Unusual case of pancreatic ascites and pancreatic pleural effusion following endoscopic retrograde cholangiopancreatography

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ABSTRACT

Introduction: Pancreatic fistula is the most common complication of pancreatic injury in the setting of blunt trauma and chronic alcoholic pancreatitis. Internal pancreatic fistulas (IPF) are most commonly cause by disruption of the pancreatic duct due to pancreatitis, and leakage from a pancreatic pseudocyst. We present a case of post-endoscopic retrograde cholangiopancreatography (ERCP) pancreatic leak complicated by pancreatic pleural effusions and pancreatic ascites. Case Report: An 18-year-old Hispanic female was admitted with persistent right upper quadrant and epigastric pain, abdominal distention, constipation, leukocytosis and elevated pancreatic enzymes, with history of recent laparoscopic cholecystectomy due to cholelithiasis three months ago. She was diagnosed with choledocholithiasis, underwent successful ERCP, and was discharged home. After 24 hours of discharge, she developed symptoms of systemic inflammatory response syndrome and constipation. Computed tomography (CT) scan of abdomen and paracentesis revealed left sided ascites and plural effusion with high amylase content and no infection. She was diagnosed as suffering from pancreatic ascites and pancreatic pleural effusion following endoscopic retrograde cholangiopancreatography, secondary to internal pancreatic fistula. She received octreotide and a conservative approach to her condition, and had a good response to therapy. Conclusion: In our patient diagnosis was made by finding elevated amylase and protein content in the ascitic and pleural fluids plus CT scan revealed effusion and ascites and managed conservatively. The use of octreotide in such cases is established, and has been successful in our experience.

Keywords: ERCP, Internal pancreatic fistula, Pancreatitis, Pancreatic ascites, Plural effusion


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INTRODUCTION

Pancreatic fistula is the most common complication of pancreatic injury in the setting of blunt trauma and chronic alcoholic pancreatitis [1]. Internal pancreatic fistula are most commonly cause by disruption of the pancreatic duct due to pancreatitis, and to a less extent by leakage from a pancreatic pseudocyst. When the disruption is anterior, an internal pancreatic fistula
(IPF) develops into the peritoneal cavity causing pancreatic ascites. If the disruption is posterior and secretions track up into the mediastinum, pleura is penetrated and an IPF into one or both cavities is established causing pancreatic pleural effusions. Endoscopic retrograde cholangiopancreatography (ERCP) is one of the procedures that explores the branches of the biliary tree, by means of injecting contrast material via the sphincter of Oddi which could potentially damage the wall of the biliary tract.

The ERCP has been the initial modality of intervention for retained stones in the common bile duct (CBD) in patients scheduled for laparoscopic cholecystectomy. Although the procedure is usually safe, procedure related complications do occur, the most serious of which are perforation, bleeding and pancreatitis. Necrotising pancreatitis, pseudoeysts, pancreaticogenic ascites and infection have been reported. Systemic complications leading to multi organ failure are the usual cause of death in cases of pancreatitis.

The diagnosis of pancreatic fistula is usually made in a typical setting of unexplained persistent elevation of amylase and protein content in the ascitic and pleural content and by using computed tomography (CT) scan and ERCP. Post-ERCP pancreatitis is usually mild and self-limiting. Treatment options are directed on decreasing the flow across the leak and increased resistance, which can be achieved non-surgically with the use of long acting somatostatin analogues for approximately 2–3 weeks to reduce the flow, with pancreatic end prosthesis or surgery. Although spontaneous closure of pancreatic ductal disruption has been reported, surgical treatment is accepted as the single most common intervention in major ductal injury but has considerable morbidity and mortality.

Here we present a case of post-ERCP pancreatic leak complicated by pancreatic pleural effusions and pancreatic ascites.

CASE REPORT

An 18-years-old Hispanic female was admitted to our institution with history of intermittent right upper quadrant pain, abdominal distention, nausea and vomiting consistent with biliary colic. These symptoms were occasionally triggered by ingestion of fatty foods. Given her initial presentation suggestive of classical gastritis, an esophagogastroduodenoscopy (EGD) was done with unremarkable results. Laboratory investigations showed no signs of cholestasis. Her symptoms were persistent which warranted further workup. There was evidence of cholelithiasis on CT scan of abdomen (Figure 1). Laparoscopic cholecystectomy with intra-operative cholangiogram was performed with findings consistent with an acutely inflamed gallbladder. She was discharged home two days after the procedure. However, she was admitted three months later with recurrent right upper quadrant (RUQ) pain, nausea and vomiting associated with food intake. Her liver function test (LFT) were abnormal. The common bile duct (CBD) was dilated with stones on liver ultrasonography, consistent with choledocholithiasis. She underwent successful ERCP and sphincterotomy with a stent placement by gastroenterologist with stone extraction on day-2 of admission. There were no acute changes in her condition and she was subsequently discharged home the next day on oral antibiotics, with improving clinical signs and liver function test (LFT).

