

Case Report: A Rare Case of Pyopericardium with Atypical Cardiac Tamponade Presentation in an Elderly Man

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Abstract

Introduction: Common causes of pericardial effusions include malignancy, renal failure, autoimmune disease or infection. Infection is one of the commonest causes of pericardial effusion. It is most often viral in aetiology and non-purulent. When the pericardial fluid is purulent, the presence of bacteria is likely.

Case presentation: We report a 72 years old Chinese man presented with mild symptoms of heart failure. He had no history of fever, weight or appetite loss, chest pain or history of tuberculosis contact. On auscultation, the heart sounds were muffled and there were minimal basal crackles over both lungs. His echocardiography showed signs of cardiac tamponade though clinically he is relatively well. Pericardiocentesis was not performed due to narrow window with thin effusion at ventricular apex. Pericardial window was done via left posterolateral thoracotomy. Intraoperatively, 500cc of purulent fluid was drained. Microbiology screens were all negative.

Discussion: We present the atypical clinical course of this elderly man presenting with a large pyopericardium. Patient with pyopericardium often present in an extreme end of spectrum with septic shock with high mortality risk. However in current case, the presentation is atypical. Thus, careful and detailed evaluation with echocardiography is essential to unmask this potentially lethal disease. A simple surgical intervention of pericardial window will be an important life-saving option for patients presented with this condition.

Conclusion: Pyopericardium can present in an atypical milder disease spectrum with relatively minor symptoms of heart failure. Careful and detailed evaluation with echocardiography is essential to unmask this potentially lethal condition.

Introduction

Pericardial effusion is commonly caused by malignancy, renal failure, autoimmune disease or infection. There are about 20% of pericardial effusions without identifiable cause [1]. Infection is one of the commonest causes of pericardial effusion. It is most often viral in aetiology and non-purulent [2]. When the pericardial fluid is purulent, the presence of bacteria is likely. The term 'pyopericardium' or 'purulent pericarditis' has been applied to this condition. The effusion may result in pericardial tamponade with hemodynamic compromise ranged from echocardiographic to clinical compromise [2]. Here, we present an elderly man with pyopericardium and subsequent echocardiographic features of cardiac tamponade.

Case Presentation

This is a 72 years old Chinese gentleman, presented to a district hospital with mild shortness of breath and reduced effort tolerance for 2 weeks. He had no history of fever, weight or appetite loss, chest pain or history of tuberculosis contact. He is diabetic and hypertensive. He has underlying chronic obstructive airway disease due to heavy smoking. He had a past surgical history of small bowel resection due to a blunt trauma and metal fragment embedded over right upper lobe following an assault. On presentation, he was comfortable under room air; saturation of oxygen was 96% under room air. Blood pressure was 124/98mmHg and pulse rate was 102bpm. His jugular venous pressure was not raised and there was no pitting ankle oedema. On auscultation, the heart sounds were muffled and there were minimal basal crackles over both lungs. Chest x-ray showed enlarged cardiac shadow (Figure 1).

Electrocardiogram showed QRS complex with small amplitude. Transthoracic echocardiography showed large global pericardial effusion, measuring 2.3 to 3.0cm in diameter. However, there is only small pericardial effusion < 1cm around the right ventricle and left ventricle apex (subcostal and 4 apical chamber view). Small fibrin strands were seen in the pericardial effusion. There is partial right atrial collapse in systole but no right ventricle diastolic collapse. There is significant variation of tricuspid and mitral inflow with respiration. Left ventricular ejection fraction was 59% (Figure 2).



Figure 1: Chest radiograph showing enlarged cardiac shadow.

