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Pancreatic Abscess: An Infection Occurring with Minimal Tissue Present

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Abstract

Pancreatic abscess typically occurs 4 weeks after acute pancreatitis begins and is defined as an infection of the pancreatic pseudocyst. There are other causes which include but are not limited to iatrogenic intra-abdominal procedures, chronic pancreatitis, and sending from distant sites. These abscesses are typically collections of pus that are within the region of the pancreas. There is also pancreatic necrosis that is seen among these abscesses. Here is a report on a case of a pancreatic abscess of unusual occurrence in a patient that had a near-total distal pancreatectomy. This is uncommon as the patient has very minimal pancreatic tissue remaining, yet still has developed this intra-abdominal abscess. These abscesses must be recognized quickly and removed to prevent further complications from occurring.

Keywords

Pancreatic Abscess, Pancreatic Pseudocyst, Pancreatitis, Pancreatectomy

1. Background

The Atlanta classification defines the verbiage commonly used to describe the infectious complications of acute pancreatitis. The definition of pancreatic abscess is known as a collection of purulent pancreatic material that is within a more-or-less defined fibrous tissue wall and contained in it. This distinguishes it from infected pseudocyst (an encapsulated collection of pancreatic juice from which bacteria can be grown) and infected necrosis (semi-liquefied peripancreatic tissue with positive microbial cultures). Infected necrosis is where most pancreatic abscesses start, typically longer than 4 weeks after acute pancreatitis has begun.

The patient would present with symptoms that include, but are not limited to fever, tachycardia, and failure of symptomatic improvement over several days from onset of acute pancreatitis. The diagnostics done that aid in determining the necrotizing infection of the pancreas include laboratory studies showing leukocytosis, bacteremia, and elevated inflammatory markers. Also, CT of the abdomen can show if there is gas within the pancreas or around the surrounding tissue. It can also show some collections of fluid around the pancreas.

The interesting part of this case is the existence of a collection of bacteria, pus, and gas around the pancreas with limited pancreatic tissue that tends to be a niche for abscess formation. The patient had most of the pancreas removed already, and yet was still able to develop an infection in the anatomic position of the pancreas status post pancreatectomy. There have been limited reports on abscess formation in individuals without pancreatic tissue. Therefore, there should be more reports to be able to find out the exact etiology of how the abscesses form without a niche for infection. The treatment entails broad spectrum antibiotics that are able to cover gram negative bacteria. Also, draining the infected material is necessary if there are signs of clinical deterioration. Prompt treatment is necessary to prevent severe complications from infection.

2. Case Report

The patient is a 56-year-old male with a past medical history of hyperlipidemia, pancreatic adenocarcinoma on chemotherapy, diabetes, 6 months prior status post near-total distal pancreatectomy, pancreatic pseudocyst (discovered 3 months earlier), and splenectomy that complained of progressive persistent worsening abdominal non-radiating pain in the left upper quadrant. There was associated bilious vomiting about eight times, nausea, chills, and abdominal distension; however, the patient did not complain of fever nor any bowel movement changes.

Vitals were stable and labs were insignificant (no leukocytosis or elevated inflammatory markers). There was significant increase in the size of the pancreatic cyst close to the head of the pancreas as well as gastric outlet obstruction seen on CT scan of the abdomen (Figure 1). Ampicillin/sulbactam was started for the

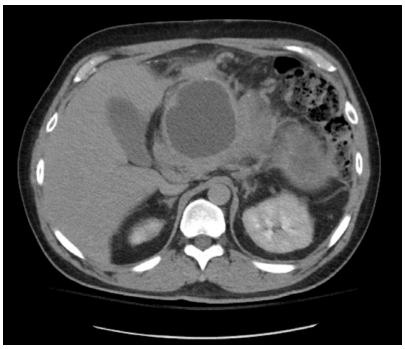

Figure 1. CT Abdomen and pelvis with contrast of the pancreatic abscess.

patient to cover gram negative bacteria as well as anaerobes. The Gastroenterology team was consulted and they evaluated the patient. On the day of presentation, it was decided to take the patient for EGD/EUS and cystogastrostomy (**Figure 2**). There was a stent placed [with drainage into the stomach], aspiration of the cyst, the purulent fluid was collected and the culture that was sent had come back positive for *Klebsiella pneumoniae* (resistant to ampicillin and sensitive to different antibiotics). Patient stated there was relief after the procedure, and he was sent home on Ciprofloxacin for 2 weeks. There was a follow-up EGD that was completed for necrosectomy and the stent was removed after which the patient reported great relief of symptoms.

