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Pancreatic choledochal fistula complicating acute pancreatitis

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Summary

Background:

Biliary tract involvement in acute necrotizing pancreatitis is rare.

Case Report:

We report a case of a 53-year-old man who had a pancreatic choledochal fistula complicating acute necrotizing pancreatitis. The fistula was suspected at computed tomography and confirmed at surgery. The patient underwent necrosectomy, cholecystectomy and proximal biliary diversion. He is well at 1-year follow-up.

Conclusions:

Simultaneous presence of air in the biliary tree and pancreatic collection is highly suggestive of a pancreaticobiliary fistula. Pancreatic necrosectomy and proximal biliary diversion resulted in closure of the fistula.

key words:

fistula • pancreatitis • acute necrotizing • computed tomography • pneumobilia

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BACKGROUND

Severe acute pancreatitis may result in locoregional complications owing to the proximity of the pancreas to adjacent structures. Fistula formation with adjacent viscera is rare and reported with stomach [1], colon [2], duodenum [3], spleen [4], bronchus [5], adjacent blood vessels [6], and biliary system [7]. Fistula between pancreas and common bile duct complicating acute necrotizing pancreatitis is rare [8]. We report a case of pancreatic choledochal fistula complicating acute necrotizing pancreatitis detected at contrast enhanced computed tomography [CECT] and confirmed at surgical necrosectomy.

CASE REPORT

A 53-year-old man with acute gall stone pancreatitis was referred to our hospital. He had persistent abdominal pain, vomiting and fever. There was no history of jaundice. On admission he looked ill, had high grade fever (104°F), and complained of pain in the epigastrium, radiating to the back. On examination, there was epigastric tenderness with a vague mass.

Laboratory investigations revealed hemoglobin of 7.0 g/dl, white blood count 8500 thou/ul, serum amylase 2020 IU/L and lipase levels 5840 IU/L. Liver and renal function tests were within normal limits. Contrast enhanced computed tomography [CECT] of the abdomen revealed a hypodense, thick fluid collection with gas in the pancreatic area. There was extensive peripancreatic stranding. Gas was also seen in intrahepatic biliary radicles (Figure 1). The lower end of the common bile duct was seen to open into the collection in the pancreatic head (Figures 2, 3). The gall bladder was distended and hyperattenuating small calculi were seen. The common bile duct was seen dilated in its proximal part with obstruction at the level of the pancreatic head collection. CECT findings were suggestive of gallstone pancreatitis with pancreatic collection and a pancreatic choledochal fistula was considered.

We instituted standard management for severe acute pancreatitis. In view of persistent fever and tenderness in the epigastrium, he was operated upon. At laparotomy there was more than 100 ml of purulent fluid in the lesser sac. Head and body of the pancreas were necrotic. As we drained the purulent fluid and removed the necrotic tissue, bile was seen in the cavity, which suggested the fistula with the bile duct. The defect in the bile duct was not visualized. The gall bladder was removed and the common bile duct was opened. On flushing the common bile duct with saline, the fluid was seen extravasating in the cavity in the pancreatic bed. The pancreaticobiliary fistula was thus confirmed. A T-tube was placed in the common bile duct. A jejunostomy tube was placed for post-operative enteral nutrition. Closed lesser sac drainage was done. The necrosis was infected as documented by the culture of *Klebsiella pneumonia* from the necrotic tissue and fluid.

The post-operative course of the patient was uneventful. A T-tube cholangiogram 8 weeks later showed free flow of contrast into the duodenum without extravasation. The T-tube was subsequently removed.

At 1-year follow-up the patient was doing well and had no recurrence of pain.

DISCUSSION

Biliary complications in acute pancreatitis include extrahepatic bile duct necrosis [9], fibrotic stricture of the extrahepatic common bile duct [10] and pancreaticobiliary fistula [8]. Pancreatic biliary fistula is rare [8,11,12]. The proximity of the extrahepatic bile duct to the pancreas makes it particularly vulnerable to damage by the inflammatory process, causing erosion of the bile duct, thereby resulting in pancreaticobiliary fistulization [11,12]. Apel et al. [13] have reported severe localized pancreatic necrosis that involved the main pancreatic duct near the distal common bile duct, with subsequent formation of a fistula. Another mechanism reported is selective autodigestion of the extrahepatic biliary system [9,11].

The reported causes of pancreaticobiliary fistula include pancreatic pseudocyst [14,15], acute necrotizing pancreatitis [8,11], chronic pancreatitis and/or pancreatic lithiasis [13,16], intraductal papillary mucinous neoplasm [17], and pancreatic tuberculosis [18]. The diagnosis is usually made at laparotomy [11] or at endoscopy [7]. Ours appears to be the first case in which the pancreatic choledochal fistula was diagnosed on CECT. The presence of gas on CECT may be indicative of a pancreaticogastrointestinal fistula [3], pancreatic bronchial fistula [5], or associated infection [19]. CECT has a vital role in assessing the extent of acute pancreatitis and its associated complications [19].

