Unusual association of diseases/symptoms

Cardiac tamponade in acute pancreatitis

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Summary

A 47-year-old man presented with severe acute pancreatitis. On hospitalisation day 8, the patient became hypotensive and developed new-onset atrial fibrillation. Echocardiography showed significant pericardial effusion with right ventricular collapse. A pericardial window was made and the effusion drained. There was rapid clinical improvement following the procedure.

BACKGROUND

Acute severe pancreatitis can have several complications that can lead to acute haemodynamic compromise. Pericardial effusion is a fairly common finding in pancreatitis,^{1–3} but cardiac tamponade has been rarely reported.^{4–5} Here we report a patient, who developed new-onset atrial fibrillation, which prompted an echocardiogram leading to the diagnosis of cardiac tamponade.

CASE PRESENTATION

A 47-year-old man presented with a 2-week history of intermittent epigastric pain radiating to the back, associated with nausea and a few episodes of vomiting. His medical history was significant for coronary artery disease status after right coronary artery stent 11 months ago, nephrolithiasis, 10 pack-year smoking history and social alcohol use. His medications included aspirin, clopidogrel, rosuvastatin and metoprolol.

On examination, he had a heart rate of 70 beats/min, blood pressure of 140/80 mm Hg, respiratory rate of 18/min and normal temperature. Abdominal examination revealed mild epigastric tenderness. The remainder of the physical examination was unremarkable.

INVESTIGATIONS

Laboratory tests revealed a white cell count of 13 800/ μ l (80% granulocytes), haemoglobin of 12.8 g/dl, platelet count of 286 000/ μ l, albumin of 3.1 g/dl, aspartate aminotransferase of 54 IU/l, alanine aminotransferase of 62 IU/l, alkaline phosphatase of 85 IU/l, total bilirubin of 0.5 mg/dl, amylase of 1830 U/l, lipase of 1896 U/l and normal electrolytes and renal function. CT of the abdomen and pelvis showed a small right pleural effusion, a small to moderate pericardial effusion, mild pancreatitis and an ill-defined 2-cm area of hypoenhancement in the pancreatic head (figure 1). Ultrasound of the abdomen showed mild dilatation of the common bile duct (0.71 cm), but no other abnormalities. Magnetic resonance cholangiopancreatography was negative. Echocardiogram on admission showed a normal ejection fraction and a small pericardial effusion.

TREATMENT

With the diagnosis of acute pancreatitis, the patient was given nothing by mouth and started on intravenous fluids and intravenous analgesics. He continued to have abdominal pain and could not be started on enteral feeds. Peripheral parenteral nutrition was started on day 7. On day 8, the patient had shortness of breath and a distension of jugular veins was seen. He subsequently became hypotensive with a blood pressure of 92/66 and developed atrial fibrillation with a rapid ventricular rate. Hypotension responded to fluid boluses and atrial fibrillation was controlled with amiodarone. Echocardiogram showed moderate pericardial effusion with right ventricular collapse and a dilated inferior vena cava (figure 2).

A pericardial window was made and about 500 cc of serous fluid was drained. Pericardial fluid analysis revealed some inflammatory cells, but no malignant cells or bacterial growth. Amylase and lipase levels were not obtained on the fluid. After the procedure, the patient had rapid improvement of his haemodynamic status.

OUTCOME AND FOLLOW-UP

The patient's subsequent hospital stay was complicated by worsening pancreatitis, pancreatic ascites and pleural effusion (figure 3), pancreatic pseudocyst formation and pancreatic necrosis. He was empirically treated with intravenous meropenem. Supportive care and active monitoring were provided in the intensive care unit. He underwent multiple paracenteses under radiological guidance. Ascitic fluid cultures were negative. Subsequently, he developed hospital-acquired pneumonia and the acute respiratory distress syndrome requiring mechanical ventilation, shock and multiorgan failure. On day 47, his family requested that medical care be withdrawn. The patient died shortly thereafter.

DISCUSSION

Acute pancreatitis, which is increasing in incidence over the past several decades, is commonly associated with ascites, pleural effusion and echocardiographic evidence of pericardial effusion,^{1–3} but rarely with clinically significant pericardial effusion and cardiac tamponade.^{4–5} In

Figure 1 CT of the abdomen and pelvis done on admission showing pancreatic pseudocyst (white arrow).

Figure 2 Echocardiogram done on hospital day 8 showing pericardial effusion (white arrow).

a prospective study done among 100 patients with acute pancreatitis, pleural effusion was found in 20 patients, ascites in 18 patients and pericardial effusion in 17 patients.³ Among survivors, effusion disappeared spontaneously. In a study done in 15 patients with acute alcoholic pancreatitis, pericardial effusion was shown to be present in 47% of patients with pancreatitis versus 11% in control subjects, however, this was without any impairment

of left ventricular function.² In a similar study done among 21 patients with acute pancreatitis, 3 patients had pericardial effusion but no decrease in left ventricular function.¹ Pericardial effusion or left ventricular asynergy, in contrast to the presence of pleural and abdominal effusions, was unrelated to the severity of the disease.^{1 3}

Although clearly not known, several theories have been proposed to explain the mechanism of pericardial effusion

Figure 3 CT of the abdomen and pelvis including lung bases done on hospital day 13 showing bilateral pleural effusions (white arrows).

in acute pancreatitis. These include chemical pericarditis due to pancreatic enzymes transported by lymphatic vessels or present in the circulation, necrosis of vascular walls in areas of fat, necrosis in the subpericardial fat and fistulous connections between abdominal and pericardial cavities.⁵ In one report, a mediastinal pseudocyst was described as the cause of cardiac tamponade.⁶ In rare cases, chylous pericardial effusion has also been described in acute necrotising pancreatitis.⁷

Sudden deterioration, shortness of breath and/or hypotension in a patient with acute pancreatitis can be secondary to several reasons including hypovolaemia, sepsis, acute respiratory distress syndrome or circulatory shock. Pericardial effusion and tamponade, although rare, should be considered in such circumstances, particularly since it can be successfully managed, if diagnosed early and treated rapidly.

Competing interests None.

Patient consent Obtained.

Learning points

- ▶ Pericardial effusion is a common finding in acute pancreatitis.
- ▶ It is not related to the severity of the disease.
- ▶ Cardiac tamponade due to pericardial effusion is a rare, but serious complication in acute pancreatitis and should be considered in case of sudden deterioration, shortness of breath and/or hypotension.
- ▶ The diagnosis can be confirmed by echocardiogram.
- ▶ Prompt diagnosis and treatment of the tamponade can lead to rapid clinical improvement.

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