CASE REPORT

Massive loculated pleural effusion in a patient with pancreatic pseudocyst due to alcohol-related chronic pancreatitis

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SUMMARY

A 47-year-old man with a history of alcohol-related pancreatitis was admitted with dyspnoea due to a moderate right-sided pleural effusion. Diagnostic pleural tap showed an amylase of 6078 U/L. CT demonstrated a pancreatic pseudocyst with communication to the pleural cavity. Conservative medical management and chest drainage were started, but after 13 days the patient became acutely unwell with severe dyspnoea and worsening chest pain. Chest X-ray and subsequent CT demonstrated a massive pleural effusion with mediastinal shift. Ultrasound scan demonstrated loculation of the effusion requiring insertion of a large bore chest drain to relieve symptoms. He was transferred to a pancreaticobiliary centre, but subsequently made a good recovery without the need for a further procedure. This case highlights massive pleural effusion with subsequent loculation as a rare complication of chronic pancreatitis.

BACKGROUND

Massive pleural effusion is a known but rare complication of chronic pancreatitis. This case reminds the clinician that in patients presenting with a pleural effusion and a history of pancreatitis, particularly secondary to alcohol, it is important to consider the possible presence of a pancreaticopleural fistula.

CASE PRESENTATION

A 47-year-old man presented to the emergency department of a district general hospital with shortness of breath of 2 days duration. He also reported dull right-sided chest pain becoming increasingly sharp in character. He was a current smoker with 35 pack-years. He had a history of long-term heavy alcohol use with three previous hospital admissions for acute pancreatitis—the last admission being 3 months earlier. On examination there was dullness to percussion of the right mid and lower lung base with bronchial breathing over that area. The abdomen was soft with mild epigastric tenderness. The working diagnosis was a reactive pleural effusion secondary to acute-on-chronic pancreatitis.

INVESTIGATIONS

Chest X-ray demonstrated a large right-sided pleural effusion (figure 1). ECG showed sinus rhythm with a rate of 92 bpm. Blood results were white cell count $11.6 \times 10^9/L$, haemoglobin 141 g/L, platelet count 282 g/L, neutrophil count $8.02 \times 10^9/L$, amylase 1360 U/L, bilirubin 11 $\mu\text{mol/L}$, alkaline

Figure 1 Chest X-ray showing a large right-sided pleural effusion.

phosphatase 66 U/L, alanine transaminase 25 U/L, albumin 34 g/L and C reactive protein 245 mg/L. At day 5 after admission a cloudy orange pleural aspirate was sent to the laboratory which showed total protein 28 g/L, albumin 15 g/L, globulins 13 g/L, lactate dehydrogenase 323 U/L, pH 8.0 and amylase 6078 U/L. There was no evidence of malignancy or tuberculosis reported from the pleural samples. A CT scan showed features of chronic pancreatitis with a pancreatic pseudocyst (figure 2, arrow).

DIFFERENTIAL DIAGNOSIS

Owing to the large pleural effusion, high amylase in the pleural fluid and presence of a pseudocyst, a diagnosis of a pancreaticopleural fistula (communication between the pancreatic pseudocyst and the pleural cavity) was made.

Figure 2 CT scan showing a pancreatic pseudocyst.

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TREATMENT

The patient was treated conservatively as follows: (1) nil orally, (2) nasojejunal feeding, (3) pancreatic enzyme replacement therapy (Creon 25 000 units), (4) Octreotide 100 µg three times daily subcutaneously and (5) 18F Seldinger chest drain. The patient initially improved but after 48 h became acutely unwell with right-sided chest pain, tachycardia (140 bpm), tachypnoea (35/min) and saturations of 95% on room air. The drain output had been decreasing (from 2.2 L over 24 h to 250 mL over 14 h) and ceased completely in the last 10 h despite several drain flushes. A further chest X-ray (figure 3) and CT showed a massive pleural effusion with mediastinal shift. Ultrasound scan of the effusion demonstrated widespread loculation accounting for the failure of the chest drain. The case was discussed with a thoracic surgeon who advised a larger bore chest drain and if not successful a thoracoscopy. A further larger chest drain was inserted under ultrasound guidance leading to improvement and normalisation of observations in 1.5 h. He was transferred to a pancreaticobiliary centre for further management.

OUTCOME AND FOLLOW-UP

The patient was further treated conservatively with nasojejunal (NJ) feeding, ongoing nil by mouth, intravenous fluids and analgesia. Repeat CT showed improvement of the pleural effusion. He was discharged home with a respiratory outpatient appointment and local alcohol misuse team review in the community.

DISCUSSION

Pancreatitis can be complicated by two types of pleural effusion. The first, a reactive effusion, is usually small and mostly left sided, seen in 3–17% of patients with acute pancreatitis.¹ One proposed mechanism is ‘migration of amylase rich fluid from the blood across capillaries that supply the pleural space’.² This is usually reabsorbed upon pancreatic recovery without need for treatment of the effusion. The second type is associated with the development of a pancreaticopleural fistula, either from a leak from a pseudocyst across the diaphragm or more rarely a direct pancreatic duct leak (fistulous tract between the pancreas and pleural space).^{1 3} Pleural effusion due to a pancreaticopleural fistula is a rare complication of pancreatitis. Incidence is

estimated at 0.4% in patients with pancreatitis rising to 4.5% in patients with an existing pancreatic pseudocyst.⁴ A review undertaken by Wypych *et al* found only 71 cases of pancreaticopleural fistulae in the literature between 1960 and 2009. They found that such patients are usually middle aged (40–50 years), predominantly men (83%) often with chronic pancreatitis secondary to alcohol abuse (67%). Symptoms include dyspnoea (65%), cough (27%), chest pain (23%) and abdominal pain (29%).⁴

The diagnosis of pleural effusion secondary to pancreaticopleural fistula is based on a pleural effusion with raised pleural fluid amylase and imaging to confirm a pseudocyst or fistulous tract.

The available treatments include: (1) medical treatment with pancreatic rest, usually via NJ feeding, pancreatic enzyme replacement therapy, chest drainage and a somatostatin analogue; (2) endoscopic retrograde cholangiopancreatography with or without pancreatic stenting and (3) surgery.³

Medical treatment aims to reduce exocrine secretions from the pancreas by reducing pancreatic stimulation as a substantial number of pancreaticopleural fistulas will close spontaneously using conservative measures.⁵

Learning points

- ▶ Pancreaticopleural fistula leading to pleural effusion is a rare complication of pancreatitis, with an incidence of 0.4%. However, when a pancreatic pseudocyst is present, the incidence is increased 10-fold.
- ▶ It is essential that an early diagnostic tap is taken for pleural fluid analysis of pancreatic enzymes.
- ▶ Diagnosis of a pancreaticopleural fistula is aided by CT.
- ▶ Conservative treatment of pancreatic pseudocyst is by pancreatic rest, octreotide and chest drainage. However, endoscopic retrograde cholangiopancreatography or surgery may be needed.
- ▶ Loculation can complicate a fistulous effusion and may require a large bore chest drain or thoracoscopy.

Figure 3 Chest X-ray showing a massive right-sided pleural effusion.

Contributors SL wrote the draft case report. PB made amendments and acted as editor of the final draft.

Competing interests None.

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