The presence of bile in the cavity following necrosectomy was indicative of a pancreatic choledochal fistula. It is speculated that necrotizing process might have contributed to the destruction of lower part of bile duct, which led to pancreatic choledochal fistula. Saline irrigation of the common bile duct via a choledochotomy resulted in the fluid extravasating into the cavity in the head. In our patient the necrosis involved mainly the head and body of the pancreas. Chaudhary et al. [11] have also reported that necrotic process involved mainly the head and body of the pancreas. In their patients the intracystic part of the common bile duct was involved by the necrotic process, in 2 only the medial wall of the bile duct was eroded, and in the other 2 there was involvement of the entire lower end of the bile duct and medial wall of second part of the duodenum. Miller et al. [12] reported a case in which erosion of the intrapancreatic bile duct and cephalic part of the pancreatic duct resulted in formation of a pancreaticobiliary fistula.

The treatment of pancreaticobiliary fistula complicating necrotizing pancreatitis is difficult. The various surgical options reported are pancreaticoduodenectomy [12], closure of biliary fistula reinforced with vascularized omentum and biliary diversion [8], and proximal biliary diversion [11]. We performed blunt pancreatic necrosectomy and T-tube drainage of the common bile duct. No attempt was made to visualize the fistulous communication.

The role of pancreatic stenting in patients with infected pancreatic necrosis is currently unclear [20]. Pancreatic pseudocyst with fistula to the common bile duct has been treated successfully by combined biliary and pancreatic stenting [14]. Apel et al. [13] inserted a plastic endoprosthesis in the main pancreatic duct to occlude the fistula. Raghunath et al. [7] treated choledochopancreatic fistula by endoscopic

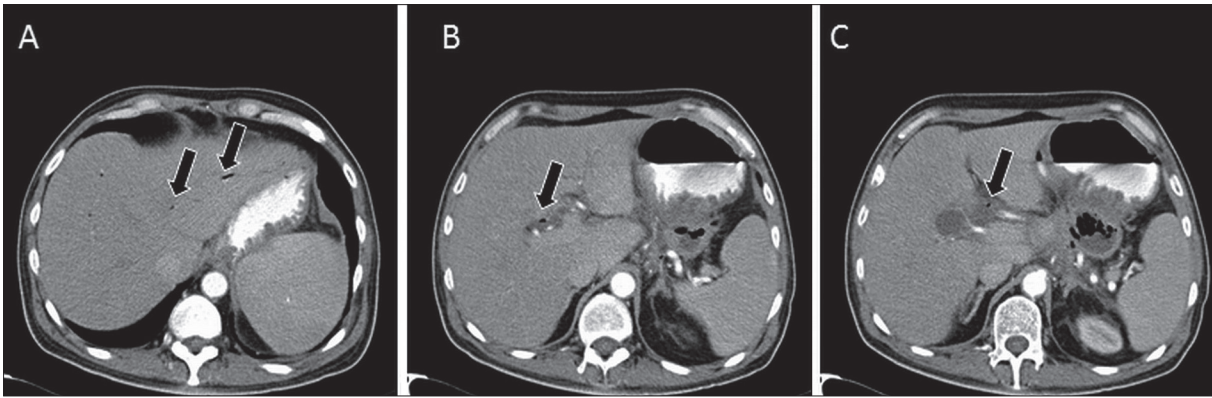


Figure 1. Axial contrast enhanced CT (CECT) sections showing air in the biliary radices (marked by arrows).

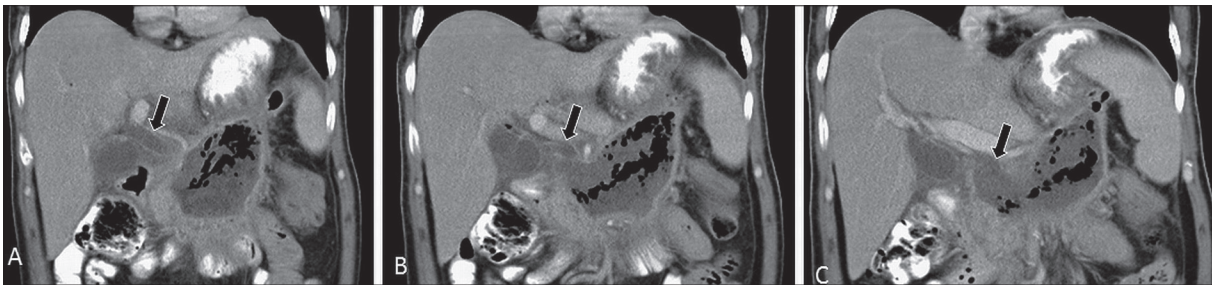


Figure 2. Coronal CECT sections showing the course of the Common Bile Duct opening into the pancreatic abscess.

