Case report - Cardiac general

Staphylococcus aureus pericardial abscess presenting as a localized bulge of the heart contour


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Abstract

Purulent pericarditis usually presents as an acute illness with diffuse involvement of the whole pericardium, but can rarely present as a localized effusion. Here, we present a patient with a pericardial abscess caused by Staphylococcus aureus. After surgical drainage of the abscess, the patient made a good recovery. To the best of our knowledge, this is the first case of a pericardial abscess presenting as a localized bulge of the heart contour on the chest X-ray.

Keywords: Pericardial abscess; Purulent pericarditis; Bulge of heart contour

1. Introduction

Purulent pericarditis in adults is a rare condition, which results from hematogenous spread, direct spread from an adjacent infectious focus, trauma, or surgery [1]. Predisposing factors are pericardial effusion, chronic renal failure, immunosuppression, alcohol abuse, cardiac surgery, and chest trauma [2]. Purulent pericarditis usually presents as an acute, fulminant infectious illness with diffuse involvement of the whole pericardium, but can rarely present as a localized effusion.

2. Case report

A 69-year-old man was admitted to our hospital for fever, shaking chills, malaise, and hypotension. He had a history of acute inferoposterolateral myocardial infarction (medical treatment only) 22 years previously, which was complicated by post-myocardial infarction pericarditis. Twenty years after this event and 2.5 years before this admission, he received an implantable cardioverter defibrillator (ICD) without any complications, because of late sustained ventricular tachycardia accompanied with a diminished left ventricular ejection fraction of 24%. He did not have recurrent infections and was not on immunosuppressive medication.

At presentation his blood tests showed leukocytosis with predominant neutrophilia and an elevated C-reactive protein level of 283 mg/l (reference range, 0–10). The chest X-ray showed old pericardial calcifications. Empiric antibiotic treatment was started. Blood cultures grew Staphylococcus aureus and the patient was treated for 14 days with flucloxacillin. After the start of antibiotic treatment his fever resolved and his symptoms improved. The source of the bacteremia was probably a soft tissue infection of the leg. Both transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) showed no evidence of endocarditis or vegetations on the ICD lead.

Five days after antibiotic treatment was stopped, the patient developed subfebrile temperature and an increase in C-reactive protein. On physical examination, there was normal blood pressure, no jugular vein distension, and no friction rub or murmur. Blood cultures taken after antibiotic administration was stopped, were again positive for Staphylococcus aureus. The electrocardiogram showed a normal sinus rhythm without low-voltage QRS or ST segment elevation. A chest X-ray, which was performed 15 days after the previous one, revealed a new bulge of the left heart contour (Fig. 1a, arrow). TTE (performed 18 and 16 days after the preceding TTE and TEE, respectively) showed a localized pericardial effusion posterolateral to the left ventricle (LV) with no evidence of valvular or ICD lead vegetations (Fig. 1b, arrow). Contrast-enhanced computed tomography demonstrated a 5.3-cm pericardial fluid collection with wall-enhancement next to the pulmonary trunk (PT) and posterolateral to the LV, consistent with a pericardial abscess (Fig. 1c, arrow). Retrospective analysis of the previous TTE and TEE did not show any clear abnor-
malities in this region. Urgent surgical intervention with a median sternotomy revealed multiple pericardial adhesions and confirmed the diagnosis (Fig. 1d, arrow). The abscess, located between the pulmonary artery and left atrial appendage, was exposed and drained. There was no relationship between the abscess and the ICD leads or generator. Culture of pus yielded *Staphylococcus aureus*. Microscopic examination of the abscess wall showed granulation tissue with non-specific inflammation. Drainage tubes were removed after six days and antibiotics were continued for six weeks. The patient made a good postoperative recovery. Follow-up contrast-enhanced computed tomography eight weeks after the operation showed complete resolution of the abscess.

3. Discussion

A localized and discrete pericardial abscess is an extremely rare complication of *Staphylococcus aureus* bacteremia with only a few reported cases in medical literature [3–7]. Other microorganisms causing pericardial abscesses include *Mycobacterium tuberculosis*, gram-negative bacilli, *Streptococcus* species, and *Aspergillus*. To the best of our knowledge, this is the first case of a pericardial abscess presenting as a localized bulge of the heart contour on the chest X-ray. Besides pericardial abscess or other causes of a localized pericardial effusion, a bulge of the heart contour can also be observed in patients with giant atrium, ventricular aneurysm, and pericardial mass, such as fibroma or pericardial cyst. In this patient the pericardial abscess may have been caused by hematogenous spread of *Staphylococcus aureus* from the soft tissue infection. The mechanism by which *Staphylococcus aureus* forms a localized pericardial abscess remains unknown. An explanation in this patient may be the presence of multiple pericardial adhesions caused by post-myocardial infarction pericarditis.

References