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Pancreaticopleural Fistula: A Rare Occurrence in Pancreatitis

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Abstract

Pancreatitis can rarely result in pancreatico-pleural fistula. A case of left-sided pleural effusion is how it can present with. A few different causes of left-sided effusion exist, including pancreatitis, extrapulmonary tuberculosis, cancer, trauma, and syn-pneumonic effusion. Diagnosis can be suspected with levels of Amylase in the pleural fluid. It can be confirmed with radiographic imaging like MRCP and CECT chest and Abdomen where we can expect a diaphragmatic rent to confirm the diagnosis. Here we will present a case of pancreatic-pleural fistula in a patient with sequelae of acute pancreatitis. This report highlights an important and often overlooked complication of pancreatitis, knowing such complications can help to make an early diagnosis and improve the quality of life of the patient.

Keywords: Pancreatitis, Left Sided Effusion, Amylase, Diaphragmatic Rent

Abbreviations: PPF: Pancreatico-Pleural Fistula, MRCP: Magnetic Resonance Cholangiopancreatography, ERCP: Endoscopic Retrograde Cholangiopancreatography

Introduction

A rare diagnosis known as pancreatico-pleural fistula (PPF) affects about 0.4% of patients with pancreatitis **[1]**. A distinct collection that forms around the pancreas due to pancreatitis may communicate with the pleural space above, draining the collection into that space. Instead of pancreatitis symptoms, the patient typically presents with pulmonary symptoms, which might delay the diagnosis **[1]**. Following diagnosis, the fistula between the collection and pleural space is typically closed.

Case Report

The patient is a known case of seizure d/o on antiepileptic x 10 years. The patient presented with c/o epigastric pain radiating to the back on 30th October 2023. On investigation amylase and lipase were raised (1880/1889). CECT whole abdomen was done and was s/o necrotizing pancreatitis having multiple necrotic foci. He was managed conservatively with fluids and analgesics and discharged when his symptoms resolved and he could take oral diet.

He presented 1 month later with c/o dull aching pain in the whole abdomen more in the epigastric area. He also complained of left-sided chest pain for 10 days insidious increased with inspiration, non-radiating, associated with shortness of breath x 10 days insidious, progressive, and cough without expectoration. There was no history of trauma, fever, or altered bowel habits. On examination build was poor, and BMI was 22.7 kg/m^2. Sensorium was intact. Air entry was reduced on the Left side. Abdominal examination showed epigastric tenderness. Lab investigations suggested,

anemia (Hb-8.5 MCV-73.9), renal function tests were normal (Urea/Cr-16/0.7), normal electrolytes (Na/k/Cl-135/3.9/99), Amylase/lipase in this admission was (1046/566). Liver functions were normal (Bil-0.3, ALP-176 IU/L (40-130) but had hypoalbuminemia Alb-2.6 (3.8-5.5 g/dL). Chest X-ray **(Figure-1)** was s/o Left-sided pleural effusion. Diagnostic pleural Tap was done and showed, 8500 cells/mm^3. (90% lymphocytes 10% neutrophils), exudative in nature as per light's criterion, pleural fluid protein 4.3 (serum protein-4.1g/dL), glucose-163 mg/dL, ADA-666 IU/L, amylase high and sterile. Malignant cytology was negative for malignant cells. ICD was inserted and daily output was 600-800ml/day.

