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Cardiac Hydatid Cyst and Rhythm Disorders: Unusual Manifestations of a Rare Disease

Rim Zerhoudi
Cardiology Department - ERRAZI Hospital – Mohammed VI University Hospital, Marrakech

Mohamed Ztati
Cardiology Department - ERRAZI Hospital – Mohammed VI University Hospital, Marrakech

Nouhaila Hamdouli
Cardiology Department - ERRAZI Hospital – Mohammed VI University Hospital, Marrakech

Abdekarim Ait Yahya
Cardiology Department - ERRAZI Hospital – Mohammed VI University Hospital, Marrakech

Mohammed El Jamili
Cardiology Department - ERRAZI Hospital – Mohammed VI University Hospital, Marrakech

Mustapha Elhattaoui
Cardiology Department - ERRAZI Hospital – Mohammed VI University Hospital, Marrakech

ABSTRACT

Introduction: Hydatid cyst is a parasitic disease endemic in various regions of the world. Pulmonary and hepatic involvement are the most described lesions. Cardiac localization remains rare, accounting for only 0.5 to 2% of all cases [1]. The aim of our study was to present a rare case in which a hydatid cyst was diagnosed following an episode of ventricular tachycardia. Case report: We report the case of a 49-year-old patient with no modifiable cardiovascular risk factors, presenting with sudden-onset palpitations lasting 24 hours prior to admission, accompanied by NYHA class II dyspnea on exertion. Clinical examination revealed a hemodynamically and respiratory stable patient, without signs of heart failure. The admission ECG showed epicardial ventricular tachycardia (180 bpm, wide QRS at 206 ms, right-axis deviation, and TV score = 4). After vagal maneuvers and adenosine failed, intravenous amiodarone successfully achieved pharmacological cardioversion. Post-cardioversion ECG revealed sinus rhythm with negative T waves in lateral leads. Transthoracic echocardiography identified a probable extracardiac mass (88 × 24 mm) near the left ventricle and atrium, with preserved cardiac function and no pericardial effusion. Thoracic CT confirmed extracavitary cystic formations,

including an intramyocardial cyst suggestive of hydatid cysts. Biological tests, including hydatid serology, were negative, and extension imaging (chest X-ray and abdominal ultrasound) found no anomalies. Cardiac MRI confirmed three calcified cystic masses: a 63 × 27 mm intramyocardial mass near the lateral LV wall, a 14 × 12 mm pericardial cyst, and a 7 × 6 mm epicardial cyst, all consistent with hydatid cysts. The patient declined any surgical intervention and was placed on medical therapy comprising Albendazole and Cordarone for rhythm control. The clinical course was complicated by the occurrence of electrical storm, ultimately leading to the patient's death. Discussion et Conclusion: Cardiac hydatid cysts are a rare condition with diverse clinical manifestations but potentially serious outcomes. The diagnosis is significantly facilitated using echocardiography. In the absence of truly effective therapeutic alternatives, cystectomy and pericystectomy, performed with or without obliteration of the residual cavity, remain the only surgical interventions offering a chance for recovery with an acceptable morbidity and mortality rate.

Keywords: Hydatid Cyst, Rhythm Disorder, Cardiac Imaging.

INTRODUCTION

Hydatid cyst is a parasitic disease endemic in various regions of the world. Pulmonary and hepatic involvement are the most described lesions. Cardiac localization remains rare, accounting for only 0.5 to 2% of all cases (1).

The aim of our study was to present a rare case in which a hydatid cyst was diagnosed following an episode of ventricular tachycardia.

CASE REPORT

This case involves a 49-year-old patient with no modifiable cardiovascular risk factors, who presented to our facility following the onset of palpitations with sudden onset and termination 24 hours prior to admission, without any associated triggering factors. The patient also reported NYHA class II dyspnea on exertion.

On clinical examination, the patient was conscious, hemodynamically, and respiratory stable, with no signs of right or left heart failure.

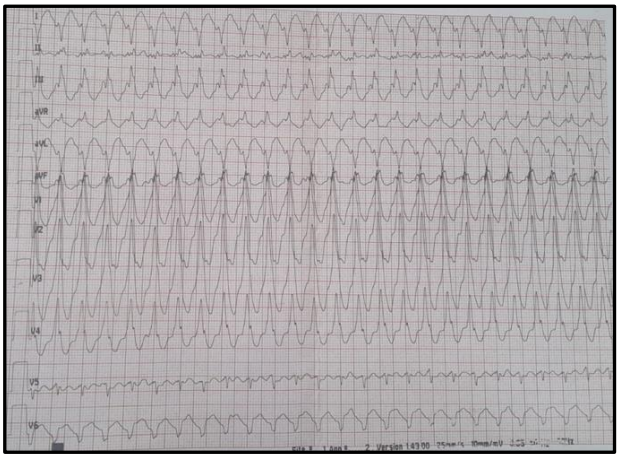

Figure 1: Electrocardiogram showed ventricular tachycardia of epicardial location.

