Purulent pericarditis due to Staphylococcus aureus in a patient with fever, cough and chest pain

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Purulent pericarditis caused by Staphylococcus aureus is an infrequent complication of infections originating in another body location. It is typically an acute and often catastrophic illness. In this report a 23-year-old man presented to accident and emergency department with fever, productive cough and chest pain of 5 days duration, followed by shortness of breath. Chest x-ray showed air fluid level in the pericardium, chest CT scan showed evidence of large pericardial effusion, with bilateral pleural effusion (more in the right) Figure 1. Diagnosis was aided by echocardiography. The patient was admitted to the intensive care unit, and pericardiocentesis was performed, followed by the insertion of a single lumen catheter into the pericardial space. During the procedure, 900 ml of purulent pericardial fluid from the pericardial sac was drained. Antibiotic therapy was started upon admission to the hospital. Aspiration revealed frank pus with polymorphonuclear predominance and Staphylococcus aureus on culture. Intravenous vancomycin was given. A total of 2600 ml of frank pus was drained from the pericardium through the single lumen catheter during the following days. But, the patient remained febrile, repeated echocardiography examinations showed signs of constrictive pericarditis, consequently, partial pericardiectomy was performed, while intravenous vancomycin continued. On the consequent, days the patient's general condition improved, and the fever subsided. Two weeks postpericardiectomy the patient remained asymptomatic and consequently, he was discharged.

Acute pericarditis is a syndrome caused by inflammation of the pericardium (the sac that encloses the heart and great vessels). The pericardium is composed of 2 layers: a fibrous outer layer called the parietal pericardium, and a serous inner layer called the visceral pericardium. The 2 layers are attached by connective tissue and separated by up to 50 mL of pericardial fluid. The pericardium function, as a barrier against infection and the spread of malignancy, limits excessive cardiac movement, and reduces friction between the heart and other organs. The intrapericardial pressure, which is normally negative, also has an important role in allowing distention of the cardiac chambers in diastole. In acute pericarditis, an inflammatory response to some agent or event causes increased vascular permeability, vasodilatation, and transudation of fluid into the pericardial space. Evidence of inflammation with polymorphonuclear leukocytes, fibrous deposition, and adhesions can be seen in both layers of the pericardium. A granulomatous pericarditis is observed with tuberculosis, fungal infections, rheumatoid arthritis, and sarcoidosis. Chest pain is the cardinal symptom. Dyspnea may present, especially with tamponade. Other nonspecific symptoms include hicups, fever, cough, hoarseness, palpitations, nausea, and vomiting. A pericardial friction rub is pathognomonic for acute pericarditis. Tachypnea and tachycardia may be present. Acute pericarditis can result from many different causes. Some of the more common causes are idiopathic, viral, tuberculous, and neoplastic. Chest radiography usually has a limited role in the evaluation of acute pericarditis. In the presence of a large pericardial effusion (at least 250 mL), a radiograph may show a flask-shaped enlarged cardiac silhouette. Most authorities recommend obtaining an echocardiogram in patients in whom acute pericarditis is suspected. Although the echocardiogram does not help distinguish between causes of acute pericarditis, it is sensitive for detecting a pericardial effusion. On the basis of several studies, routine diagnostic pericardiocentesis is not recommended, but the procedure is useful for treatment of cardiac tamponade and in cases of suspected purulent pericarditis. Pericardial biopsy and pericardiectomy also have a low diagnostic yield. These procedures should be reserved for therapeutic indications or, rarely, for diagnosis in cases of prolonged illness when tuberculosis is highly suspected. Purulent pericarditis is an infrequent complication of infections originating in another body location. Symptoms and signs are
often absent; a high index of awareness is required for its diagnosis. It is typically an acute and often catastrophic illness. *Staphylococcus aureus* is considered as a causative agent, and the most common predisposing factor is respiratory tract infection. Our patient initially developed productive cough, fever and chest pain; later on he developed shortness of breath. Pericardiocentesis was diagnostic in purulent pericarditis. Purulent pericarditis is diagnosed when pus is drained from the pericardial space or when bacteria are cultured from the pericardial fluid. This rare disease is often diagnosed late, when severe hemodynamic compromise develops due to pericardial tamponade. It is usually a complication of pneumonia. The chest radiograph and echocardiogram were useful pointers to the diagnosis, but the electrocardiogram was not reliable. Pericardial drainage and appropriate antibiotic treatment eventually resulted in complete recovery. Delay in diagnosis and treatment often results in death. Some surviving patients like our patient may develop constrictive pericarditis and require pericardiectomy.

References


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