CASE REPORT

Cardiac tamponade, an unusual complication of acute pancreatitis

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SUMMARY

A 41-year-old Hispanic man was admitted to our hospital with the diagnosis of acute pancreatitis due to hypertriglyceridemia. During his stay, he developed sudden haemodynamic instability and clinical presentation suggestive of cardiac tamponade. A transthoracic echocardiogram confirmed the diagnosis. Echocardiography-guided pericardiocentesis was performed with immediate haemodynamic improvement. The patient's condition underwent favourable evolution. The pancreatitis was resolved and a control transthoracic echocardiography was performed showing no pericardial effusion. The pathophysiology of this rare entity is unknown. Early diagnosis and treatment are crucial. Although pericardiocentesis is the treatment of choice, there have been a few reports of medical treatment with encouraging results. Although the association of acute pancreatitis and tamponade are anecdotal in literature, medics should be aware of this association in order to perform prompt diagnosis.

BACKGROUND

Cardiac tamponade has high mortality rates when untreated and can occur in many clinical settings; sometimes there are unusual causes of tamponade. Acute pancreatitis is associated with several local and systemic complications, such as pericardial effusion.¹ Even though this complication is usually mild and without haemodynamic consequences, it can sometimes present as a cardiac tamponade. Suspecting cardiac tamponade in a patient with acute pancreatitis and haemodynamic impairment without any other explicable causes could save the patient's life.

CASE PRESENTATION

A 41-year-old Hispanic man with medical history significant for hypertension and type 2 diabetes, presented to our emergency department with acute abdominal pain of several hours' duration and clinical presentation suggestive of acute pancreatitis. Laboratory data showed elevated levels of triglycerides (2420 mg/dL), total cholesterol (395 mg/dL), amylase (268 IU) and lipase (209 IU). Arterial blood gases were: PaO₂, 74 mm Hg; PaCO₂ mm Hg, 36.7; pH, 7.45; HCO₃, 25.5; and lactate 1.4. Other test results such as complete blood count, serum chemistry and electrolytes, as well as chest X-ray and 12-lead electrocardiogram, were unremarkable. The patient was admitted with the diagnosis of acute pancreatitis with a Ranson criteria at admission of 1 (lactate dehydrogenase (LDH), 180 IU/L; glucose, 231 mg/dL; aspartate aminotransferase, 38 IU/L; leucocytes, 11.8×10³/μL). Abdominal CT scan showed pancreatic abnormalities that were consistent with acute pancreatitis as well as mild bilateral pleural effusion (figure 1). Two days after being admitted, the patient presented sudden onset chest pain with profuse sweating, hypotension (70/40 mm Hg), tachycardia (128 bpm), jugular distention, pulsus paradoxus, as well as muffled heart sounds.

INVESTIGATIONS

Physical examination suggested a cardiac entity as the cause of the haemodynamic impairment. ECG showed electrical alternans best viewed in precordial leads (figure 2) and chest X-ray revealed bilateral pleural effusion; the patient was started on intravenous fluid resuscitation with crystalloids, resulting in mild improvement. A transthoracic

Figure 1 (A) Abdominal CT scan showing fatty peripancreatic infiltration (white arrow) and (B) Increased pancreatic size, typical of pancreatitis.

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Figure 2 ECG with electrical alternans, more evident in precordial leads.

echocardiogram was performed showing diastolic collapse of the right chambers, moderate pericardial effusion (figure 3A, B) and transmitral flow velocity variation of 55% on pulsed Doppler (figure 3C).

TREATMENT

Owing to the echocardiography findings and haemodynamic impairment, an echocardiography-guided pericardiocentesis was performed obtaining 50 mL of clear liquid with immediate improvement of haemodynamic status with blood pressure of 96/64 mm Hg, normalising heart rate (88 bpm) as well as improvement of chest pain. A pigtail catheter was placed. Mild pericardial effusion was noted on control echocardiography with transmitral flow velocity variability of 15% and absent right chamber diastolic collapse.

OUTCOME AND FOLLOW-UP

Drainage output reported only a few millilitres in the next 24 h and the catheter was removed 3 days later. The biochemical analysis of pericardial fluid reported: glucose 242 mg/dL, proteins 0.8 g/dL, LDH 39 UI/L, triglycerides 4.2 mg/dL, leucocytes 48/ μ L (polymorphonuclear 41% and mononuclear 59%), and erythrocytes 80/ μ L; microbiological and pathology analyses were unremarkable. After the pancreatitis was resolved, a transthoracic echocardiogram was performed, showing no abnormalities (figure 4A, B), and the patient was discharged home. At 1-year follow-up the patient had had no recurrence of pericardial effusion.

DISCUSSION

The association between pancreatitis and tamponade is rare, being reported more commonly in chronic pancreatitis² and

Figure 3 (A and B) Bi-dimensional echocardiography demonstrating pericardial effusion. (C) Pulsed Doppler recordings of transmitral flow indicating variability of >25%, which is typical of pericardial effusion with haemodynamic impairment.

Figure 4 Control echocardiography. (A) Pulsed Doppler recordings without significant variability of transmitral flow. (B) Left ventricle without collapse during diastole.

pancreatic pseudocyst.³ Pathogenesis of this entity has not yet been fully elucidated, infiltration through the diaphragm of inflammatory pancreatic exudates containing digestive enzymes could play a role in pericardial irritation and increased production of pericardial fluid; nevertheless, some cases have reported presence of lipemic liquid in the pericardial effusion, 'kilotamponade',⁴ suggesting a variety of mechanisms uniting in a common complication. Regardless of the cause, the rapid accumulation of pericardial fluid, even a few millilitres,⁵ can lead to tamponade. The diagnosis should be made promptly, as suggested by current guidelines, by transthoracic echocardiography; this might be difficult in patients with mechanical ventilation;⁶ initial treatment remains the rapid resolution of haemodynamic deterioration by pericardiocentesis (class IA).⁷ Pericardiocentesis should be performed in all patients with haemodynamic impairment demonstrated with clinical and echocardiographic signs such as pulsus paradoxus, Beck's triad and transmitral flow variability >25% in pulsed Doppler; in addition to pericardiocentesis, there have been some case reports of patients treated with somatostatin⁸ or its analogue, octreotide acetate, especially in patients with chronic effusions.⁹ It should be noted that these novel medical treatments should never replace pericardiocentesis and have only been used as adjunctive therapy. The recurrence

of tamponade in cases such as that presented has not been reported before.

Learning points

- ▶ Acute and chronic pancreatitis have multiple systemic complications—one such unusual and rarely reported complication is cardiac tamponade.
- ▶ Although tamponade is a rare complication, it should be considered as a possibility in any patient with acute and especially chronic pancreatitis, who suffers sudden haemodynamic deterioration with no other explainable causes.
- ▶ Prompt diagnosis and treatment are crucial to provide a better prognosis for the patient. Although pericardiocentesis is the treatment of choice, there have been a few reports of medical treatment with encouraging results.

Competing interests None declared.

Patient consent Obtained.

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