

Role of enteral nutrition in pancreaticocolonic fistulas secondary to severe acute pancreatitis

A case report

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Abstract

Rationale: Pancreaticocolonic fistula (PCF) is an exceedingly rare complication of severe acute pancreatitis (SAP) and has primarily been treated surgically, but a few reported cases are successfully treated with nonsurgical methods.

Patient concerns: A 32-year-old male presented to our hospital with chief complaints of sharp and persistent left upper quadrant abdominal pain radiating to the back.

Diagnoses: Computed tomography showed a pancreatic pseudocyst replacing a majority of the pancreatic parenchyma and PCF that formed between the pancreas and the colon. However, the final diagnosis of PCF was confirmed by drainage tube radiograph, which revealed extravasation of contrast from the tail of the pancreas into the colon.

Interventions: A therapeutic strategy of enteral nutrition (EN) was applied.

Outcomes: The patient responded well to the treatment. No complication and recurrence were reported during 2-year follow-up.

Lessons: This case highlights the role of EN in the treatment of PCF secondary to SAP. To the best of our knowledge, this is the first case of PCF that treated successfully with EN, rather than surgical or endoscopic intervention.

Abbreviations: CT = computed tomography, EN = enteral nutrition, ERCP = endoscopic retrograde cholangiopancreatography, EUS = endoscopic ultrasound, MRCP = magnetic resonance cholangiopancreatography, PCD = percutaneous catheter drainage, PCF = pancreaticocolonic fistula, SAP = severe acute pancreatitis, TPN = total parenteral nutrition.

Keywords: enteral nutrition, pancreatic pseudocyst, pancreaticocolonic fistula, pancreatitis

1. Introduction

Severe acute pancreatitis (SAP) is an acute inflammatory condition of the pancreas that is clinically severe, associated with a high morbidity and mortality, especially those with infected pancreatic or peripancreatic necrosis. Pancreatic fistulas have been reported to involve the pleura, peritoneum, pericardium, and other peripancreatic organs (i.e., esophagus, stomach, duodenum, and colon).^[1] Pancreaticocolonic fistula (PCF), that formed between the pancreas and the colon is an extremely rare complication of SAP and has primarily been treated surgically, but a few cases are successfully treated with nonsurgical methods.^[2]

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2. Methods

The authors provided a written informed consent. This study was approved by the Human Ethics Review Committee of Tianjin Medical University General Hospital (Tianjin, China).

3. Case presentation

A 32-year-old male presented to the digestive department of Tianjin Medical University, General Hospital in September 2015 with chief complaints of sharp and persistent left upper quadrant abdominal pain radiating to the back for 11 days. He had known history of alcoholism and was diagnosed with SAP at a local hospital and underwent conservative treatment, but his symptoms worsened after conservative management, and he was transferred to the emergency department of our hospital with severe epigastric pain. His weight being measured 115 kg and body mass index was 35.1 kg/m². Laboratory tests showed amylase 147 U/L, lipase 539 U/L, albumin 31 g/L, and hemoglobin 136 g/L. The acute physiology and chronic health evaluation II score was 10 and Ranson score was 4. The Nutrition Risk Screening score was 3.

Abdominal computed tomography (CT) revealed extensive accumulation of extrapancreatic fluid along with a swollen pancreas (Fig. 1).

Four weeks later, physical examination of deep abdominal palpation revealed a bulge and a localized tenderness without rebound tenderness. Then the CT scan showed a pseudocyst replacing a majority of the pancreatic parenchyma in the body and tail of pancreas with a fuzzy colosplenic zone (Fig. 2). And his

