

## CASE REPORT

# An unusual case of cardiac syncope and acute coronary syndrome – a case report

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**Introduction:** We aimed to present a case of acute coronary syndrome with unexpected etiology complicated by syncope and arrhythmias, confirmed by imagistic examinations as cardiac parasitosis. Cardiac parasitic diseases are rare diseases, whose diagnosis and therapy should be adapted to each case. Imaging techniques allow precise diagnosis of cardiac echinococcosis, providing essential structural details on the damage degree of heart structures, allowing optimization of complex treatment in these cases. **Case presentation:** A 67-year old, obese and diabetic woman presented with cardiac syncope, arrhythmias and acute chest pain. Imagistic examinations excluded intracoronary thrombosis and confirmed a severe structural damage of myocardial tissue, consisting in replacement of the myocardial structure by many cysts caused by parasitic infestation with echinococcus multilocularis and echinococcus granulosus originating from the liver. CT scan confirmed severe destruction of the left ventricular myocardium by polycysts, that led to thinning of inferior and apical left ventricle wall without any possibility of surgical excision. Therefore a specific chemotherapy with albendazole was initiated. Follow up at 2 months indicated a favorable evolution, with serological decrease of echinococcal antibodies and reduction of cysts volume. **Conclusion:** In cases of angina and arrhythmias with non-atherosclerotic etiology, imaging techniques can diagnose the anatomopathological substrate of the disease and represent a valuable tool for the follow up.

**Keywords:** cysts, syncope, echinococcosis, angina, Cardio CT scan

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## Introduction

Parasitic diseases represent a special category of cardiovascular pathology that require the existence of a transmission circuit involving binding to a host animal, a development phase and a cystic proliferation stage.

Echinococcosis is a parasitic disease caused by Echinococcus granulosus, which together with alveococcosis provoked by echinococcus multilocularis represent the most widespread parasitic disease in temperate continental geographical areas (having an average ambient temperature between 10-20 degrees).

Imaging techniques allow precise diagnosis of cardiac echinococcosis cases, providing essential structural details on the degree of heart damage and allowing optimization of complex treatment in these cases.

## Case report

A 67-year old women, obese and diabetic, without any cardiac history, was admitted to emergency department in territorial county hospital for prolonged chest pain followed by syncope, which proved to be caused by a paroxistically wide complex tachycardia (with right bundle branch aspect) resolved by electrical conversion with 200 J external shock. The patient was referred to our clinic with a diagnostic of acute coronary syndrome. At admission the patient was free of angina, however the ECG revealed an

anterolateral subendocardial ischemia and elevated myocardial necrosis enzyme (I Troponine 4,15ng/dl). Angiogramography did not show any significant coronary stenosis (Figure 1), however echocardiography indicated a transonic multiloculated tumor on the posterior left ventricular wall, compressing the adjacent myocardium. Cardio CT examination confirmed the existence of multiple cysts located on the inferior, apical and posterior left ventricle walls, associated by severe myocardial damages and wall deformation, the whole posteroinferior wall being replaced by cysts (Figures 2, 3 and 4). Abdominal CT scan confirmed the association with 2 hepatic cysts, highly suggestive for liver echinococcosis (Figure 5).

As the association between heart and liver cysts indicated a high probability of echinococcosis, serologic samples were collected and confirmed the pathological presence of a high level of type G antibodies for echinococcosis granulosus and multilocularis (1:4020).

Multiple myocardial cysts, large destruction area and patient refusal determined the therapeutical strategy for this patient, which consisted in initiation of chemotherapy with albendazole 12 mg /kg /day for 4 weeks followed by hematological and imagistic assessment, which confirmed a favorable evolution by volume cysts reduction and abrupt decrease of serological antibodies (below 1:800). The patient was clinically well, so the medical treatment was suspended for 2 weeks and the reload therapy for 4 weeks at the same dose.

