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Case Report

Acute cardiac tamponade secondary to ruptured pericardial cyst: Case report and literature review

Bashar S. Amr (MD)*, Tarun Dalia (MBBS), Ashley Simmons (MD FACC)

University of Kansas Medical Centre, Kansas City, KS, USA

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ABSTRACT

Pericardial cysts are a rare disorder with an incidence of about 1 in 100,000, the majority of which are benign and incidentally identified. Pericardial cyst causing cardiac tamponade is an extremely rare phenomenon. The exact incidence of cardiac tamponade secondary to pericardial cyst is unknown. To the best of our knowledge limited case reports showing this association have been published. We have summarized cases showing this association in a tabular fashion. We present a case of a 36-year-old male who presented with symptoms of shortness of breath, chest pain, and fevers found to have ruptured pericardial cyst causing cardiac tamponade.

<**Learning objective:** The majority of pericardial cysts are diagnosed incidentally and have benign course. Pericardial cyst causing cardiac tamponade is an extremely rare phenomenon. Ruptured pericardial cysts should be considered in the differential diagnosis of cardiac tamponade in patients with history of pericardial cyst. Interventions such as immediate pericardiocentesis, sternotomy, and surgical resection of cyst can be life-saving.>

Introduction

Pericardial cysts are a rare disorder with an incidence of 1 in 100,000 [1]. These are mostly congenital mesothelial cysts, which are a result of abnormalities in formation of coelomic cavities [2]. Most cases of pericardial cysts are incidentally detected during routine imaging for some other cause and follow a benign course. But they can also present with chest discomfort, dyspnea, or palpitations due to cardiac compression [3]. We present a case of a 36-year-old male with ruptured pericardial cyst leading to acute onset of cardiac tamponade.

Case report

A 36-year-old male with past medical history of hypertension presented to our emergency department (ED) with shortness of breath, chest pain, and intermittent fevers of two weeks' duration. Two weeks previously he presented to his local ED with similar symptoms and was found to have a pericardial cyst on chest computed tomography (CT) scan (Fig. 1A). He was discharged home at that time as he was hemodynamically stable, laboratory data were within normal limits, and there was no evidence of pericardial effusion or cardiac compression. His symptoms progressed until he presented to our institution. On physical examination he was tachycardic with heart rate of 120 beats per minute (bpm), tachypneic with respiratory rate of 24 breaths per minute, afebrile, blood pressure was 120/76 mmHg, increased work of breathing, muffled heart sounds, elevated jugular venous distention, and mild bilateral pitting edema. Laboratory studies including complete blood count, basic metabolic panel, thyroid stimulating hormone, and liver function test were all within normal limits. Electrocardiography showed sinus tachycardia at a rate of 123 bpm with no ST segment changes. Chest X-ray showed moderate enlargement of cardiac silhouette, no pulmonary congestion, and small bilateral pleural effusion. Chest CT revealed an increase in size of the left pericardial cystic lesion measuring 10.9 × 7 × 13.2 cm compared to 9.4 × 5.3 × 5.9 cm previously with development of complex moderate size pericardial effusion. This represented a ruptured pericardial cyst with mass effect on the left ventricle concerning for tamponade (Fig. 1B). Transthoracic echocardiogram revealed moderate to large pericardial effusion, dilated inferior vena cava, cardiac tamponade physiology, and normal left ventricular systolic function (Fig. 2). The department of

* Corresponding author at: University of Kansas Medical Centre, 3901 Rainbow Blvd., Kansas City, KS 66160, USA.
E-mail address: bamr@kumc.edu (B.S. Amr).

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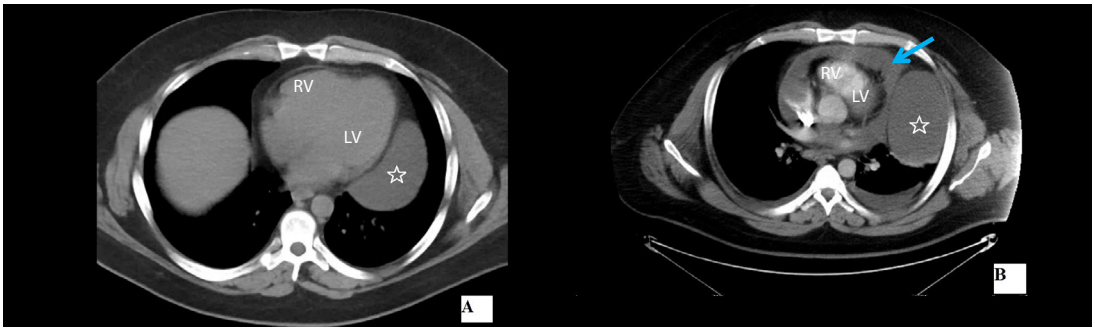

