

Single Case

Pancreatic Pseudoaneurysm from a Gastroduodenal Artery

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Keywords

Abdominal pain · Pancreas · Pseudoaneurysm

Abstract

Pancreatic pseudoaneurysm is a rare vascular complication of pancreatitis, resulting from erosion of the pancreatic or peripancreatic artery into a pseudocyst. However, it may happen after pancreatic or gastric bypass surgery or trauma. It may lead to fatal complications if left untreated. Herein, we report a unique case of pseudoaneurysm from a gastroduodenal artery in a patient with recurrent episodes of acute pancreatitis, which was managed successfully with coil embolization.

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Introduction

Pancreatic pseudoaneurysm is an uncommon clinical entity, created due to the erosion of the pancreatic or peripancreatic artery into a pseudocyst. Pseudoaneurysm differs from a true aneurysm in terms of the wall of the pseudoaneurysm being composed of fibrous tissue instead of an arterial wall as in the true aneurysm. It is a rare vascular complication after pancreatitis with an estimated prevalence of less than 10% [1]. Splenic artery involvement is more common in up to 50% of cases followed by the gastroduodenal, pancreaticoduodenal,

superior mesenteric, left gastric, and hepatic artery. Common presenting symptoms may vary from bleeding secondary to rupture or abdominal pain, or it may be asymptomatic in some patients. These aneurysms are frequently accompanied by life-threatening complications, mainly rupture and bleeding. Bleeding can occur in the pseudocyst itself, via the ampulla of Vater, or by fistulation into nearby hollow organs. Due to their instability and subsequent risk of massive bleeding, prompt treatment is necessary. Endovascular embolization and surgery are the primary modalities of treatment.

Case Presentation

A 30-year-old male with a history of alcohol abuse for the last 2 years (4 drinks/day), recurrent alcoholic pancreatitis (last episode 3 weeks ago), and splenic vein thrombosis on Xarelto presented to the emergency department with 4 days of abdominal pain. Pain was in the epigastric region, dull in nature, 7/10 in intensity, radiating to the back, associated with nausea but with no relation to food intake or bowel movement. The patient denied fever, vomiting, hematemesis, melena, or diarrhea. No significant family history of pancreatitis, pancreatic cancer, or other malignancies was present. He was discharged from the hospital 3 weeks ago after an episode of acute interstitial edematous pancreatitis secondary to alcohol intake, which improved with intravenous fluids, pain control, and bowel rest. Physical examination was positive for mild epigastric tenderness without guarding, rigidity, or distension, and bowel sounds were present in all 4 quadrants. Vitals on admission were blood pressure of 130/80 mm HG, heart rate of 90 beats/min, and oxygen saturation of 98% on room air. Laboratory examination revealed a white blood cell count of 10,000 (normal 4,000–10,000), hemoglobin of 12.6 g/dL (normal 12–15.5 g/dL), hematocrit of 37% (normal 37–47%), blood urea nitrogen of 7 mg/dL (normal 10–20 mg/dL), creatinine of 0.5 mg/dL (normal 0.7–1.5 mg/dL), international normalized ratio of 1.1 (normal 0.65–1.3), triglyceride levels of 140 mg/dL (normal 10–149 mg/dL), calcium of 9.4 mg/dL (normal 8.5–10.1 mg/dL), lipase of 318 U/L (normal 7–60 U/L), and lactic acid of 1.9 mmol/L (normal 0.5–2.2 mmol/L); liver enzymes were within normal limits.

The computed tomography (CT) of the abdomen and pelvis with intravenous contrast showed extensive pancreatic inflammatory changes and fluid collections in the head and proximal body of the pancreas and the new development of a pseudoaneurysm branching from the gastroduodenal artery measuring 2.9 × 2.1 × 2.6 cm (Fig. 1). He was started on intravenous fluids, pain control, and bowel rest. Intervention radiology was consulted for diagnostic angiography and embolization of the pseudoaneurysm under fluoroscopic guidance. Angiography confirmed the results of the CT scan (Fig. 2), and coil embolization of inflow and outflow vessels and of the pseudoaneurysmal sac was performed (Fig. 3). His hemoglobin was stable after the procedure and symptoms were improved. Diet was advanced to a low-fat diet over the subsequent days; Xarelto was resumed. He was discharged from the hospital 3 days after the procedure.