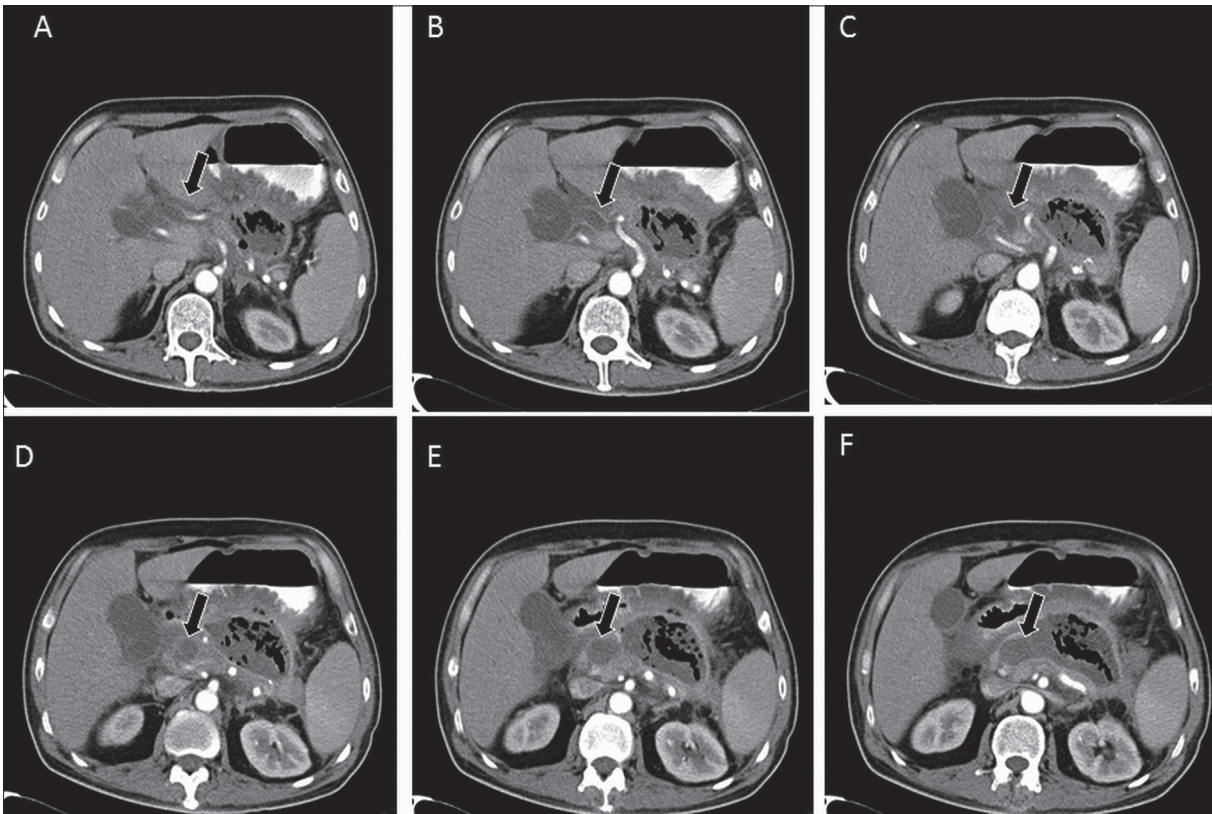


Figure 3. Axial (CECT) sections showing the course of the Common Bile Duct and its communication with the pancreatic abscess.

placement of a pancreatic stent. They diagnosed the fistula 2 months after drainage of a pseudocyst complicating acute

necrotizing pancreatitis owing to continued drainage of approximately 100ml of bile stained fluid each day.

Our patient has been followed up for 1 year and is doing well. Chaudhary et al. [11] reported a long stricture in the lower end of common bile duct in one of their patients on T-tube cholangiogram, needing a Roux-en-Y hepaticojejunostomy. The other 2 patients were well on follow-up [range 18–56 months].

CONCLUSIONS

Simultaneous presence of air in the biliary tract and intrapancreatic collection on CECT is highly suggestive of a pancreatic choledochal fistula. The presence of bile in the cavity at surgery is confirmatory of a pancreatic choledochal fistula. Awareness of pancreatic choledochal fistula is important in managing acute necrotizing pancreatitis. Drainage of the pancreatic/peripancreatic collection and bile duct is effective.

Conflict of interest

None.

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