3. Discussion

Pancreatic abscess can be caused iatrogenically when treating for necrotizing pancreatitis. [1] It can also happen in the absence of pancreatitis due to duodenal disease or biliary tract disease. [2] There should be a high index of suspicion for patients that have acute pancreatitis in which they don't improve after initial management. Moreso, when they have an elevated RANSON score of 3 - 7 which has 24% more likelihood of pancreatitis mortality. [3] Also, in chronic pancreatitis, patients with persistent abdominal pain should be evaluated as chronic pancreatitis could cause death and systemic inflammatory response syndrome. [4] The gold standard in diagnosis is CT scan with a sensitivity of 74% compared

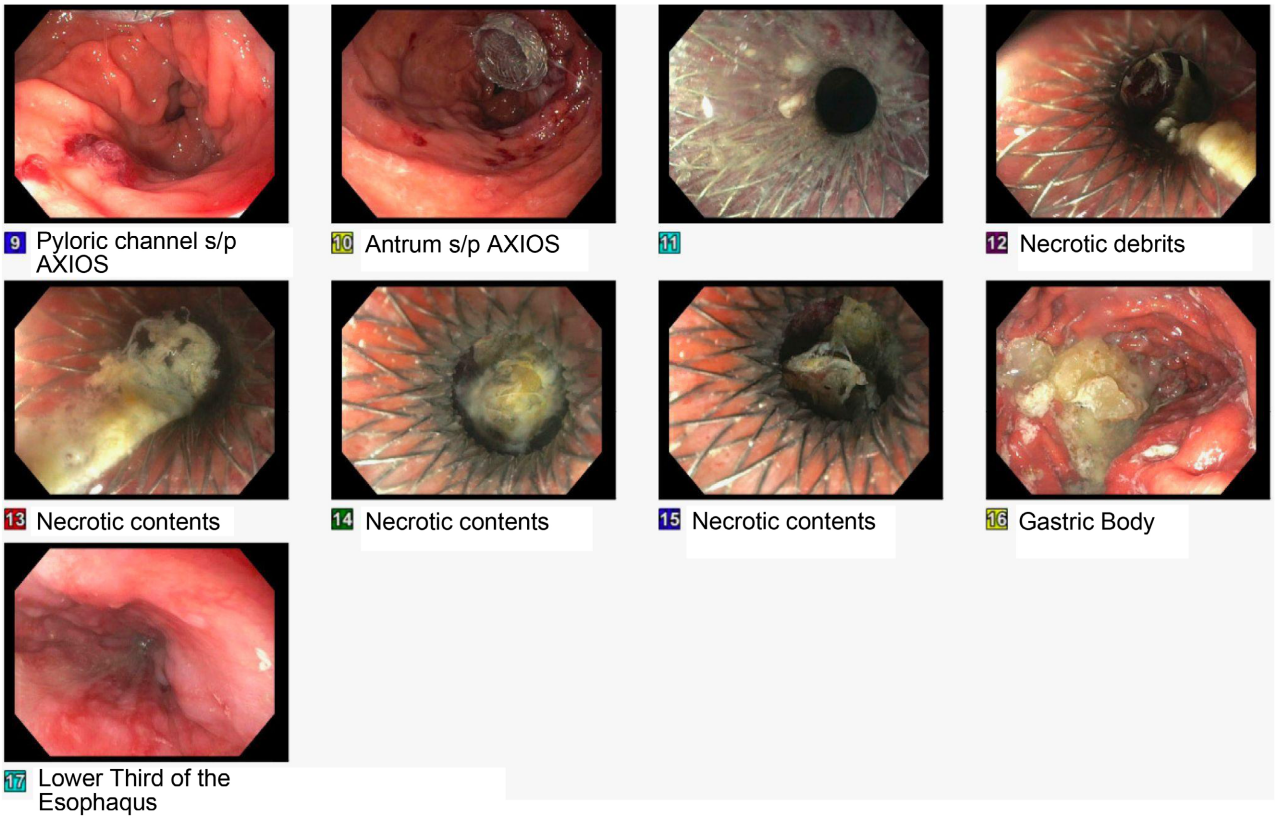

Figure 2. Intra-operativephotograph displaying abscess on upper GI endoscopy.

