Crit Care Shock (2018) 21:103-106

Cardiac tamponade in acute necrotising pancreatitis

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Abstract

***Objective*: This case report highlights cardiac tamponade as a potentially significant complication of severe acute pancreatitis.**

***Settings*: This patient was admitted to the Ng Teng Fong general hospital emergency department. He was subsequently admitted to the Intensive Care Unit (ICU) in the same hospital.**

***Patients*: A 58-year-old male presented with severe acute gallstone pancreatitis with a Glasgow-Imrie criteria of 3. He was admitted for haemodynamic instability and acute respiratory distress syndrome (ARDS). The patient developed new-onset atrial fibrillation, persistent hypotension despite fluid resuscitation and increasing dependence on high inotropic support.**

***Investigations*: A CT abdomen incidentally discovered an accumulation of pericardial fluid. Bedside echocardiography confirmed the presence of a large pericardial effusion consistent with cardiac tamponade. A CT scan revealed severe necrotising pancreatitis with a significant peripancreatic fluid collection.**

***Interventions*: An emergency pericardiocentesis was performed and a pericardial drain was inserted. Eight hundred ml of haemoserous pericardial fluid was drained over a period of 2 days. The patient's haemodynamic status improved significantly after drainage of pericardial fluid.**

***Conclusion*: Cardiac tamponade is one of the rare but clinically significant complications of severe acute pancreatitis and should be treated with a high index of suspicion in cases of acute pancreatitis with hypotension.**

Case presentation

A 58-year-old Chinese male presented with a 1-day history of central chest and epigastric pain radiating to the back, worse after meals and associated with one episode of vomiting without fever. He has past medical history of biliary colic, chronic hepatitis B, alcoholic fatty liver disease, psoriasis and hypertension. Patient's alcohol use is estimated to be 25 units a day for the past 30 years but claims to have stopped alcohol use 6 months prior to admission.

Initial laboratory tests showed a serum amylase of 5692 U/L. Patient was diagnosed with acute severe pancreatitis with a Glasgow-Imrie score of 3. Aetiology of gallstone pancreatitis was confirmed on magnetic resonance cholangiopancreatography (MRCP). MRCP revealed a dilated common bile duct (CBD) of 17 mm with multiple gallstones measuring up to 8 mm together with findings consistent with acute pancreatitis. Endoscopic retrograde cholangiopancreatography (ERCP) with sphincterectomy and stent placement was performed after unsuccessful gallstone removal.

Patient subsequently developed acute respiratory distress syndrome (ARDS), systemic inflammatory response syndrome (SIRS) and acute kidney injury (AKI), and was admitted to ICU due to haemodynamic instability and acute respiratory failure. Patient went on dialysis for AKI and was intubated post ERCP. He was empirically treated with intravenous imipenem. Nasogastric (NG) and nasojejunal (NJ) tubes were inserted in view of the narrowing the duodenum and lumen due to oedema. CT abdomen and pelvis was done to reassess the extent of pancreatitis, which showed a necrotic peri-

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pancreatic collection, bilateral pleural effusions, and a small pericardial effusion (**Figure 1**). A percutaneous drain was placed under imaging guidance to drain the peripancreatic collection.

On day 29 of hospitalisation, the patient developed worsening hypotension despite fluid resuscitation, new-onset atrial fibrillation and required increasing inotropic support. Noradrenaline dosage was increased from 0.02 mcg/kg/min to 0.18 mcg/kg/min. A repeat CT abdomen showed rapidly accumulating pericardial fluid (**Figure 2**). Subsequent echocardiography confirmed the presence of large circumferential pericardial effusion consistent with cardiac tamponade physiology.

An emergency pericardiocentesis was performed and a pericardial drain was inserted. At total of 800 ml of haemoserous pericardial fluid was drained over a period of 2 days. Patient's haemodynamic status stabilised significantly after drainage of pericardial fluid. The patient was weaned of noradrenaline inotropic support.