Discussion

Visceral artery aneurysms are divided into true or pseudoaneurysm [2]. A true aneurysm involves all layers of the vessel wall and is created due to partial digestion of the arterial wall, destroying the elastic tissue of tunica media by the inflammatory process, whereas

pseudoaneurysms are false aneurysms which result from injury to one or more vessel wall layers. Pancreatic pseudoaneurysms are formed by the erosion of the pancreatic or peripancreatic artery into a pseudocyst. They are most common after pancreatitis, but they can also occur after pancreaticobiliary surgery, pancreatic transplantation, trauma, and motor vehicle accident. Pseudoaneurysm was first reported by Starlinger in 1930; since then, there has been an increasing number of reports on gastroduodenal artery aneurysms due to improved radiological techniques. The pathophysiology of these aneurysms is not clearly understood; weakening of the vessel by leakage of proteolytic enzymes has been implicated in the pathogenesis.

Pseudoaneurysms are classified according to the artery they originate from, communication with the gastrointestinal tract, and exposure to pancreatic juice [2]. The most commonly involved artery is the splenic artery (30–50%) due to its proximity to the pancreas. After the splenic artery, the gastroduodenal artery is involved in 10% and the pancreaticoduodenal artery in 10%, followed by the superior mesenteric, left gastric, hepatic, and small intrapancreatic arteries [3, 4].

Gastroduodenal pseudoaneurysm most commonly presents as gastrointestinal bleeding secondary to rupture (52%) or as abdominal pain (46%); it is asymptomatic in 7.5% and rarely presents as retroperitoneal bleed, intraperitoneal bleed, or bleeding into the pancreatic duct or common bile duct, which can cause obstructive jaundice [5, 6].

In patients presenting with abdominal pain only as in our patient, it is difficult to distinguish pseudoaneurysm from a bout of acute pancreatitis, which usually presents with similar symptoms. CT of the abdomen and pelvis with contrast is often suggestive (sensitivity of 67%), but CT angiogram is the gold standard for the diagnosis (sensitivity of 100%) [7]. Once pseudoaneurysm is diagnosed, it should be treated immediately because of increased mortality up to 90% in untreated patients and 12.5% in treated patients. It is recommended to treat even asymptomatic aneurysms given the increase in morbidity and mortality associated with surgery in the setting of rupture.

Treatment modalities include either embolization (coils, covered stent, percutaneous or transcatheter thrombin injection) or surgery [2, 8–11]. Endovascular therapy offers significant advantages in terms of less postoperative pain, shorter hospital stay, and early return to activities of daily life. In the event of failed embolization or rebleeding after embolization surgery, either direct ligation of the bleeding vessel or resection of the pancreas with pseudoaneurysm should be performed [12–14]. Embolization is often the treatment of choice in unstable patients or if the bleeding is still diffuse. Observation after embolization is necessary to monitor for complications, such as early or late re-bleeding, which can occur in 20–40% of patients [2]. Even though embolization has increased the success rate, there is still an increased risk of recurrence and an overall mortality rate of 16%. Mortality rate after surgery varies from 20–30%.

Conclusion

Pseudoaneurysm of the gastroduodenal artery is rare. However, it should be considered in the differential diagnosis in patients with chronic pancreatitis, presenting with epigastric pain. Prompt diagnosis and early treatment is mandatory because of potentially life-threatening consequences and increase in mortality if left untreated.

Statement of Ethics

Informed consent was obtained from the patient. IRB approval was not needed.

Disclosure Statements

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Author Contributions

Dr. Gurala and Dr. Polavarapu wrote the introduction, case description, and discussion, Dr. Idiculla drafted the introduction, and Dr. Daoud and Dr. Gumaste reviewed and edited the manuscript.

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Fig. 1. Development of a pseudoaneurysm branching from the gastroduodenal artery.



Fig. 2. Angiography showing uptake of contrast by the pseudoaneurysm from the gastroduodenal artery.



Fig. 3. No contrast in the pseudoaneurysm after successful coil embolization of the pseudoaneurysm.