CASE REPORT

A giant pancreatic pseudocyst treated by cystogastrostomy

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SUMMARY

We report a case of a giant pancreatic pseudocyst in a 65-year-old man presenting with abdominal pain, loss of appetite and abdominal distension. CT scans demonstrated a giant pancreatic pseudocyst measuring 25.7 cm×15.3 cm×10.9 cm anteroposteriorly, with significant compression of surrounding organs. An open cystogastrostomy was performed through a midline incision, and 3 L of fluid was drained from the giant pseudocyst. Recovery has been uneventful.

BACKGROUND

Pancreatic pseudocysts are a relatively common complication of pancreatitis and chronic alcoholism. However, very few cases of giant pancreatic pseudocysts, those measuring 10 cm or more in major diameter, have been reported in the literature.^{1–10} Possible contributing factors to the paucity of literature about giant pancreatic pseudocysts may include decreased incidence because of more advanced diagnostic and therapeutic tools and/or inconsistencies in sizing classification.⁸ In several sources, adjectives were termed as 'large' or 'huge' instead of 'giant' when 10 cm or larger in major diameter.^{11 12} This case demonstrates the successful use of a cystogastrostomy to surgically drain a giant pancreatic pseudocyst.

CASE PRESENTATION

A 65-year-old Caucasian man presented for initial evaluation with symptoms of abdominal pain and weight loss. Although his symptoms had progressively worsened over the course of the past year, he had never sought medical care and had not been hospitalised for his acute pancreatitis. He also reported a loss of appetite and an approximately 20 pound weight loss over the past month. Being a smoker and a chronic alcoholic, he reported a smoking history of 19 pack-years and an alcoholic consumption of 24 drinks/week. On physical examination, his abdomen was significantly distended and the upper abdomen was extremely tender to palpation.

INVESTIGATIONS

Initial laboratory values were as follows: sodium 133 mM, potassium 3.9 mM, chloride 106 mM, CO₂ 21 mM, blood urea nitrogen 12 mg/dL, creatinine 0.72 mg/dL, glucose 100 mg/dL, calcium 8.6 mg/dL, aspartate transaminase 14 IU/L, alanine transaminase 20 IU/L, total protein 7.1 g/dL, albumin 3.8 g/dL, alkaline phosphatase 85 U/L, white cell count 13.5 K/UL, haemoglobin

15.2 g/dL, Hct 43.7% and platelets 199 K/UL. Laboratory values of note included: lipase level of 216 U/L (normal range 18–180 U/L), prealbumin level of 10.2 mg/dL (normal range 16–40 mg/dL), carcinoembryonic antigen level of 7.7 µg/L (normal values in smokers <5.0 µg/L) and CA 19–9 level of 36 U/L (normal value <37 U/L). Liver function test levels were within normal limits.

CT scan demonstrated the extent of the giant pancreatic pseudocyst (figures 1 and 2), which indicated surgical intervention, given the patient's highly symptomatic status.

Endoscopic ultrasound (EUS) and fine needle aspiration were recommended. Since the patient was symptomatic and access to EUS was lacking, we were of the opinion that an EUS/oesophagogastroduodenoscopy would be difficult to attempt in the presence of the giant pancreatic pseudocyst, so the patient was taken to the operating room to drain the pseudocyst.

DIFFERENTIAL DIAGNOSIS

A man in his 60s with a history of extensive smoking and alcohol use who presents with rapidly increasing abdominal distension and diffuse upper abdominal pain (most likely secondary to the abdominal distension) may have pancreatitis (acute, chronic or acute on chronic), a (giant) pancreatic pseudocyst, pancreatic malignancy or cirrhosis. Cirrhosis was ruled out on the basis of laboratory results, scans and physical examination. Elevated lipase levels indicated pancreatitis. CT scans allowed for visualisation of the giant pseudocyst.

Figure 1 Preoperative coronal CT of the abdomen.

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Figure 2 Preoperative axial CT of the abdomen.

