Case Report

Right-Sided Pancreaticopleural Fistula: An Unusual Presentation of Chronic Pancreatitis

V. Tamilarasan, Syed Zulkharhain Tousheed, Karthik Gadabanahalli[1], H. K. Nandish[2], Vellaichamy M. Annapandian[3]

Departments of Internal Medicine and Pulmonology, [1]Medical Gastroenterology and [2]Radiology, Mazumdar Shaw Medical Center, Narayana Health, [3]Department of Academic Research, Narayana Hrudayalaya Foundations, Bengaluru, Karnataka, India

Abstract

Pleural effusions due to pancreatitis are more common on the left side, but right-sided pleural effusion is very rare. This case report describes a young male who presented with features of right-sided massive pleural effusion. Magnetic resonance cholangiopancreatography showed, chronic pancreatitis with pseudocyst extending into the mediastinum through esophageal hiatus and communicating with right pleural cavity (pancreaticopleural fistula). The patient improved clinically after placing an intercostal drainage tube and stenting of the main pancreatic duct. A clinician should consider pancreatic pathology also in the differential diagnosis of right-sided pleural effusion, even in the absence of abdominal symptoms and risk factors for pancreatitis, when initial evaluation is inconclusive.

Keywords: Chronic pancreatitis, pancreaticopleural fistula, pleural effusion, pseudocyst

Introduction

Pancreaticopleural fistula (PPF) can occur in both acute and chronic pancreatitis. Pleural effusion secondary to pancreatic etiology is more common on the left side due to its anatomic relation.[1,2] Right-sided pleural effusion secondary to pancreatitis is rare, and so far only few cases were reported in the English Medical Literature.[3-6] Here, we describe a young male who presented with hemorrhagic right-sided pleural effusion secondary to PPF.

Case Report

An 18-year-old male college student presented to our hospital with complaints of breathlessness on exertion, dry cough, and decreased appetite for 1 week. It was associated with weight loss (4 kg) and on/off low-grade fever in the past 1 month. He also had a history of recurrent dull aching upper abdominal pain since the past 5 years, at least 2–3 episodes in a year.

On examination, breath sounds were decreased in the right hemithorax. Chest X-ray showed right-sided massive pleural effusion with a deviation of trachea to the left side [Figure 1a]. The initial pleural fluid analysis was inconclusive. Considering the history of recurrent abdominal pain, amylase and lipase levels were measured. Pleural fluid amylase and lipase levels were 981 U/L and 511 U/L, respectively. However, serum amylase and lipase were within normal range.

Ultrasonography (USG) of abdomen was suggestive of chronic calcific pancreatitis. Magnetic resonance cholangiopancreatography (MRCP) showed inflammation of body and tail of pancreas with peripancreatic fluid and pseudocyst extending into the mediastinum through esophageal hiatus and communicating with right pleural cavity [Figure 2]. This could be the cause of right-sided pleural effusion in this present case. There was no family history of pancreatitis, and there was no history of alcohol intake or trauma to the abdomen. Causes such as hyperlipidemia, hypercalcemia, and gallstones were ruled out. Genetic testing could not be carried out considering patient's financial constraints.

While the cause of pancreatitis could not be identified, an endoscopic retrograde cholangiopancreatography (ERCP) showed distortion of main pancreatic duct. Sphincterotomy and

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Address for correspondence: Dr. V. Tamilarasan, Department of Internal Medicine and Pulmonology, Mazumdar Shaw Medical Center, Narayana Health, Bengaluru - 560 099, Karnataka, India. E-mail: tamilnine9@gmail.com

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main pancreatic ductal stenting were done, and an intercostal drainage tube was placed. The patient was further managed with bed rest and diet. His condition improved clinically, and a repeat chest X-ray [Figure 1b] and MRCP [Figure 3] showed resolution of pleural effusion, peripancreatic collection with complete clearance of pseudocyst.

Discussion

PPF is an unusual complication of chronic pancreatitis and occur in <1% of patients with chronic pancreatitis and about 4.5% of patients with pancreatic pseudocysts. Small and transient left-sided effusion without elevated pancreatic enzymes is commonly seen in acute pancreatitis due to increased vascular permeability secondary to diaphragmatic inflammation. Massive recurrent exudative effusion with high pancreatic enzymes occurs in chronic pancreatitis due to the development of PPF.[7]

Literature shows the incidence of pleural effusion in acute pancreatitis was 3%–7% whereas recent reports suggest nearly 50% due to utilization of computed tomography (CT) imaging for diagnosis.[7] Although the pleural effusion in chronic pancreatitis is uncommon, it is often missed because of lack of abdominal symptoms. About 18% of the patients with chronic pancreatitis can present without abdominal symptoms.[8]

The available pathogenic mechanism for the formation of pleural effusion includes direct contact of pancreatic enzymes with the diaphragm, hematogenous transfer of pancreatic enzymes into pleura, transfer of pancreatic secretions through transdiaphragmatic lymphatics, extension of pseudocyst into mediastinum and formation of PPF which results in direct communication of pancreatic pseudocyst with pleural cavity.[8]