After about 24 hours, she was re-admitted with persistent RUQ and epigastric pain, abdominal distention and constipation. She was found to have elevated pancreatic enzymes, leukocytosis and dilated loops of bowel without air levels on abdominal X-ray consistent with ileus (Figure 2). At the same time, there was evidence of a small left pleural effusion and ascites on CT scan of abdomen (Figure 3). With the assistance of interventional radiology, a diagnostic paracentesis was performed. Her clinical condition continued to deteriorate with tachycardia, persistent leukocytosis, worsening LFTs and pancreatic enzymes, and with serum amylase peaking at 2,097 U/L. She was transferred to MICU for close monitoring; and was treated for opioid induced ileus and constipation, with non-pathologically raised pancreatic enzyme post-ERCP. Fluid analysis from paracentesis later showed markedly elevated amylase of 46,250 U/L, without significant bile (bilirubin 1 mg/dl; LDH 2,345 U/L) or pus. There was no indication of drain insertion as both pleural effusion and ascites were too small to be drained. Instead, she was managed conservatively with bowel rest and octreotide (100 µg subcutaneous) was started along with broad-spectrum antibiotic coverage with imipenem/cilastatin. Blood cultures were negative for bacterial growth. Her antibiotic therapy was stopped after four days of treatment. Enteral feeding via a tube in proximal jejunum was started in time without complication. Her clinical condition further improved with no fever and her abdomen became non-tender on palpation. CT scan of abdomen showed improvement with CBD reduced in size (Figure 4). The patient had normal stool formation. The opioid dose was tapered and normal oral feeding was re-started. A diagnosis of internal pancreatic fistula/pancreatic duct leak with pancreatic ascites and pleural effusion was made.

Figure 1: Computed tomography scan of abdomen and pelvis showed gallstones with sludge (gastrografin and vasipaque320, power 114 mA, 120 kV).
pancreatic leak leading to internal pancreatic fistula (IPF). Ordinarily when a pancreatic duct disruption occurs, it is during an attack of acute pancreatitis and there is enough inflammatory reaction so that the disruption is walled off by the stomach, transverse colon, mesocolon and other surrounding tissues and a pseudocyst is formed. When a duct disruption occurs in the absence of acute pancreatitis, the duct disruption is not walled off, and an IPF results. The incidence of post-ERCP pancreatitis is reported to range from 1.3–6.7%. Post-ERCP pancreatitis is defined as abdominal pain for more than 24 hr after the procedure and levels of serum pancreatic enzymes three times above normal. Pancreatitis and high serum amylase usually occur after difficult procedures in which pancreatography was performed [2]. The elevation of serum amylase is not a specific sign of pancreatic injury. Small CBD and pre-cut papillotomy also significantly increases the risk of pancreatitis [2]. ERCP has a major complication rate of 1.38% for diagnostic and 5.4% for therapeutic purposes [3].

The diagnosis is made by routinely sending all pleural effusions and ascitic fluid for amylase and albumin determination. Amylase will be markedly elevated, not necessarily elevated in the serum, and in the absence of hypoalbuminemia, albumin will be over 3 g/dL in the ascitic or pleural fluid, which will be diagnostic. Pancreatic ascites diagnostic criteria include ascitic fluid amylase >2000 IU/L in ≥5 simultaneous values. Recent articles in literature suggest that CT scan has 90% sensitivity for detecting pancreatic ductal disruption [4]. Gougeon et al. [5] first reported the use of emergency ERCP in the diagnosis of pancreatic injury in 1976. ERCP has a sensitivity and specificity of 100% for pancreatic ductal injury [6]. ERCP provides not only a conclusive diagnosis but also an effective and safe non-operative treatment tool, in applications such as sphincterotomy, removal of CBD stones, lithotripsy, biliary drainage, and stricture dilation [7]. However, ERCP requires a stable patient and a skilled endoscopist, and has its own complications like pancreatitis, infection, duodenal injury and pancreatic duct disruption.

Despite a success rate of only 48% and a mortality of 16%, non-operative therapy should probably be attempted as the initial treatment in all patients with the IPF. Treatment of leak has focused on decreasing the flow and increasing resistance like a drain removal or fibrin glue. Most authorities feel that the pancreatic fistulas should be managed conservatively as the majority close within a month and operative management should be reserved for the failure of conservative management, peritonitis and associated duodenal injury. Some case series have shown pancreatic duct stent placement to be an effective therapy in resolving duct disruption. Transduetal pancreatic stenting allows internal drainage of the pancreatic secretion and may re-establish duct continuity, although a proportion still requires percutaneous or endoscopic drainage. Endoscopic management with a stable patient and a skilled

**DISCUSSION**

This case report highlights an important issue of the potential risk of ERCP associated complication of
endoscopist has gained increasing acceptance over the past decade. Endoscopic sealing of fistulas by endoscopic injection of the sealant have also been used.

Our patient underwent successful ERCP and sphincterotomy with a stent placement for protection of the pancreas, stone extraction and stent removal. Stent placement is known to decrease the incidence of ERCP directed pancreatitis. Post-ERCP our patient had elevated pancreatic enzymes typical of post-ERCP pancreatitis, however, CT scan showed septated complex collection in perisplenic and tail region of the pancreas. Septated collection represents walling at the point of pancreatic duct leak which does not occur with post-ERCP pancreatitis in which the entire pancreas is edematous. In case of a possible disruption at the level of the tail, it was most likely due to the guide wire insertion with distal perforation. Another important factor was constipation and dilated loops of bowel, ‘ileus’ which was likely multifactorial from the use of opioids and pancreatic ascites. There has been reported cases of such similar nature [8].

Our patient’s diagnosis was made by finding elevated amylase and protein content in the ascitic and pleural fluids plus CT scan revealing effusion and ascites and managed conservatively. The use of octreotide in this case was established, and has been successful in our experience. Nonetheless the latest literature concluded that octreotide does not aid in the resolution of the fistula. Options for treatment of a persistent chronic fistula include removal of the drain and injection of the fistula tract with fibrin glue or fistula tract-enteric anastomosis.

CONCLUSION

The long-term outlook for patients with pancreatic ascites and pancreatic pleural effusions is certainly much more favorable than that of entities with which they are usually confused with like cirrhotic ascites and lung cancer. Although a pancreatic leak is a very rare complication, it can become serious condition adding to morbidity and mortality.

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Author Contributions

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Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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