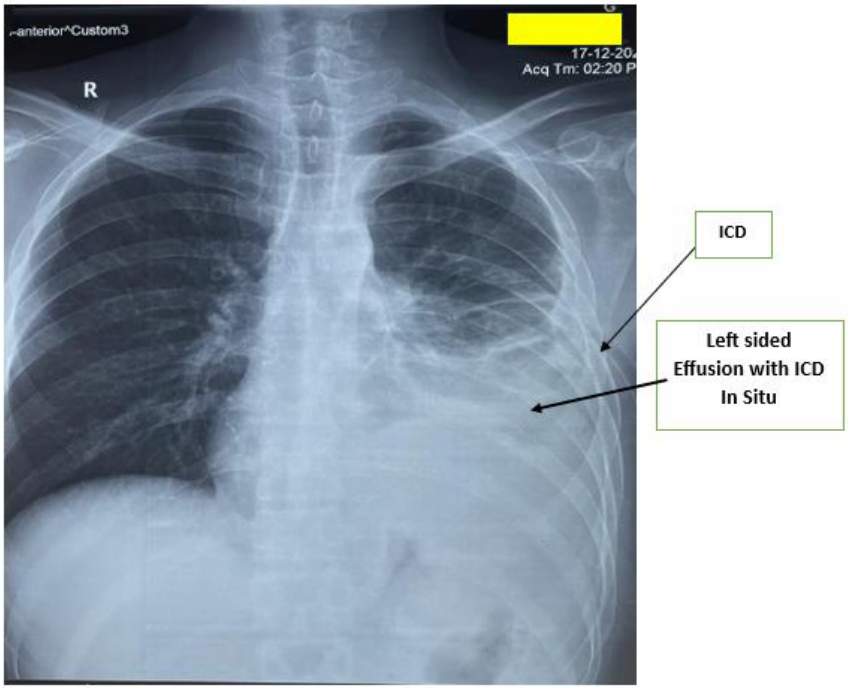
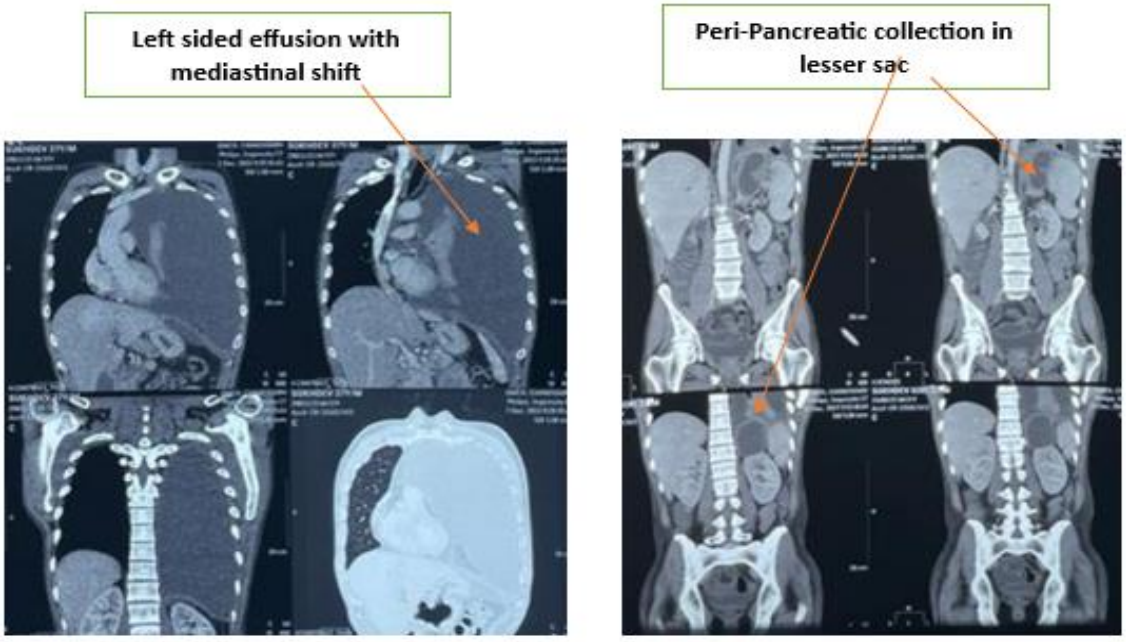


Figure-1: CXR in PA View

CECT abdomen was done **(Figure 2 and 3)** and suggested pancreatitis with a peripancreatic collection of about 8.6 x 4 x 6.6 cm arising from pancreatic tail extending into the lesser sac, with extension into pleural cavity-s/o pleuro-peritoneal fistula.