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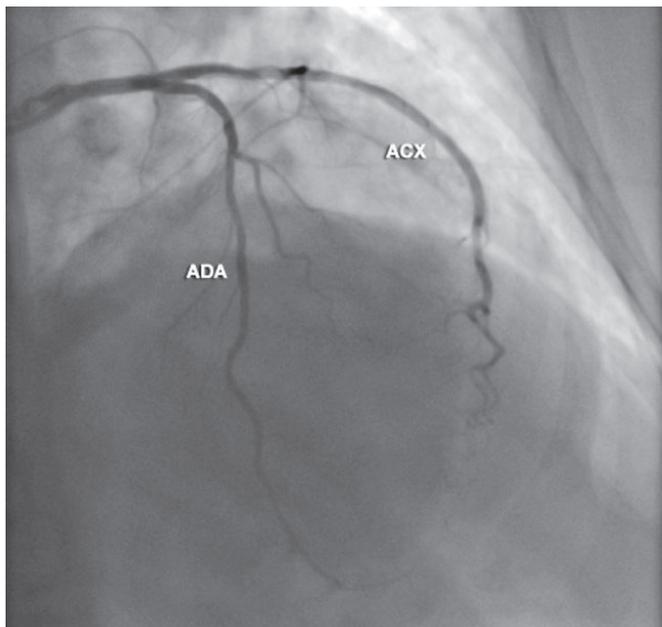


Fig. 1. Left coronary angiography

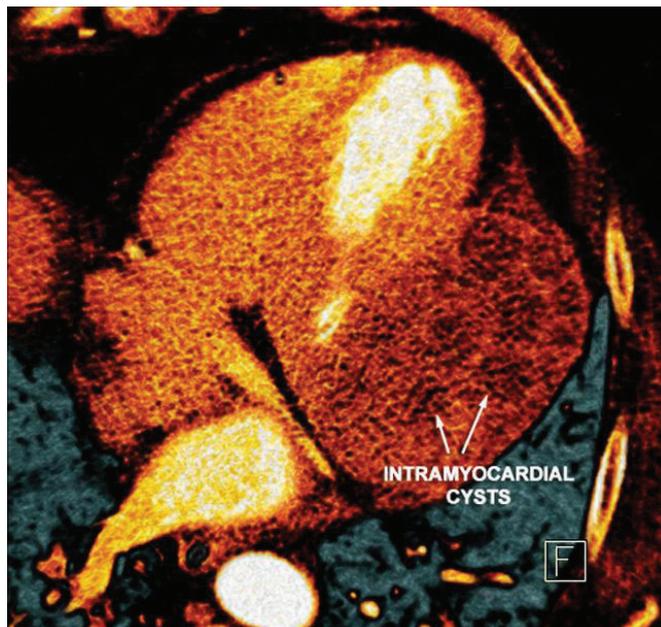


Fig. 4. Cardiac echinococcosis

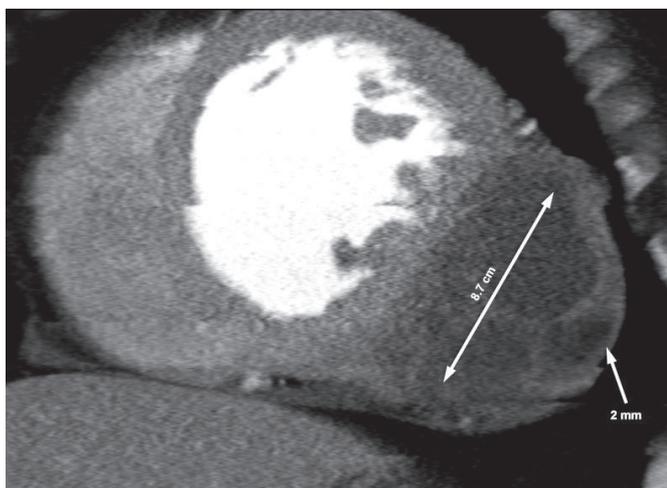


Fig. 2. "Mother and daughters cysts " in left ventricle wall

### Discussions

Cardiac echinococcosis was first described by Kashin in 1862 and the first surgery to remove cysts myocardial in cardiopulmonary bypass was performed in 1962 by Artucino. The transmission of echinococcosis to humans is by helminthes eliminated in the excrements of flash-eating animals, each helminth containing more than 800 oncospheres unfortunately resistant to common disinfectants, while for an infection to be transmitted an amount of less than 20 oncospheres is sufficient [1].