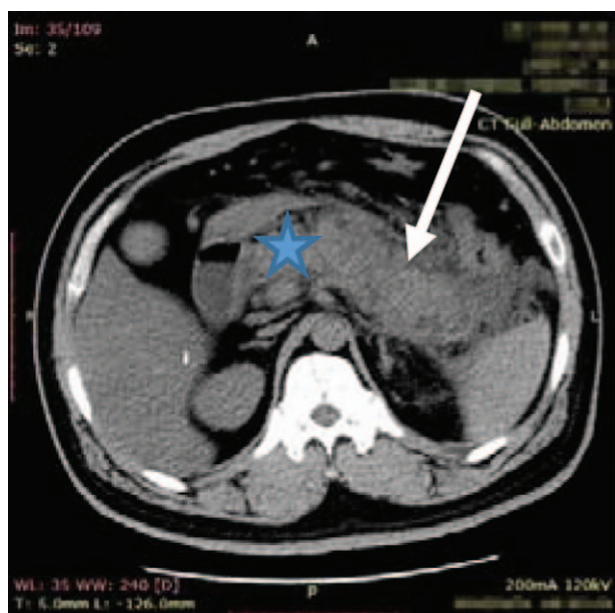


Figure 1. The computed tomography showing accumulation of extrapancreatic fluid (white arrow) along with a swollen pancreas (blue star).



Figure 3. The computed tomography showing a presence of small bubbles in the pancreatic pseudocyst and the lower density of the tube between the pseudocyst and colon (blue triangular star).

laboratory tests showed albumin of 29g/L and hemoglobin of 115 g/L.

The patient underwent endoscopic ultrasound (EUS)-guided transmural drainage of the pancreatic pseudocyst, and drained 20 mL turbid pancreatic fluid collections. The amylase and lipase level of the drained fluid showed over 12,000 and 20,000 U/L. Subsequently, a percutaneous catheter drainage (PCD) was positioned immediately on the next day. Following the PCD procedure, the patient suffered mild fever and vomiting. The

drained fluid of PCD tube was appeared yellowish and slightly turbid.

Of note, 2 days later, a purulent fecal material was found in the PCD tube. Finally, the diagnosis of PCF was confirmed by the drainage tube radiograph, which revealed extravasation of contrast from the tail of the pancreas into the colon. A re-examination of the abdominal CT demonstrated a presence of small bubbles in the pancreatic pseudocyst and the lower density of the tube between the pseudocyst and colon (Fig. 3). Laboratory tests showed albumin of 34g/L and hemoglobin of 98 g/L.

Treatment: At first, the patient was started on EN as primary therapy by a tube located at jejunum with short peptide enteral nutrition (EN) powder (250g/24h) for 4 days, Enteral Nutritional Suspension (TPF-D) for 20 days (1500 mL/24 h, rate 100 mL/h), intravenous fat emulsion (250 mL/24 h) for 6 days and 5% dextrose solution (500 mL/24 h) for 54 days. The amount of calories intake per day was 2800 kcal. The patient's symptoms were gradually improved and the abdominal pain was subsided after a month of treatment with EN and active treatment, such as octreotide, a proton pump inhibitor, and empiric antibiotic therapy.

The patient avoids any surgical intervention, and he was maintained with EN. He underwent duodenal nutrition tube implantation and supplied with Enteral Nutritional Suspension (TPF-D) for 2 days (1000 mL/24 h, rate 100 mL/h), 10% dextrose solution (500 mL/24 h) for 4 days and fat emulsion (250 mL/24 h) for 12 days. The amount of calories intake per day was 2300 kcal. During his 2 months hospital stay, he lost significant weight, from 115 kg to nearly 80 kg. The duodenal nutrition tube was withdrawn after the patient discharged, and he was advised to take pure milk (10 mL/24 h) for 20 days and rice porridge (20 g/time, 3 times/24 h) for 40 days.

After 2 months follow-up, abdominal CT showed a significant reduction of pancreatic pseudocyst, complete disappearance of the lower density of the tube, and nearly closed PCF (Fig. 4). The patient was currently well and asymptomatic. His laboratory



Figure 2. The computed tomography showing pseudocysts (blue star) replacing a majority of the body and tail of pancreas with a fuzzy colosplenic zone.



Figure 4. The computed tomography showing a significant reduction of pancreatic pseudocyst (blue star), complete disappearance of the lower density of the tube, and nearly closed pancreaticocolonic fistula (white arrow).

tests showed albumin of 35 g/L and hemoglobin of 101 g/L. After 2-year follow-up, the patient was still asymptomatic, and took rice porridge (50 g/time, 7 times/24 h), boiled cabbage (20 g/time, 7 times/24 h), and meat (50 g/time, 7 times/24 h) every day. His weight was measured 65 kg.