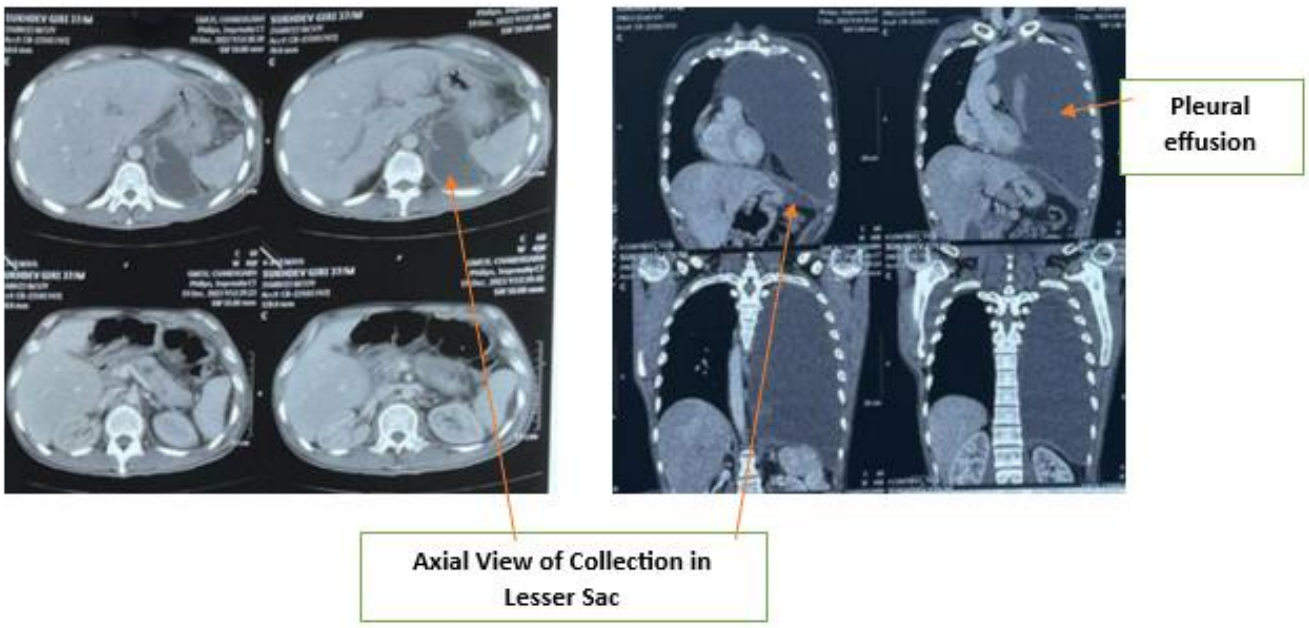


Figure 2: CECT whole Abdomen (Axial and Coronal views)

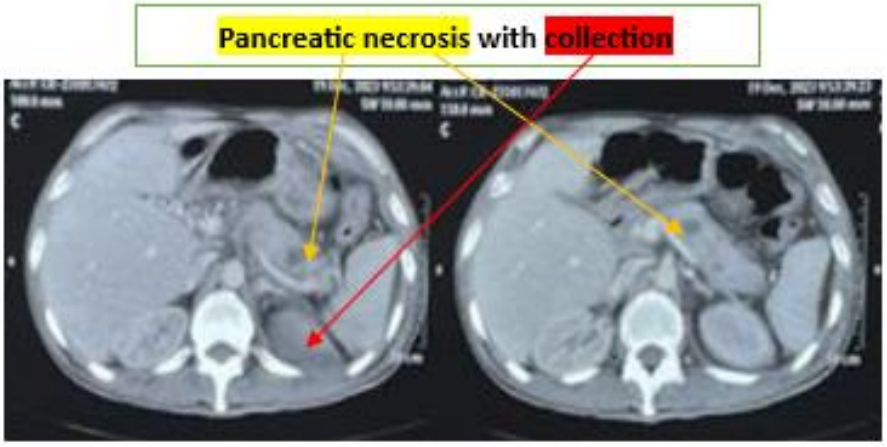


Figure 3: CECT whole abdomen Axial view

MRCP was done **(Figure-4)** and suggested a multi-loculated intercommunicating collection showing communication with the main pancreatic duct and with the pleural cavity.

Discussion

Pathophysiology

The incidence of pancreatico-pleural fistula in patients suffering from acute pancreatitis is less than 1%. 4.5% of patients with pseudocyst **[1-4]** and 0.4% of patients with chronic pancreatitis. An abnormal collection of pancreatic secretions enclosed in a non-epithelial wall made mainly of granular and fibrous tissue is known as a pancreatic pseudocyst **[4]**. The most common cause of fistula formation is chronic pancreatitis caused by alcohol **[1]**. On the other hand, PPF may result from trauma, idiopathic pancreatitis, gallstone pancreatitis, or congenital abnormalities of the pancreatic duct. PPF may result from the abnormal direct trans-diaphragmatic connection of the pancreatic duct to the pleural space or from the posterior pancreatic pseudocyst rupture into the retroperitoneum, which causes the pancreatic secretions to ascend to the pleural space through the esophageal or aortic opening in diaphragm **[3]**. Reactive pleural effusion associated with pancreatitis, typically left-sided and self-limiting should be differentiated from PPF-related pleural effusion.

Figure 4: MRCP Coronal View

Clinical Presentation

A male patient in his mid-40s who suffers from chronic pancreatitis caused by alcoholism and has recurrent pleural effusion that is resistant to thoracentesis and rapidly reaccumulates is a typical clinical scenario for PPF. On the left, pleural effusion secondary to PPF is more prevalent (42%–67%). But it can also happen bilaterally (14%–17%) or on the right side (19%–40 %) **[1]**. The majority of presenting symptoms are pulmonary, with dyspnea accounting for 65%–76% of all cases **[5,6]**. In 24% of the cases, there were reports of abdominal symptoms **[3]**.

