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A CASE SERIES ON PANCREATICOPLEURAL FISTULA

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ABSTRACT

A pancreaticopleural fistula (PPF) is a rare condition that causes thoracic symptoms such as dyspnea and chest pain secondary to exudative pleural effusions. While PPF is a very rare complication with only 52 cases reported between 1960 and 2007, they typically occur in patients who are male, middle aged, and have a history of chronic alcohol use and chronic pancreatitis (Aswani and Hira, 2015; Francisco et al., n.d.; Valeshabad et al., 2018; Ali et al., 2009). The fistula between the pancreas and pleural cavity causes large, rapidly accumulating, and recur- rent pleural effusions which cause symptoms that can be difficult to differentiate from other acute thoracic pathologies (Francisco et al., n.d.). As a result, it is essential that providers have a high index of suspicion for PPF in these appropriate populations. We present a case study with 2 patients who reported to our institute, to review the typical presentation, pathophysiology, and current approach to treatment of PPF.

INTRODUCTION

Pancreaticopleural fistulas (PPF) are a rare complication commonly associated with pancreatitis but can occur secondary to pancreatic trauma. While the incidence of PPF is unknown, it is estimated to occur in 0.4% of patients with pancreatitis and in 4.5% of patients with pancreatic pseudocysts [2,5]. These exudative pleural effusions cause chest pain, which can present similarly to other emergent thoracic pathology to include aortic dissection; as a result, this diagnosis is challenging to identify. In this case report, we present a case of PPF without known risk factors and review its pathophysiology and acute management.

CASES

CASE REPORT 1)

A 47-year-old gentleman, a chronic alcoholic, chronic smoker presented with shortness of breath for 2 weeks, exacerbated on lying down, walking for 100 metres. Patient also had complaints of pain in the right shoulder for past 1 week. On examination, patient was afebrile, pulse rate 94/ minute, blood pressure: 130/70 mmHg, tachypnea was present, patient had decreased breath sound and vocal fremitus on left lower lobe. Chest X-ray on admission showed left sided massive pleural effusion. Diagnostic thoracentesis was performed yielding dark brown – black pleural fluid with an exudative pattern characterized by the following: pH 7.59; lactate dehydrogenase (LDH), 1016 U/L (serum LDH, 133 U/L); total protein, 3.0 g/dL (serum total protein, 6.6 g/dL); albumin, less than 1 g/dL (serum albumin, 3.1 g/dL); lipase, 2348 U/L; and amylase, 30731 U/L. Serum amylase and lipase were 620 and 376 U/L. Liver function, renal function tests were unremarkable. Plain CT chest revealed left sided massive pleural effusion with ipsilateral lung collapse. Contrast enhanced CT abdomen revealed bulky neck, uncinate process of pancreas, atrophic body of pancreas, dilated main pancreatic duct (MPD) 1.2cm, left sub hepatic, splenic collection, no fistula tract could be identified. Magnetic Resonance Cholangio Pancreatography (MRCP) revealed multiloculated collection in subdiaphragmatic, left sub hepatic, splenic region communicating with the MPD and left pleural cavity. Patient was managed conservatively with nil per oral, subcutaneous octreotide, parenteral nutrition. A left sided Intercostal Drainage (ICD) tube was placed. Patient was treated with intravenous antibiotics, improved symptomatically, repeat MRCP after 4 weeks showing no residual collection in abdomen and no fistulous tract to left pleural cavity.

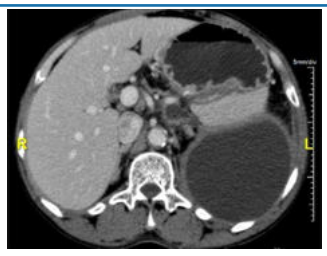

Figure 1 IV-CECT Abdomen revealing left subhepatic, splenic collection

CASE REPORT 2)

52 year old gentleman, chronic alcoholic, presented to the OPD with complaints of pain abdomen, shortness of breath for 6 months. Clinical examination revealed normal vital parameters, right hypochondrial, epigastric tenderness, right sided pleural effusion. Chest Xray revealed massive right pleural effusion. Ultrasound abdomen revealed a perihepatic collection. Right pleural fluid analysis revealed elevated Amylase of 33259 U/L, Lipase of 27866 U/L, liver, renal function tests were normal except for decreased albumin (2.4mg/dl). MRCP revealed a perihepatic collection (8*12*3cm) with communication to the MPD, specks of calcification in head of pancreas. Patient was treated with right intercostal drainage, kept on nil by mouth, parenteral nutrition, intravenous antibiotics. Patient improved gradually, and was discharged after 22 days.