Discussion

Common complications of acute pancreatitis include ascites and pleural effusion, but clinically relevant pericardial effusion and cardiac tamponade are unlikely. (1-3) In a study done in 21 patients with acute pancreatitis, 8 patients had severe pancreatitis, and only 1 patient with severe pancreatitis had a pericardial effusion while 7 of these patients had pleural effusions. (1) In another study done among 15 patients with mild acute alcoholic pancreatitis and 28 controls, 7 patients (47%) with pancreatitis and only 3 controls (11%) had pericardial effusion on echocardiography. (2) Interestingly none of the above patients had left ventricular impairment. (1,2) Pericardial effusion was also unrelated to the severity of the disease, unlike pleural and abdominal effusions. (1) There have been multiple theories postulated to cause pericardial effusions in acute pancreatitis, however the exact mechanism is still unknown. Some of these theories include chemical pericarditis due to circulating pancreatic enzymes, fat necrosis in the subcutaneous tissues, as well as pericardial-abdominal fistulas which may result in a mediastinal extension of a pancreatic pseudocyst. (3) While extremely rare, pericardial effusion may also subsequently lead to a cardiac tamponade which is life-threatening for the patient. (4)

Although pericardial effusion is a relatively common complication in acute pancreatitis, it can potentially lead to serious complications such as left ventricular dysfunction, cardiac tamponade and subsequent hemodynamic instability. As a rapidly accumulating pericardial effusion is relatively easy to manage before it develops the above complications, it is important to consider doing serial echocardiograms for patients who have pericardial effusions in acute pancreatitis to ensure there is no rapid accumulation which might further complicate treatment.

Figure 1. CT of the abdomen and pelvis on day 15, necrotizing pancreatitis (white arrow)

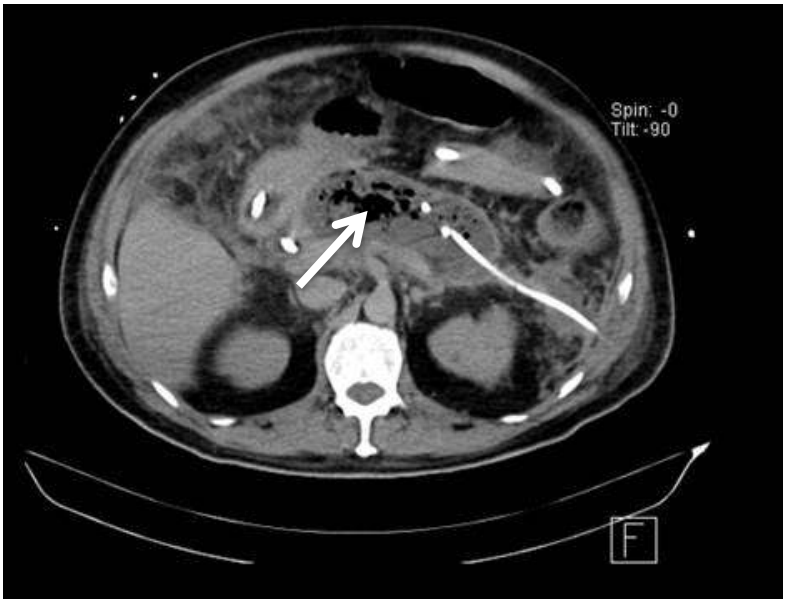
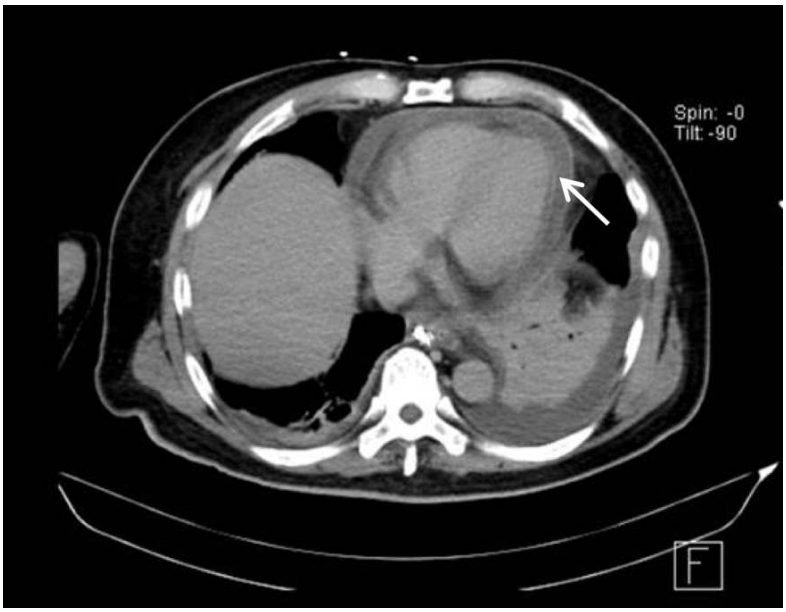


Figure 2. CT of the abdomen and pelvis on day 32, pericardial effusion (white arrow)



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