Diagnosis

PPF diagnosis requires a high degree of clinical suspicion. Thoracentesis can be used to make the diagnosis if pleural fluid analysis shows an exudative effusion with a high level of amylase. The amylase level does not have a cutoff point. Nonetheless, it is typically markedly elevated when the mean amylase level is greater than 10,000 U/L **[1,4]**. Additional causes of amylase-rich pleural effusion include parapneumonic effusion, esophageal rupture associated with pulmonary tuberculosis, and cancers such as lymphoma, leukemia, and gynecological cancers **[1,2]**. The Pancreatic-type amylase is only present in PPF-related effusions; salivary-type amylase is present in pleural effusions caused by other factors that are amylase-rich **[3]**. As soon as amylase levels are found, the goal is to confirm the existence of a fistula. With a sensitivity of 80%, magnetic resonance cholangiopancreatography (MRCP) is the most sensitive radiological modality. Endoscopic retrograde cholangiopancreatography (ERCP) comes in second with a sensitivity of 78% followed by CT scan with a sensitivity of 47% **[6]**. ERCP is diagnostic and therapeutic but complications such as pancreatitis, ductal perforation, and bleeding can occur so MRCP is the diagnostic tool of choice.

Treatment

PPF can be managed with medication, surgery, and endoscopy **[1,2]**. In 31%–65% of cases, octreotide-based medical therapy to reduce pancreatic secretions combined with total parenteral nutrition has proven effective. However it requires two to three weeks of medical care, and during that time, a chest tube is frequently inserted to drain the recurring pleural effusion **[6]**. Sepsis, malnourishment, and infections from catheter use are among the complications. Additionally, successful endoscopic therapy using ERCP stenting to the pancreatic duct. The aims of ERCP stenting are twofold: The first is to mechanically block the abnormal pancreatic duct-pleura connection; the second is to maintain the pancreatic duct open, allowing pancreatic secretions to bypass the abnormal pleural connection with the higher resistance by traveling downstream via the duct of lower resistance to the duodenum **[7]**. Pancreatic duct disruption and recurring fluid accumulation are among the complications. When medical and endoscopic therapy are unsuccessful, surgical closure is the last option.

Medical treatment is an option for patients whose MRCP results show a normal pancreatic duct free of strictures. ERCP should be used to treat patients with ductal disruption in the pancreatic head or body and stricture downstream of the disruption. When the pancreatic duct is completely blocked, when it is disrupted in the pancreatic tail, or in cases where ERCP treatment is ineffective or ineffective, surgery is necessary **[8-10]**. Creating a pancreatic enteric connection—with or without pancreatic resection—is the fundamental goal of surgical treatment to achieve sufficient drainage of the pancreatic sections. The distal pancreatectomy combined with pancreatico-jejunostomy is the most frequently reported surgical procedure used to treat PPF. The Frey procedure, which includes pancreatic head resection with longitudinal pancreatico-jejunostomy **[2]**, can be used in the event of a pancreatic head mass compressing on the pancreatic duct and the biliary tree.

Conclusion

Pancreaticopleural fistula occurs as a rare complication of Pancreatitis. Diagnosis requires a high index of suspicion. The diagnostic pleural tap showing exudative pleural fluid with high amylase can point out its diagnosis. The confirmatory investigation is MRCP showing a diaphragmatic rent communicating peripancreatic collection to Pleural space, Treatment includes ERCP-guided pancreatic duct stenting to allow drainage of collection. Surgical treatment includes distal pancreatectomy followed by pancreatico-jejunostomy.

Human Ethics

Ethical considerations play a fundamental role in guiding our interactions, decisions, and actions toward one another, ultimately shaping the fabric of our society.

Human ethics encompass a set of principles and values that govern how we treat and interact with one another, rooted in respect, dignity, fairness, and compassion. These principles serve as a moral compass, guiding us to make decisions that prioritize the well-being and rights of individuals, communities, and society as a whole.

In today's complex and rapidly changing world, it is more important than ever to uphold human ethics in all spheres of human endeavor. Whether in the fields of healthcare, business, science, technology, or governance, ethical considerations must always be at the forefront of our minds.

We must ensure that our actions do not cause harm or injustice to others, that we respect the autonomy and dignity of every individual, and that we strive to promote equality, diversity, and inclusion in all aspects of our society. This requires a commitment to honesty, integrity, transparency, and accountability in all our interactions and decisions.

Furthermore, as individuals and as a society, we must continuously reflect on and evaluate our ethical practices, recognizing that ethical dilemmas may arise in various contexts. It is essential to engage in open and respectful dialogue, seek diverse perspectives, and collaborate to find ethical solutions that uphold the principles of justice, equity, and human rights.

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