The extensive size of the pseudocyst obscured visualisation of adjacent structures, so the presence of additional retroperitoneal disease could not be explored until surgical drainage of the fluid was accomplished. Assessment of malignancy could not be determined without pathological examination, which could only be achieved after obtaining specimens intraoperatively.

TREATMENT

A midline incision provided access to the giant pseudocyst. There was murky fluid in the abdomen, demonstrating significant third spacing of intravascular fluid. A specimen of the pseudocyst wall measuring 3.0×2.5×0.7 cm was sent to pathology for intraoperative consultation. On gross examination, one aspect consisted of a retroperitoneal margin, and the opposing aspect had a 2.0×1.8 cm smooth pink portion of cystic wall. Slides made from the specimen showed full thickness sections taken through the wall of the stomach. The glands of the stomach were oxyntic, but were likely in proximity to the antrum due to the presence of mucinous glandular lining cells. The serosa of the stomach exhibited a thin layer of adherent

Figure 3 Honeycomb appearance.

Figure 4 Cystogastrostomy.

fibrin with mixed inflammatory cells accompanied by a mild mesothelial reaction. No neoplasia was seen. The gastric submucosa was oedematous and showed mild vascular dilation and congestion. No neoplasia was identified. A 4 mL specimen of cloudy red cystic fluid was also sent for analysis. Microscopic examinations of smears showed granular proteinaceous material with mild inflammation and small numbers of benign mesothelial cells. No malignancy was identified. The absence of epithelial cells within the wall supported the initial diagnosis of pseudocyst.

The gold standard treatment for giant pancreatic pseudocysts is a cystojejunostomy.¹³ However, in this case, the cyst wall seemed friable based on the honeycomb appearance of the inferior portion of the cyst wall (figure 3). Given the friability of the pseudocyst and the proximity of the pseudocyst to the posterior wall of the body of the stomach, a cystogastrostomy was performed (figure 4), in which the anterior wall of the pseudocyst was anastomosed with the posterior wall of the stomach. Incidentally, a region of partial wall necrosis along the inferior portion of the pseudocyst near the omental-colonic edge was discovered and repaired (figure 5). Both the anterior surface of the stomach and the partially necrotic area were reinforced with richly vascularised portions of the greater omentum.

OUTCOME AND FOLLOW-UP

The patient had a source of upper gastrointestinal bleeding on postoperative day 4 that eventually resolved with conservative

Figure 5 Partial wall necrosis of the omentum.

Figure 6 Postoperative coronal CT of the abdomen 2 weeks after discharge.

management. He was discharged and is doing well on follow-up. The patient returned to the emergency department 2 weeks later with an unrelated symptom. Incidentally, CT scans were obtained, which indicated full resolution of the giant pseudocyst (figures 6 and 7).

DISCUSSION

When the main pancreatic duct or one of the ductal branches becomes disrupted, pancreatic secretions collect in the retroperitoneum or peripancreatic tissues. The majority of these accumulations resolve spontaneously, but in some cases, the fluid collection persists, and a wall of fibrous or inflammatory tissue forms around the fluid reservoir. This wall lacks an epithelial lining, hence the use of the term pseudocyst.

The incidence of pancreatic pseudocysts is low, approximately 0.5–1/100 000 adults per year.¹⁴ The incidence increases

remarkably among patients with pancreatitis. Among patients with acute pancreatitis, the incidence of pancreatic pseudocysts ranges from 5% to 16%, whereas in chronic pancreatitis, the incidence rates are higher, between 20% and 40%.¹⁵ The highest incidence of pancreatic pseudocysts can be found in patients with chronic pancreatitis secondary to alcohol abuse. In a retrospective study of 97 patients with pancreatic pseudocysts, alcohol consumption was the most significant aetiological factor in 64% of patients with chronic pancreatitis and in 26% of patients with acute pancreatitis.¹⁶

The clinical presentations of pancreatic pseudocysts vary widely from completely asymptomatic to pancreatic and bile duct obstruction. The most common clinical manifestations are abdominal pain, nausea and vomiting, early satiety, weight loss and obstructive jaundice. The location of the pancreatic pseudocyst is extremely important, both in symptomatology and management.^{17 18}

Treatment falls into one of two categories: observation and intervention.¹⁹ The most significant factors affecting treatment decisions are maturity, size and location.²⁰ In the treatment of symptomatic pancreatic pseudocysts, it is often possible to start with a less invasive procedure and use a 'step-up approach' regarding invasiveness.