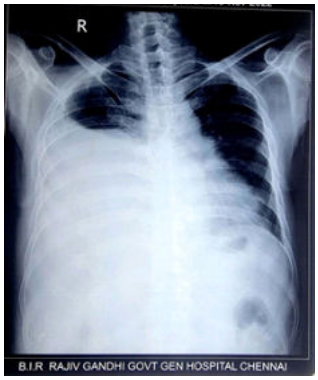

Figure 2 Chest Xray showing bilateral pleural effusion (Right > Left)

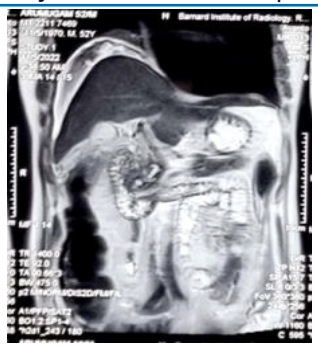

Figure 3 MRCP showing subhepatic collection with fistulous communication to right pleural cavity

CASE REPORT 3)

A 58 year old gentleman, known case of chronic pancreatitis, presented with recurrent left sided pleural effusion. Pleural fluid analysis revealed high amylase levels (21567 U/L). Contrast enhanced CT abdomen, MRCP of the patient revealed pancreatic pseudocyst communicating with left pleural space. Patient was treated conservatively elsewhere, which had not resolved the pleural effusion. ERCP with stent placement was done, along with percutaneous drainage of the pseudocyst. Followup of patient showed resolution of pleural effusion over 2 weeks.

DISCUSSION

PPF is an uncommon emergency that is characterised by the underlying anatomic and physiological abnormalities. Dyspnea (65-76%) is the most common initial symptom, followed by fever, chest pain, coughing, and abdominal pain [3,4]. These symptoms could be mistaken for another acute thoracic pathology, which would delay diagnosis and treatment.

The fifth decade of life, male sex, chronic pancreatitis brought on by alcohol, trauma, and choledocholithiasis are all predisposing factors [1-3]. It has been proposed that a pancreatic hydrothorax can be diagnosed by the triad of prior pancreatitis, obstruction of the pancreatic duct on imaging, and pleural effusion with high levels of amylase in the pleural exudate [6]. Amylase and protein levels in pleural fluid that are noticeably raised can distinguish effusions from pancreatic fistulas and from acute pancreatitis [4,5,7,8]. Despite the fact that there is no established cutoff for pleural fluid amylase levels, the colour of amylase-rich pleural fluid has been described as black, leading to consideration of this diagnosis [2,5,9].

Pancreatic enzymes erode the fascial planes posteriorly in PPF, which develops as a result of either pancreatic duct leaking or a burst or incomplete pseudocyst [1,4]. This dissects into the mediastinum through the aortic or esophageal hiatus, and when it ruptures, it creates a pseudocyst or a fistula that communicates with the pleural cavity [4, 10]. Although a PPF can also result from an anterior pancreatic disruption, ascites is more likely to do so [4,6]. A hydrothorax is more usually found on the left side, however bilateral or right hydrothoraces have also been reported [1,2,4,6].

A chest radiograph and a CT are used in the initial evaluation to check for pancreatitis and any complications; however, the sensitivity of CT visualisation is only 47–63% [1,3]. Endoscopic retrograde cholangiopancreatography (ERCP), which has a sensitivity of 78%, and magnetic resonance cholangiopancreatography (MRCP), which has a sensitivity of 80%, both enable advanced visualisation and therapeutic intervention [1,9]. Based on scant data, PPF management begins with a medicinal therapy trial if hemodynamic stability is present. In 30 to 60 percent of cases, this results in resolution [2,3,7,11]. Conservative treatment consists of complete bowel rest, total parenteral feeding, and broad-spectrum antibiotics [2-4,8]. Octreotide is utilised to reduce pancreatic fistula output and closing time [4]. Thoracentesis or tube thoracostomy can monitor amylase and drain symptomatic pleural effusions in a therapeutic and diagnostic manner [3,6].

CONCLUSION

Pancreatic pleural fistula is a rare condition that needs a high threshold of suspicion in individuals presenting with chest symptoms or pleural effusion and a history of pancreatitis or drinking. Extremely high pleural fluid amylase levels are common but not ubiquitous. We advise noninvasive imaging studies like MRCP before moving on to ERCP after the initial laboratory evaluation, chest radiograph, abdominal radiograph, and thoracentesis for pleural fluid studies. Decisions on intervention therapy (endoscopic vs. surgical) and conservative management (bowel rest, total parenteral nutrition, and somatostatin analogues) may be aided by imaging tests, particularly those that focus on pancreatic duct structure. When the pancreatic duct reveals a stricture or when medicinal therapy fails in patients with dilated or irregular pancreatic duct, endoscopic retrograde cholangiopancreatography with stent/sphincterotomy should be considered. Surgical intervention is indicated for patients with complete disruption of pancreatic duct or large cysts.

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