4. Discussion

Pancreatic fistulae have been reported to involve in the pleura, peritoneum, pericardium, and other peripancreatic organs (i.e., esophagus, stomach, duodenum, and colon).^[1] Pancreaticocolonic fistulization is a rare complication of SAP,^[3] and only 2 cases were reported who underwent nonoperative intervention and recovered uneventful.^[4] Persistent leakage of pancreatic secretions can result in the development of internal fistula due to spontaneous erosion into the neighboring hollow organs and cavities. Leakage of pancreatic secretions can cause significant morbidity, due to malnutrition and infections. Endoscopic retrograde cholangiopancreatography (ERCP), magnetic resonance cholangiopancreatography (MRCP), CT scan, and fistulography are frequently used imaging studies for diagnosis of PCF. MRCP is the best imaging study for diagnosing the presence of a pancreatic fistula.^[5]

There are several methods help in reduction of a pseudocyst including fistulas itself. At times, the pseudocyst regresses after the inflammatory reaction resolves or it can resolve spontaneously with normal drainage to the duodenum through the pancreatic duct. A resolution of the pseudocyst takes place when the fistula drains the pseudocyst into the gastrointestinal tract. In some cases, the pseudocyst can resolve as it leaks or ruptures into the abdominal cavity.^[6]

Conservative management results in spontaneous resolution in 50% of internal pancreatic fistulas and 70% to 90% of external pancreatic fistulas.^[7] Conservative treatments for PCF include dietary modifications, electrolyte repletion, broad-spectrum antibiotics,

percutaneous drainage,^[8] ERCP with pancreatic sphincterotomy, and pancreatic duct stenting yields high closure rates.^[9]

Somatostatin analogs have been used as a mainstay treatment to reduce the volume of the fistula output and potentially mitigate its natural course. But no significant advantage of the use of somatostatin analogs in terms of the fistula closure rate was shown in a recent systematic review and meta-analysis.^[10]

Nutritional support has also been regarded as a key element of conservative therapy because most patients are in a hypercatabolic state. EN is the recommended nutritional support in patients with SAP.^[5] Klek and colleagues^[11] reported that EN increased the probability of fistula closure by >2-fold than the total parenteral nutrition (TPN). Of course, in cases of clinical deterioration and/or signs of infection, antibiotic therapy is required.

Datta et al^[12] reported that factors influencing spontaneous closure of colonic fistula include a long fistulous tract, intestinal continuity, absence of distal obstruction, no sepsis, low fistula output (<500 mL/24 h), no malnutrition, no anastomotic leakage, and absence of inflammatory bowel disease.

Fistulae to the colon are infrequent and have a higher risk of spontaneous or persistent infection, perforation, severe hemorrhage, or overwhelming sepsis.^[13–15] Therefore, pseudocyst drainage and excision of the fistulous tract are usually recommended.^[14,16] Although surgery remains the optimum choice for colonic fistula, successful endoscopic pseudocyst drainage and placement of a nasocystic drainage catheter have been reported.^[4,15] Our patient developed a PCF after SAP, which was resolved with conservative treatment. We acknowledged that EN is of critical importance to the treatment of our patient and close follow-up is mandatory to detect potentially serious complications in a patient with PCF who underwent conservative treatment rather than surgical intervention. Nevertheless, if conservative measures fail, and or the fistula becomes complicated by infection or bleeding, endoscopic or surgical interventions are necessary.^[17] ERCP is safe and can be considered as the first-line therapy in the management of pancreatic fistulae. Early ERCP and pancreatic stent insertion promote fistula resolution and may allow delay or avoidance of surgical measures.^[18] Due to their significant complication, surgical interventions should be reserved for cases not responsive to conservative approaches. The satisfactory patient outcomes in our case may be a result of the better nutrition support at home, allowing the fistula to close without other intervention and complications. Another factor leading to an improved outcome might be a reduction of infections by oral antibiotics. We conclude that EN and oral antibiotics are crucial for the recovery PCF secondary to SAP.

5. Conclusions

This case highlighted a patient with a pancreatic pseudocyst, resulting from a complication of SAP caused by consumption of alcohol, which resolved spontaneously through the formation of a fistula between the pseudocyst and the colon. The patient was treated with EN alone and he made an uneventful recovery. He showed good progress at 2-year follow-up after spontaneous resolution of the fistula.

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