Pancreatic-related pleural effusion is more common on the left side due to its simple anatomical relationship. If the pancreatic duct disruption occurs posteriorly, an internal fistula may develop between the pancreatic duct and the pleural space, producing a PPF that is usually left-sided. In our present case, right-sided effusion was probably due to enzyme-mediated rupture of mediastinal pseudocyst into the right pleural cavity with the formation of PPF. This is a very rare mechanism and usually presents as massive pleural effusion. Most of the patients with pancreatic pleural effusion are alcoholics and about 80%–90% of the PPF occurs in chronic alcoholic pancreatitis.[9]

The best screening test for chronic pancreatic pleural effusion is the measurement of pleural fluid amylase, whereas the serum amylase may be normal or mildly elevated. In our case, pleural fluid amylase and lipase levels were initially 981 U/L and 511 U/L, respectively. The repeat pleural amylase level drastically decreased to 123 U/L after treatment.

All recurrent exudative pleural effusion of unknown etiology should be analyzed for pleural fluid amylase level. Other conditions that can raise the amylase level in pleural fluid is esophageal rupture and metastatic malignant tumor.[10] These were ruled out in our case by clinical presentation, and detailed investigations include upper gastrointestinal endoscopy, USG abdomen, MRCP, and pleural fluid cytology. In most cases, PPF can be diagnosed either by CT or ERCP. CT imaging can demonstrate only PPF in 33%–47% of cases, whereas ERCP can diagnose fistula in 46%–78% of cases.[1,4,6]

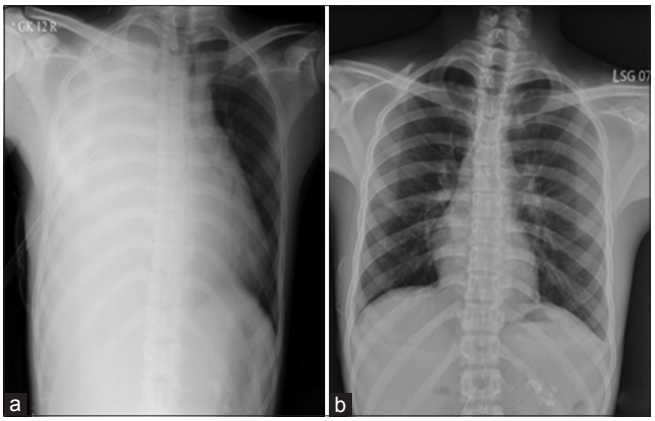

Figure 1: Resolution of pleural effusion (a) before treatment, (b) after treatment

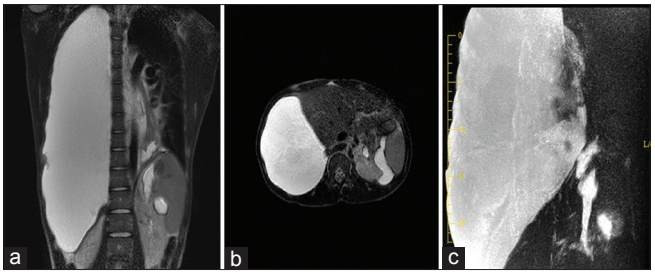

Figure 2: (a) Right-sided massive effusion, (b) pancreatic tail pseudocyst, (c) pancreatic pseudocyst extend into mediastinum and communicating with right pleural cavity

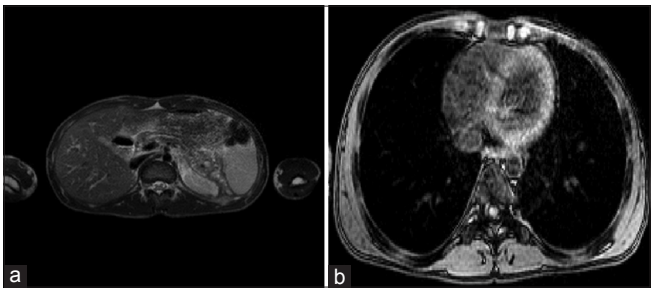

Figure 3: (a) Interval resolution of pseudocyst, (b) interval resolution of pleural effusion

Treatment for pancreatitis can be either conservative or operative. Initial conservative treatment has considerable support in the literature. With conservative treatment, approximately 40%–60% of fistulas close spontaneously. Surgical treatment is indicated when conservative treatment fails or in the presence of life-threatening complications.

Conclusion

The clinician should have high index of suspicion on pancreatic pathology in right-sided pleural effusion even

in the absence of abdominal symptoms when the initial evaluation is inconclusive. Pleural fluid amylase level is the best screening test rather than serum level, and hence pleural fluid amylase content should be measured in all recurrent massive pleural effusion of unexplained etiology even if it presents as right-sided pleural effusion to rule out pancreatic pathology.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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