Endoscopic management of pancreaticopleural fistula after recurrent acute pancreatitis

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ABSTRACT

Pancreaticopleural fistula is an extremely rare complication of pancreatitis. We present a case of pancreaticopleural fistula in a patient with recurrent acute pancreatitis who presented with right-sided symptomatic pleural effusion. Pancreatic sphincterotomy and pancreatic duct stenting led to resolution of pleural effusion and withdrawal of the chest tube within 3 weeks.

KEYWORDS Endoscopic retrograde cholangiopancreatography; pancreaticopleural fistula; pancreatitis; pleural effusion

Pleural effusion is an extremely rare complication of acute/chronic pancreatitis, accounting for <1% of cases.^{1–3} The incidence is 0.4% in patients presenting with pancreatitis and 4.5% in patients presenting with pancreatic pseudocysts.^{4,5} We describe a patient with recurrent acute pancreatitis who presented with right-sided symptomatic pleural effusion and was found to have a pancreaticopleural fistula.

CASE PRESENTATION

A 53-year-old man with known alcohol dependence, human immunodeficiency virus infection on highly active antiretroviral therapy with a CD4 count of 694 cells/ μ L, hypertension, chronic obstructive pulmonary disease, alcohol-induced recurrent acute pancreatitis, and right-sided pleural effusion presented with the chief complaint of shortness of breath. He was afebrile and had a heart rate of 111 beats/min, respiratory rate of 27 breaths/min, blood pressure of 112/69 mm Hg, and oxygen saturation of 94% on 2 L of oxygen via nasal cannula. The white count was 12,700 cells/ μ L. A basic metabolic panel and liver enzymes were within normal limits. His amylase was 322 U/L and lipase was 173 U/L. COVID-19 polymerase chain reaction testing was negative. Computed tomography (CT) of the chest with

contrast showed a loculated right-sided pleural effusion (*Figure 1a*).

A chest tube was placed, and pleural fluid analysis showed an exudative effusion with a high amylase of 18,000 IU/L, as well as total protein of 3.7 g/dL and lactate dehydrogenase of 296 U/L. At the time, the patient's serum protein was 7 g/dL, and serum lactate dehydrogenase, 272 U/L. Effusion was exudative per Light's criteria.⁶ Cytology was negative for malignancy. Due to the presence of loculations, tissue plasminogen activator plus dornase alfa was used alongside chest tube drainage.

CT of the abdomen with contrast showed mild pancreatic fat stranding at the tail of the pancreas without any evidence of pancreatic pseudocysts. Endoscopic retrograde cholangiopancreatography (ERCP) revealed extravasation of contrast from the tail of the pancreas coursing toward the right hemidiaphragm, suggesting a fistula in communication with the pleural space (*Figure 1b*). Pancreatic sphincterotomy was performed, and a 4 Fr by 9 cm plastic straight pancreatic duct stent was placed in the main pancreatic duct (*Figure 1c*). The patient was discharged with a pigtail draining catheter on his right chest. The chest tube was withdrawn after 3 weeks once CT of the chest confirmed resolution of the pleural effusion. He was asymptomatic at 2-month follow-up, and imaging revealed no further development of pleural effusion (*Figure 1d*).

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Figure 1. (a) CT of the chest showing a large right-sided pleural effusion with loculations. (b) ERCP showing extravasation of contrast at the tail of the pancreas. (c) Placement of a pancreatic duct stent in the main pancreatic duct. (d) Repeat CT of the chest showing resolution of pleural effusion.

DISCUSSION

Pancreaticopleural fistulas are usually left sided but can be right sided or bilateral. They usually result from disruption of the pancreatic duct. Anterior duct disruption can lead to pancreatic ascites, and the posterior duct disruption can lead to pancreaticopleural fistula. When posterior disruption occurs, the fluid flows through the path of least resistance through the aortic and esophageal hiatus into the mediastinum and drains into the pleural cavity. Sometimes the fluid transverse via the lymphatic channels, directly through the hiatus or via diaphragmatic microperforations to reach the pleural cavity.^{7,8} In patients with pancreaticopleural fistula, respiratory symptoms such as dyspnea, cough, chest pain, and fever are more prominent than abdominal symptoms.⁹

The triad of (a) a history of acute/chronic pancreatitis, (b) imaging showing pancreatic ductal disruption with pleural effusion, and (c) amylase-rich pleural exudate is diagnostic of pancreaticopleural fistula. Imaging modalities include magnetic resonance cholangiopancreatography, ERCP, and CT of the abdomen, with sensitivities of 80%, 78%, and 47%, respectively, for detection of pancreaticopleural fistula.^{10–12}

Pancreaticopleural fistula can be managed medically, endoscopically, or operatively. Medical management includes use of octreotide, which inhibits the exocrine pancreatic secretions and facilitates the fistula closure. Endoscopy therapy with ERCP has revolutionized management and is also helpful in diagnosis by revealing the ductal morphology and site of leak. Endoscopic management includes pancreatic sphincterotomy and/or pancreatic duct stenting.^{13–15} Surgical management is recommended when medical or endoscopic management fails. Cystogastrostomy or cystojejunostomy is done if symptomatic pancreatic pseudocyst is present. Distal and middle pancreatectomy are a last resort in

patients who fail medical, endoscopic, or cyst drainage procedures.^{16,17}

In conclusion, persistent and symptomatic pleural effusion in the setting of pancreatitis should raise suspicion for pancreaticopleural fistula, which can be managed by medical and/or endoscopic intervention. In rare circumstances, patients might require surgical intervention.

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