The admission ECG revealed an epicardial ventricular tachycardia, identified by a regular tachycardia at 180 bpm, wide QRS complex measuring 206 ms, right-axis deviation, an initial R wave in V1 > 40 ms, initial R wave in aVR (and aVR+), intrinsic deflection delay in lead II > 50 ms, without patterns of right or left bundle branch block (TV score = 4).

The initial management of this hemodynamically stable ventricular tachycardia, after the failure of vagal maneuvers and adenosine administration, consisted of pharmacological cardioversion using intravenous amiodarone, which achieved therapeutic success. The post-cardioversion ECG showed a regular sinus rhythm with a ventricular rate of 80 bpm, a constant PR interval of 160 ms, left-axis deviation, QRS duration of 80 ms, negative T waves in the lateral leads, and a QT interval of 450 ms.

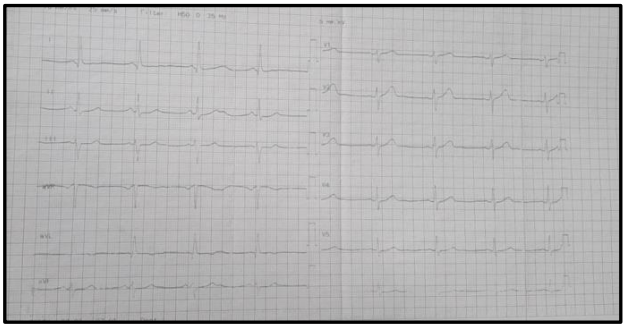

Figure 2: Electrocardiogram after electrical cardioversion

Transthoracic echocardiography revealed a likely extracardiac mass measuring 88 × 24 mm located lateral to the left ventricle (LV) and left atrium (LA), with preserved size and function of the cardiac chambers, no mitral or aortic valve disease, normal filling pressures, a normal-sized right ventricle with preserved systolic function, and no pericardial effusion.

Thoracic CT imaging identified extracavitary cystic formations, one of which exhibited intramyocardial development, primarily suggestive of hydatid cysts.

A biological workup was performed and showed no abnormalities, with hydatid serology returning negative. Additionally, an extension workup, including a chest X-ray and abdominal ultrasound, revealed no anomalies.

Cardiac MRI identified three cystic masses with calcified walls. The largest was intramyocardial, located along the lateral wall of the LV, measuring 63 × 27 mm, with intimate contact with the circumflex artery (CX), which remained free without encasement. The second lesion was pericardial, anterior to the posterior interventricular artery (PIVA 2), measuring 14 × 12 mm. The third lesion measured 7 × 6 mm, located in the epicardial fat in contact with the right coronary artery (RCA1), which also remained free without encasement. The findings were consistent with hydatid cysts.

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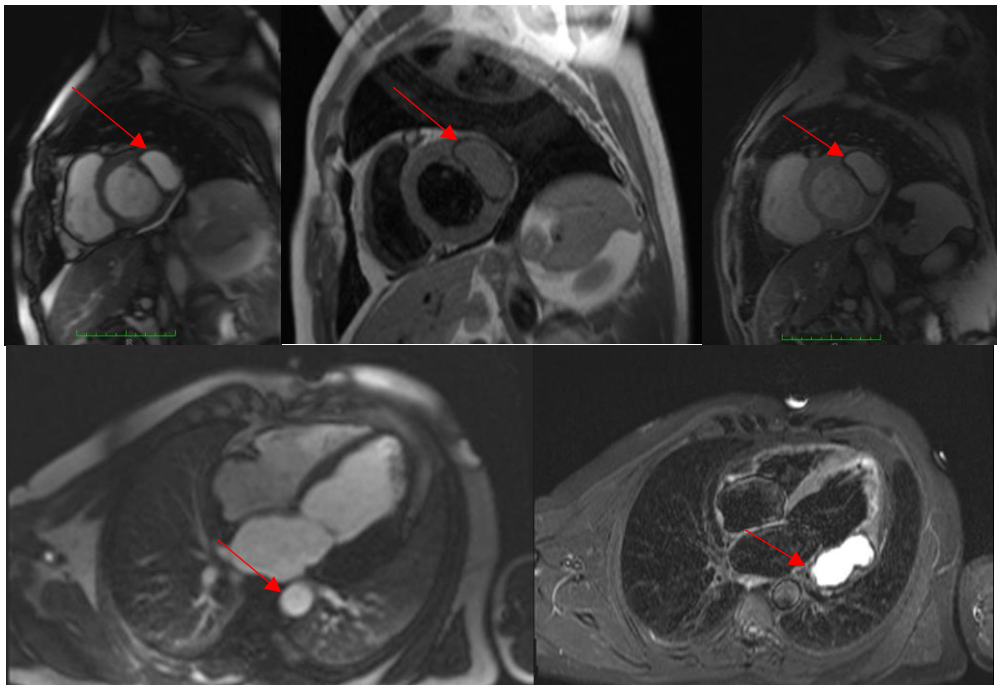

Figure 3: Intramyocardial cystic mass developed from the lateral wall of the left ventricle primarily affecting its basal and middle parts. The mass is oval-shaped with lobulated contours, well-defined, measuring 53x26 mm in the short axis up to 59 mm in anteroposterior diameter in the four-chamber view. This lesion exhibits a liquid-like hyperintensity in T2/STIR, is isointense in T1 dark blood, and shows no contrast enhancement after gadolinium injection, suggesting a hydatid cyst.

