CASE REPORT

Pyopericardium presenting with echocardiographic features of pericardial tamponade in an elderly man

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SUMMARY

A 72-year-old Chinese man presented with mild symptoms of heart failure. Transthoracic echocardiography showed signs of cardiac tamponade though clinically he was relatively well. The option of pericardiocentesis was not carried out due to a narrow window for aspiration with only a thin layer of effusion seen surrounding the apex and right ventricle on subcostal view.

Pericardial window was done via a left anterolateral thoracotomy. Intraoperatively, 500 cm³ of purulent fluid was drained. Microbiology screens were all negative. We present the atypical clinical course of this elderly man presenting with a large pyopericardium.

measuring 2.3–3.0 cm in diameter. However, there is only a small pericardial effusion <1 cm around the right ventricle and left ventricle apex (subcostal and apical four-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).

Arterial blood gas on admission showed pH 7.396, pCO₂ 53.7 mm Hg, pO₂ 61.6 mm Hg, bicarbonate 29.6 mmol/L and base excess 7.4. The biochemistry examination including cardiac enzymes was normal. Sputum was negative for acid fast bacilli. A CT excluded any lung malignancy. However, it showed a right upper lobe consolidation and pericardial effusion with maximum thickness of 3.4 cm over left posterolateral area.

BACKGROUND

Common causes of pericardial effusion include malignancy, renal failure, autoimmune disease or infection. In about 20% of cases, there are no identifiable causes found for the pericardial effusion.¹ Infective cause of pericardial effusion is most often viral in aetiology and non-purulent.² When the pericardial fluid is purulent, the presence of bacteria is likely.² Here, we present an elderly man with purulent pericardial effusion with echocardiographic features of cardiac tamponade.

CASE PRESENTATION

A 72-year-old man presented with mild dyspnoea for 2 weeks. He denied any history of fever, weight or appetite loss, chest pain or history of contact with tuberculosis. His medical history includes diabetes, hypertension and chronic obstructive airway disease. Important surgical history includes metal fragment embedded over upper lobe of the right lung following an assault 20 years ago.

On presentation, his vital signs were: blood pressure 124/98 mm Hg, heart rate 102 bpm and oxygen saturation 96% room air. Clinical examination revealed a normal jugular venous pressure and there was no pitting ankle oedema. The heart sounds were muffled and there were minimal bibasal crackles.

TREATMENT

The patient was referred to the cardiothoracic team for open drainage as there was minimal effusion near the apex, making it unsafe for pericardiocentesis. We decided to perform a pericardial window via a left anterolateral thoracotomy contrary to usual subxiphoid approach due to presence of fibrin strand on echocardiography. Intraoperatively, 500 cm³ purulent fluid was drained (figure 3). There were adhesions between left lower lobe and the pericardium. A pleural chest drain was left to drain the left pleural space. Intravenous cefuroxime 750 mg thrice a day was completed for 1 week after surgery.

OUTCOME AND FOLLOW-UP

Postoperatively, the patient recovered well and was discharged on day 5. Histopathology report of pericardial tissue showed no evidence of malignancy. The pericardial fluid contained reactive mesothelial cells exhibiting moderately pleomorphic enlarged hyperchromatic nuclei in moderate cytoplasm with vacuoles and blebs. Pleural biochemistry showed turbid yellowish fluid with >10 × 10⁹/L white cell count. There was 75% of polymorph with 25% of lymphocyte in the fluid. Pericardial fluid cultures were negative.

DISCUSSION

Pyopericardium or purulent pericarditis is rare, accounting for less than 1% of acute pericarditis. It is exceedingly rare when present in adult. It is often

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INVESTIGATIONS

Chest radiograph showed enlarged cardiac shadow (figure 1). ECG showed QRS complex with small amplitude. Transthoracic echocardiography revealed a large global pericardial effusion,

Figure 1 A chest radiograph showing the enlarged cardiac shadow.

associated with a chest infection.³ The presence of pneumonia can mask the diagnosis of purulent pericardial effusion leading to a delay in diagnosis.⁴

Patients with pyopericardium often present at the end of the disease spectrum with septic shock which is associated with a high mortality risk.⁵ However, in our case, the presentation was atypical. The patient had mild symptoms of heart failure without haemodynamic compromise. He had no fever and his septic parameters from blood results were all within normal range. There were no obvious clinical signs of cardiac tamponade; however, echocardiography showed signs of cardiac tamponade. There were small fibrin strands in the pericardial space. This atypical presentation serves as an important reminder that purulent pericardial effusion may present in a milder spectrum.

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

Figure 3 Intraoperative picture demonstrating pyopericardium.

Immunosuppression, alcohol abuse and previous pericardial inflammation can cause pyopericardium.⁴ In our case, the patient was an elderly man with diabetes mellitus and history of heavy smoking. These factors may have predisposed him for a chest infection which could have led to pericardial inflammation and hence the subsequent pyopericardium.

A negative culture was reported from the pericardial fluid in our case. The negative culture result is likely due to the good penetration of antibiotics which is common in this region. The other reported case also had a negative culture.⁴

Learning points

- ▶ Pyopericardium can present in an atypical milder disease spectrum with relatively minor symptoms of heart failure.
- ▶ The diagnosis of purulent pericardial effusion can be easily masked by the presence of pneumonia leading to a delay in diagnosis.
- ▶ Careful and detailed evaluation with echocardiography is essential to unmask this potentially lethal condition.

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