Fig 1. Incidental left-sided pericardial cyst (star) measuring 5.2 × 9.3 × 4.9 cm (A). Increase in size of the pericardial cyst (star) to 10.9 × 7 × 13.2 cm with development of moderate size pericardial effusion representing a ruptured pericardial cyst with mass effect on the left ventricle which is indicated by blue arrow (B). RV, right ventricle; LV, left ventricle.

cardiothoracic surgery was consulted and the patient was urgently taken to the operating room for creation of left pericardial window with sternotomy and resection of pericardial cyst. Intraoperatively, there was evidence of recent acute pericarditis with fibrinous and fibrinopurulent exudate present in the pericardial space which was drained. On close inspection of the pericardial space, a finger-sized communication was found between the cyst and pericardial sac at the left cephalad border, near the left upper pulmonary vein. The resected pericardial cyst was sent for pathologic examination, which resulted as reactive mesothelial cells and fibrin, acute and chronic inflammation, without any evidence of infection or malignancy. Repeat transthoracic echocardiography two days later showed no pericardial effusion and the patient was discharged home in a stable and symptom-free state.

Discussion

Our patient probably had a pericardial cyst that had gone unnoticed until he developed symptoms consistent with pericarditis. Although the patient's pericardial cyst may have been acquired due to an inflammatory process, we believe it was congenital in origin as he was found to have this cyst as an incidental finding on CT scan two weeks previously. Furthermore, the pathology of the cyst and the patient's age are more consistent with a congenital etiology. As our patient presented with pericarditis-like symptoms two weeks prior to hospitalization with a CT scan showing no pericardial effusion, this leads us to believe that the inflammatory process led to cyst rupture rather than spontaneous rupture. Rupture of the pericardial cyst into the pericardial cavity led to worsening of the pericarditis and a new effusion resulting in cardiac tamponade. To the best of our knowledge there are a limited number of cases of cardiac tamponade secondary to pericardial cyst (Table 1) [2,4–10].

Pericardial cysts are usually an incidental finding on chest imaging. The etiologies for development of a pericardial cyst include congenital (most common), inflammatory (rheumatic pericarditis; bacterial infections such as tuberculosis; parasitic infection such as echinococcosis), traumatic, and post-cardiac surgery. They usually are asymptomatic (up to 60% of cases), run a benign course, and present equally in males and females in their third or fourth decade of life [1,2]. When symptomatic, they may present as chronic cough, chest pain, palpitations, dyspnea, or a feeling of retrosternal pressure [1]. Life-threatening complications include cyst rupture, cardiac tamponade, arrhythmia, cardiac compression leading to congestive heart failure, recurrent syncope, erosion of cyst into adjacent structures, and even sudden cardiac death [1].

Although most cases of pericardial cyst are incidentally found on chest X-ray as an isolated cystic shadow adjacent to the heart,

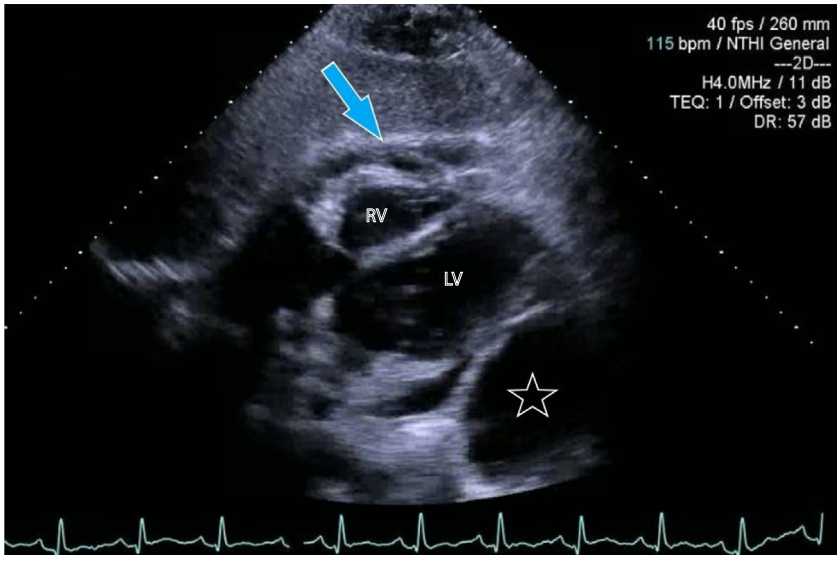

Fig. 2. Subcostal view shows pericardial cyst (star) and pericardial effusion (blue arrow) with evidence of right ventricular collapse. RV, right ventricle; LV, left ventricle.

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