The patient declined any surgical intervention and was placed on medical therapy comprising Albendazole and Cordarone for rhythm control. The clinical course was complicated by the occurrence of electrical storm, ultimately leading to the patient's death.

DISCUSSION

Cystic echinococcosis is an endemic parasitic disease in several regions worldwide, with an incidence that can exceed 50 cases per 100,000 inhabitants (2). In Morocco, this incidence is 5.2 cases per 100,000 inhabitants, with a predominance in women (sex ratio F/M = 0.66) and young adults (59.1% of hydatid disease cases are diagnosed in patients aged 15 to 49 years) (3). Cardiac involvement, though rare, accounts for 0.5% to 2% of all hydatid localizations (1).

The distribution of hydatid cyst localizations follows the pattern of coronary blood flow: 60% occur in the left ventricle, 15% in the right ventricle, and 15% in the interventricular septum. Atrial involvement is rare, while the pericardium is affected in 2% to 10% of cases (4,5). The clinical presentation of cardiac hydatid cysts is highly nonspecific. The history of exposure to dogs and sheep, an endemic context, or a personal history of other hydatid localizations should prompt consideration of the diagnosis.

The clinical manifestations of cystic echinococcosis depend on the location, size, and integrity of the cyst. Complete clinical latency has often been reported in certain series. Multiple symptoms, often occurring together, are described in the literature, including exertional dyspnea, palpitations, angina, hemoptysis, arrhythmias, and fever. However, pain remains the

most common presenting symptom (6,10). Over time, the disease may progress to include pericardial pain, dyspnea, invasion of surrounding structures, obstruction of flow, or involvement of the cardiac conduction system, causing arrhythmias or heart block (11,12).

Transthoracic echocardiography is the reference imaging modality for diagnosing cardiac echinococcosis (6).

Other radiological examinations have limited utility but can help refine the localization and extent of the cysts. In contrast, serological testing in our patient was negative. This aligns with the literature, which reports a high rate of false negatives (13).

The most commonly reported complications in the literature include systemic and pulmonary embolism, myocardial tears, conduction disorders requiring pacemaker implantation, and sudden death caused by ventricular arrhythmias associated with myocardial scarring (14,17). Given the severity of spontaneous progression, including risks of compression, rupture, and sudden death (18), surgical treatment of cardiac hydatid cysts is mandatory as soon as possible. Even in asymptomatic patients, it remains the only therapeutic option that ensures complete recovery (19,20).

The curative treatment for cardiac hydatidosis is primarily surgical and should be initiated as soon as the diagnosis is established, prior to the occurrence of complications. Currently, all cardiac hydatid cysts should be operated on under extracorporeal circulation, with median sternotomy remaining the most commonly used approach. The surgeon aims to perform a precise lesion assessment through an open thorax, sterilize the cyst, excise it while preserving the myocardium, and perform pericystectomy as necessary. Intraoperative echocardiography provides significant assistance to the surgeon by allowing definitive diagnosis and identifying the optimal surgical approach to the cyst. Cardioplegia is recommended to facilitate cyst excision and minimize the risk of accidental spillage of intracavitary fluid. Postoperative treatment with albendazole for 3 to 6 months is recommended to reduce the risk of local recurrence (20).

As an alternative to surgery, isolated medical treatment has been proposed in specific cases such as calcified or small cysts, elderly patients, or those who refuse surgery (21,22).

Antiparasitic medical treatment complements surgery by optimizing its efficacy, reducing the risk of recurrence, and serving as a therapeutic option for small or calcified cysts, particularly in cases of surgical contraindications (22,23). According to WHO recommendations, albendazole is administered at a dose of 10 to 15 mg/kg/day in one-month cycles separated by 15-day intervals, for a total duration of 6 months.

The eradication of hydatid disease relies primarily on effective collective and individual preventive measures.

CONCLUSION

Cardiac hydatid cysts are a rare condition with diverse clinical manifestations but potentially serious outcomes. The diagnosis is significantly facilitated by the use of echocardiography. In the absence of truly effective therapeutic alternatives, cystectomy and pericystectomy,

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performed with or without obliteration of the residual cavity, remain the only surgical interventions offering a chance for recovery with an acceptable morbidity and mortality rate.

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