In the literature, the incidence of cardiac hydatid disease was noted between 0.01 to 2% of all forms of echinococcosis, the disease been asymptomatic for a long time (even decades) after contamination.

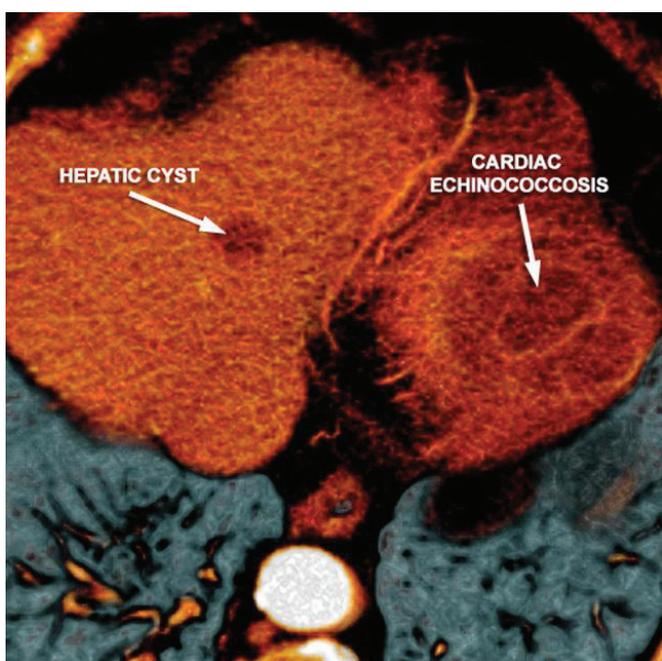


Fig. 3. Systemic echinococcosis (liver and cardiac )

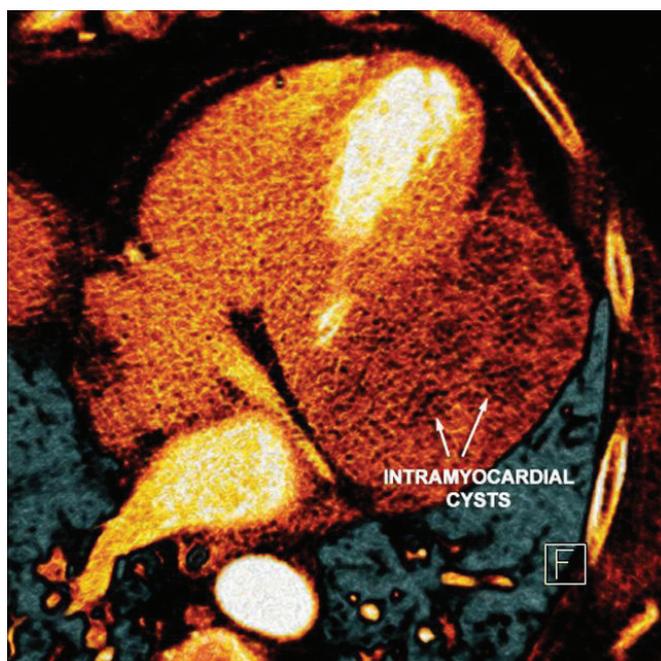


Fig. 5. Left ventricular wall deformation

Pathological cardiac lesions are located predominantly in the ventricular myocardium (in approximately 60 % of locations), being 2-3 times more frequent in the left ventricle, while the atrial localisation are extremely rare and predominant at the left atrium appendage. An explanation for this preferential localisation could be represented by the fact that atria has a thinner wall which allows location of usually a single cyst at this site.

