Unusual association of diseases/symptoms

Recurrent haemoptysis, left-sided chest pain and an evolving left lower lobe cavity in a 50-year old smoker with prior high ethanol intake

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Summary

The authors describe a case of pancreatico-pleural fistula that presented as recurrent pyogenic chest disease in a patient with underlying ethanol related pancreatic disease. The diagnosis was suspected, given the context of non-resolving chest sepsis despite repeated antibiotics in a patient with known pancreatic disease. Although not revealed by initial tests the diagnosis was confirmed by repeating imaging investigations. The fistula was repaired surgically with consequent resolution of chest disease without need for extensive thoracic surgery.

BACKGROUND

This case illustrates two principles that are clinically important. First it demonstrates how it is important to consider the presence of an underlying abnormality when a seemingly common presentation fails to improve with conventional treatment. Second, it illustrates how repeating imaging investigations can be helpful in diagnostically difficult cases. In addition this case provides evidence of how detection and treatment of pancreatico-pleural fistula may lead to successful treatment of resulting pyogenic chest disease. If not considered, the alternative approach would have been for major thoracic surgery (lobectomy) which would not necessarily have stopped the patients' recurrent problems given that the causal fistula would not have been addressed. By demonstrating the potential existence of pancreatico-pleural fistula, and how it may lead to chest sepsis, this case report should be of educational value to respiratory and general physicians.

CASE PRESENTATION

Clinical presentation

A 50-year-old male smoker was admitted with left-sided pleurisy, haemoptysis, fever and purulent sputum production. Patient's history included high ethanol intake, chronic pancreatitis complicated by pancreatic pseudocyst plus splenic haematoma secondary to splenic rupture. There was no history of other relevant comorbidity such as immunocompromise, intravenous drug use, or poor dentition.

Examination revealed clubbing and reduced left basal breath sounds. Chest x-ray showed left basal consolidation (figure 1a). C reactive protein (CRP 333 mg/l), white cell count ($16.0 \times 10^9/l$) and serum amylase (182 IU/l) were elevated. Ultrasound demonstrated stable splenic haematoma plus small left pleural effusion. Pleural fluid analysis demonstrated exudate, (pH 7.31) with negative microbiology and cytology. Sputum grew only scanty yeasts. Urinary Legionella and Pneumococcal antigens were negative. Intravenous antibiotics (augmentin + clarithromycin) were

commenced to manage a significant community acquired pneumonia. He improved and was discharged on oral antibiotics after a 10 day admission. At time of discharge, CRP had fallen to 162 mg/l and white cell count to $11.2 \times 10^9/l$. However, he represented to hospital 6 days later with haemoptysis. Chest x-ray (figure 1b) showed worse left basal consolidation with effusion. Blood tests showed elevated CRP (46 mg/l) and white cell count ($11.2 \times 10^9/l$). Given a recent admission and clinical/radiological deterioration, intravenous tazobactam/piperacillin was commenced to cover nosocomial pathogens. Chest CT demonstrated left-sided consolidation, ground glass changes, moderate left pleural effusion and a small cavitating lesion in the left lower lobe. Bronchoscopy showed bleeding from the left lower lobe. Cytology and microbiology (including acid fast bacilli stains) were negative from bronchial washing. Quantiferon-gold and HIV testing at this stage were negative. He improved and was discharged on oral antibiotics (ciprofloxacin) providing coverage for possible nosocomial pathogens.

He was readmitted a week later with further haemoptysis. Repeat CT was performed (figure 2) after which multidisciplinary team review suggested considering a specific cause related to his history, prior to any thoracic surgery for an apparent lung abscess.

Questions:

1. What does the CT image show?
2. What cause for these appearances was found?

Answers:

1. Worsening cavitation with air-fluid level surrounded by ground glass changes in the left lower lobe.
2. A pancreatico-pleural fistula.

DIFFERENTIAL DIAGNOSIS

- Community acquired pneumonia with complicating empyema/lung abscess.
- Aspiration pneumonia with complicating empyema/lung abscess.

Figure 1 (a) Chest x-ray showing left basal consolidation. (b) Chest x-ray showing worsening left basal pneumonia and parapneumonic effusion.

Figure 2 CT chest showing fluid filled cavity in left lower lobe.

OUTCOME AND FOLLOW-UP

Repeat abdominal ultrasound was performed which showed pancreatic tail swelling, encapsulated fluid beneath the left hemidiaphragm and a well-defined thick walled cavitating pulmonary collection above that. A mature pancreatco-pleural fistula track with secondary pulmonary cavitation was diagnosed following the ultrasound scan. The patient was then reviewed by the hepato-biliary surgical team; they were happy to proceed to surgery as potential definitive treatment without need for any further imaging. Distal pancreatectomy and splenectomy were performed. At operation, an inflammatory mass was found in the tail of the pancreas which involved the spleen and was adherent to the right hemidiaphragm. The resected specimen contained a fistula track which was confirmed to be in communication with the left lower lobe. The patient made an uneventful postoperative recovery. One year post

surgery, he had no further significant chest sepsis nor had he required thoracic surgery.

DISCUSSION

Pancreatco-pleural fistula may complicate pancreatitis, when there is retroperitoneal rupture of a pseudocyst/ pancreatic duct with trans-diaphragmatic fluid tracking leading to pleural effusion/abscess formation. Typical presenting symptoms include dyspnoea, cough and chest pain. Abdominal symptoms occur in 29% cases.¹ Chronic relapsing ethanol-related pancreatitis² is the commonest cause (50%); others include biliary stone disease,² endoscopic retrograde cholangiopancreatography (ERCP),³ and traumatic pancreatitis.⁴ Diagnosis is suggested by grossly elevated pleural fluid amylase and confirmatory imaging. Fistulae may be identified by ERCP (46% cases), CT (33% cases),² or magnetic resonance cholangiopancreatography.⁵ Ultrasound is not well described as a diagnostic modality for pancreatco-pleural fistula. To the best of our knowledge, there is only one other case report of ultrasound providing a diagnosis of pancreatco-pleural fistula.⁶ There is no published comparison of diagnostic imaging modalities for pancreatco-pleural fistula that includes the role of ultrasound. Our experience suggests that with a high index of pretest suspicion, and in the hands of a skilled operator, ultrasound can be helpful in confirming the diagnosis of pancreatco-pleural fistula.

Several management options exist.^{2,7} Conservative therapy includes bowel rest, total parenteral nutrition, thoracocentesis and antisecretagogues like octreotide. Surgical management includes distal pancreatectomy for distal defects, or if the rupture is more proximal, cyst- or pancreatco-jejunostomy. The interventional approach involves ERCP guided stenting of the pancreatic duct for preferential drainage. A recent review showed that conservative management was successful in 31% cases, with longer hospital stay but similar mortality to surgical management.² Surgical treatment was successful in 94% cases and interventional in 100% cases (although this only included six cases).

To conclude, pancreatico-pleural fistula should be considered as a potential cause for persistent pyogenic chest disease in patients with chronic pancreatic disease.

Learning points

- ▶ Always consider an underlying abnormality in persistent pyogenic chest sepsis that fails to respond to conventional therapy.
- ▶ Repeat imaging investigations when initial investigations fail to identify an abnormality and problems persist.
- ▶ Consider the possibility of pancreatico-pleural fistula in a patient with known chronic pancreatic disease who presents with persistent pyogenic chest disease.

Competing interests None.

Patient consent Obtained.

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