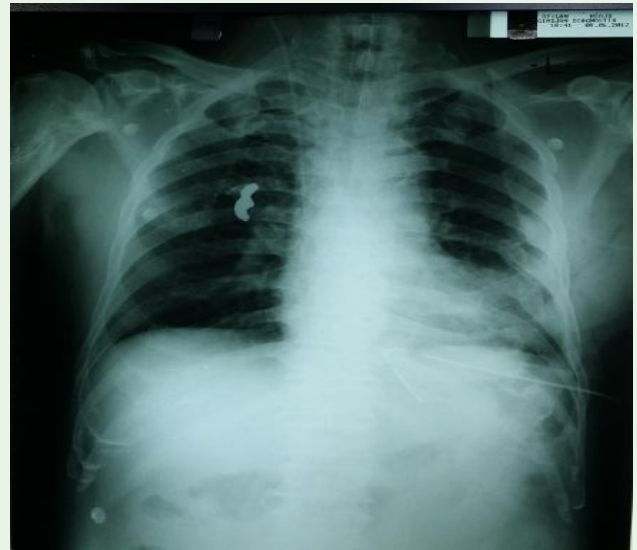


Figure 3: Chest radiograph taken immediate postoperative, which showed the absence of cardiac shadow.

Arterial blood gases on admission showed pH 7.396, $p\text{CO}_2$ 53.7mmHg, $p\text{O}_2$ 61.6mmHg, bicarbonate 29.6mmol/L, base excess 7.4. White cell count was $7.3 \times 10^9/\text{L}$, haemoglobin level was 16.3g/dL, platelet was $262 \times 10^9/\text{L}$, urea was 3.0 mmol/L, and creatinine was 70umol/L. Liver function test and cardiac enzymes were normal. C-reactive protein was 11.4 mg/l. Sputum was negative for acid fast bacilli. A computed tomography was done to exclude an underlying lung malignancy. However, it showed a right upper lobe consolidation and pericardial effusion with maximum thickness 3.4cm over left posterolateral area. He was referred to cardiologist for pericardiocentesis. Due to a thin effusion over the heart apex, an open drainage was done. We explored the pericardial space via a left posterolateral thoracotomy in contrary to usual subxiphoid approach due to presence of fibrin strand on echocardiography. Intraoperatively, there were 500cc purulent fluids drained.

There was adhesion over left pulmonary lower lobe onto the pericardium. The pericardial window was left open and a pleural chest drain was placed. Post operatively, he stayed for 5 days and the chest drain was removed prior to discharge home (Figure 3).



Figure 2: Preoperative Echocardiography showing the thin effusion at apex and global effusion up to 2.8cm.

Histopathology report of pericardium tissue showed no evidence of malignancy. The pericardial fluids contained reactive mesothelial cells exhibiting moderately pleomorphic enlarged hyperchromatic nuclei in moderate cytoplasm with vacuoles and blebs. Pleural biochemistry showed turbid yellowish fluid with >1000 white cells count/ cm^2 . There was 75% of polymorph with 25% of lymphocyte in the fluid. Pericardial fluid culture & sensitivity, AFB (Acid Fast Bacilli) staining and mycobacterium culture were all negative.

Discussion

When pus drained from pericardium, it is called pyopericardium or purulent pericarditis. It is rare, accounting for less than 1% of acute pericarditis. It is exceedingly rare when present in adult. It is often associated with a chest infection [3]. Presence of pneumonia can mask the diagnosis of purulent pericardial effusion leading to delay in diagnosis [4].

Patient with pyopericardium often present in an extreme end of spectrum with septic shock with high mortality risk [5]. However in current case, the presentation is atypical. He had mild symptoms of heart failure without hemodynamic compromise. He had no fever, his septic parameters from blood results were all within normal range. He had no obvious clinical cardiac tamponade but echocardiography showed signs of cardiac tamponade. There were small fibrin strands in pericardial space. All of the atypical presentations give us an important lesson that purulent pericardial effusion may present in a milder spectrum.

Risk of pyopericardium includes immunosuppression, alcohol abuse, and previous pericardial inflammation [4]. In current case, the patient is an elderly man with diabetes mellitus and history of heavy smoking. These factors may predispose him for a chest infection which could have led to a pericardial inflammation and hence the pyopericardium. The presence of adhesions between the left lower lobe and pericardium and evidence of lobar consolidation from the CT Thorax were the relevant clinical associations.

A negative culture was reported from the pericardial fluid in current case. This was not unusual as penetration of antibiotic to this area is good. The other reported case also unable to culture an organism [4].

Conclusion

Pyopericardium can present in an atypical milder spectrum with relatively minor symptoms of heart failure. Careful and detailed evaluation with echocardiography is essential to unmask this potentially lethal disease. A simple surgical intervention of pericardial window will be an important life-saving option for patients presented with this condition.

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