Pericardial location is uncommon but when present, it consists in multiple cysts, being caused by a rupture of an intramyocardial cyst or by manipulation during surgery extraction. Rare cases with propagation and localization in the pulmonary artery (6%) have also been described [2].

Etiopathogenesis of this infestations necessarily involves penetration of liver or lung vascular filters, heart fixation being secondary to a hepatic or pulmonary primoinfection. The second route of cardiac infestation is represented by coronary system or, less frequent, pulmonary veins after lung hydatid cyst rupture.

Typical lesions of cardiac echinococcosis are represented by the presence of cystic tumors, bounded by a kitin membrane which isolates protoscolices (vulnerable forms to external factors) and accephalocysts (dormant forms resistant to extracellular aggression, thanks to which the parasite can survive 30-40 years and determine latent destruction at long time after infection).

The development of parasitic cysts on the heart can cause various effects, depending on their location and involvement of mobile heart structures like valves, ventricular outflow tract, papillary muscle etc.

Several cases of tricuspid stenosis, obstruction of the left ventricular outflow tract, acute myocardial ischaemia with manifestation of acute coronary syndrome, conduction abnormalities or arrhythmias have been described in the literature in association with echinococcosis [1,3].

The most dangerous complication of the cysts is represented by perforation, which triggers a systemic dissemination followed by severe sepsis and having a mortality higher than 75%. As a rule, left ventricular cysts perforate out of the cavity in the pericardial space, while the right ventricle cysts perforate in the cavity and could embolise in pulmonary artery branches [3]. More than 40% of perforated cysts determine anaphylaxis and sudden death, being associated with a very high mortality.

Sometimes the parasite crosses intimate or enter into the vasa vasorum, conducting to development of pulmonary arterial hydatid masses with subsequent acute occlusion. Left ventricular hydatid cysts rupture in the pericardium determines lethal pericardial tamponade in about 23% of cases, caused not only by the content of the cyst fluid but also by the massive exudative reaction at pericardial membrane.

Often the diagnosis of cardiac echinococcosis is a surprise in the cardiac investigations algorithm, the most common being a surprise of echocardiographic or heart imaging (CT or MRI), requiring mandatory serologic confirmation [4,5,6].

The assessment of cardiac status and systemic implications of parasitosis determines the strategy of treatment that can be represented by surgery of cysts extraction under cardiopulmonary bypass and chemotherapy protection preceded by intraoperative sterilization puncture or only systemic antihelminthic therapy.

Experienced cardiac surgery centers demonstrated that chemotherapy may lead to parasite death and increases risk of cyst rupture by thinning of wall, thus therapy may be avoided before intervention.

In this case, the first symptoms were atypical – the patient had a cardiac syncope in the context of a complex tachycardia requiring electrical conversion, angina at rest and myocardial necrosis enzyme elevated.

Coronarography excluded a significant coronary stenosis, echocardiographic assessment ruled out the suspected cardiac tumors, while the CT scan and positive serology confirmed systemic echinococcosis. Angina in this case can be explained by the massive destruction of ventricular myocardium localized in the inferior wall and posterior apex by cysts development.

The extension of myocardial destruction over 2/3 of the inferior, posterior and lateral ventricular walls added to patient's refusal to surgical treatment led to the decision to start chemotherapy with albendazole 15mg/kg/day po for 4 weeks, after which the level of serologic antibodies was re-assessed, showing a 75% reduction without significant leukopenia, which allowed resumption after a break of seven days of therapy for another 4 weeks.

## Conclusions

Structural alteration of myocardium in parasitic diseases could be accurately revealed by CT examinations, and medical therapy is an optimal solution for cases with severe destruction of myocardial tissue.

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