma G; writing of the manuscript: Guaman-Valdivieso C.

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This article does not contain any studies with human participants or animals performed by any of the authors.

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