Early observations found that pancreatic pseudocysts larger than 6 cm in diameter and persisting longer than 6 weeks (from the day of diagnosis) were unlikely to resolve spontaneously.²¹ Later data found that about half of acute pseudocysts remain asymptomatic, independent of size or duration.^{22 23} To date, no prospective indicators have been identified that reliably predict the course of an already established pseudocyst. However, some surgeons continue to adhere to the 'Rule of 6' for the treatment of pancreatic pseudocysts (cysts >6 cm or duration >6 weeks), based on the assumptions that 6 weeks is sufficient time for (A) the pseudocyst to resolve spontaneously if it will resolve at all and (B) the pseudocyst wall to mature to be sturdy enough to hold sutures postoperatively.^{24 25}

Intervention can be divided into two methods: percutaneous drainage and internal drainage. Internal drainage can be accomplished through surgical decompression (into the stomach or small intestine), percutaneous cystogastrostomy or endoscopic techniques. A retrospective study comparing national outcomes from 1997 to 2001 for surgical versus percutaneous drainage of pancreatic pseudocysts found that surgical drainage was superior to percutaneous drainage. Even after correction for confounders such as disease severity and comorbidities, surgical approaches were associated with decreased mortality, shorter length of stay and fewer complications.²⁶ Percutaneous drainage remains a viable option for patients with infected pancreatic pseudocysts or patients who are major operative risks. Endoscopic approaches are becoming more popular as well. Statistics aside, selection of an intervention approach is often dependent on the expertise available at the hospital performing the procedure.

Surgical drainage is accomplished via one of three anastomoses: cystoduodenostomy, cystojejunostomy or cystogastrostomy. The dominant forces driving the surgical approach are the anatomy and topography of the pseudocyst, followed less significantly by the surgeon's preference.²⁷

Cystoduodenostomy is chosen when the pseudocyst is located in the head of the pancreas and adheres to the duodenum. This procedure is not feasible if a thick rim of pancreatic parenchyma is between the pseudocyst and duodenal wall.²⁸ Questions have been raised about the safety of a cystoduodenostomy, given the laterolateral nature of the anastomosis, especially in those pseudocysts that are not fused to the duodenum. The procedure has

Figure 7 Postoperative axial CT of the abdomen 2 weeks after discharge.

also been considered the most technically demanding of the three options, with higher morbidity and mortality rates.²⁹

Cystogastrostomy is chosen when the pseudocyst is located in the epigastric region and adheres to the stomach. Cystogastrostomy is advantageous since it allows for post-operative drainage using a nasogastric tube; however, an increased risk of infection exists due to the tendency for gastric and pancreatic secretions to pool in the dependent part of the pseudocyst, leading to abscess formation and/or a higher likelihood of sepsis.²⁹ Cystogastrostomy is also associated with a higher risk of postoperative haemorrhage compared with cystojejunostomy.

Cystojejunostomy is chosen when the pseudocyst is very large and extends beyond the epigastric region to the umbilical hypochondriac and lumbar region.²⁹ This procedure allows for dependent drainage, and subsequently is the anastomosis of choice for giant pseudocysts.³⁰

Learning points

- ▶ Pancreatic pseudocysts commonly occur in patients with a history of pancreatitis.
- ▶ Giant pancreatic pseudocysts, those measuring 10 cm or more in major diameter, are rare and can be a surgical challenge.
- ▶ Giant pancreatic pseudocysts can be treated through surgical anastomosis between the pseudocyst wall and the stomach, duodenum or jejunum.
- ▶ Cystojejunostomy is the anastomosis of choice when surgically decompressing a giant pancreatic pseudocyst, since it allows for dependent drainage.

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