to 35% from ultrasonography. [5] Although, a subsequent fine needle aspiration can yield a sensitivity close to 100%, and is very important in distinguishing infection from sterile inflammation. [6] Aspirated fluids most commonly contain gram negative bacteria; however, rare tuberculosis infection and gram positive can be seen. [7] Invasive surgical cystoduodenostomy or cystogastrostomy, depending on where the abscess is located, shouldn't be postponed in symptomatic patients with infected pancreatic pseudocysts. They have much better results than doing antibiotic therapy by itself or endoscopic intervention. [8]

This patient had their pancreas near totally removed due to a diagnosis of pancreatic adenocarcinoma. Pancreatic cancer can often go unnoticed depending on the location of the malignancy. Symptoms go more noticeable if the malignancy is near the pancreatic head as opposed to the tail of the pancreas due to the close proximity to the biliary system. Some of the symptoms include nausea, belt-shaped epigastric pain, poor appetite, weight loss and weakness. The best treatment options consist of surgical resection, chemotherapy/radiotherapy, and supportive care including pain management. Surgical treatment with near total distal pancreatectomy as well as splenectomy is the choice for distal pancreatic malignancies. This entails exposing the pancreas first by entering the lesser sac. Then, exposure can be from a lateral to medial approach with mobilization of the pancreas and spleen from the retroperitoneum and vasculature with transection of the pancreas. It can also be performed with a medial to lateral approach with transection of the pancreas at the confluence of the superior mesenteric vein and splenic vein and then complete the dissection laterally. [9] After resection, chemotherapy and radiotherapy were promptly started to attempt to increase long term survival.

Even though most of the pancreas was removed in this case, the patient still was able to develop a pseudocyst at the anatomical position of the pancreas with the remaining tissue. Pancreatic pseudocyst is a collection of pancreatic fluid that typically forms after an episode of acute pancreatitis. The presentation is usually pressure effects causing biliary obstruction, gastric outlet obstruction, and duodenal obstruction. The procedure to help alleviate the pressure effects should be a cystogastrostomy. Endoscopic drainage in the presence of endoscopic ultrasound (EUS) is an important procedure in the management of pseudocysts, especially cysts indenting the stomach or duodenum and in the absence of necrotic tissue. [10] This basically entails drainage of the pancreatic fluid into the stomach and duodenum to alleviate the contents inside the pancreatic pseudocyst.

Most infections need a specific location to establish a biofilm and environment in which the organism can grow. The development of infection correlates with an immune response the body produces to get rid of said infection. This is typically done through innate and adaptive immunity starting with an inflammatory process. This leads to acute pancreatitis which then can progress to necrotizing pancreatitis, infected necrotizing pancreatitis, and then ultimately

walled-off necrosis. This is usually the case where the pancreas is actively affected and becomes dysfunctional due to the inflammation and infection. Altered lab values such as increased lipase and amylase levels, and persistent epigastric pain radiating to the back would indicate that. Upon closer examination, our patient had all of those characteristic findings without the pancreas being present with minimal tissue remaining.

4. Conclusion

Pancreatic abscesses can be life threatening and cause serious complications such as sepsis, disseminated intravascular coagulation, and systemic inflammatory response syndrome. The abscess must be removed immediately to prevent these complications from occurring. Especially, at the site of the pancreas which has a difficult time adapting to stressors such as inflammation and infections. Therefore, having an abscess develop when there is minimal pancreatic tissue is very rare since there isn't much tissue left to become necrotic and form an abscess.

Conflicts of Interest

None declared.

References

[1] Bradley, E.L. (1987) Management of Infected Pancreatic Necrosis by Open Drainage. *Annals of Surgery*, **206**, 542-550. https://doi.org/10.1097/00000658-198710000-00015

[2] Abraham, S.C., Wilentz, R.E., Yeo, C.J., Sohn, T.A., Cameron, J.L., Boitnott, J.K. and Hruban, R.H. (2003) Pancreaticoduodenectomy (Whipple Resections) in Patients without Malignancy: Are They All 'Chronic Pancreatitis'? *The American Journal of Surgical Pathology*, **27**, 110-120. https://doi.org/10.1097/00000478-200301000-00012

[3] Ranson, J.H., Rifkind, K.M., Roses, D.F., Fink, S.D., Eng, K. and Spencer, F.C. (1974) Prognostic Signs and the Role of Operative Management in Acute Pancreatitis. *Surgery, Gynecology & Obstetrics*, **139**, 69-81.

[4] Hoilat, G.J. and Katta, S. (2022) Pancreatic Abscess. StatPearls Publishing, Tampa.

[5] Warshaw, A.L. and Jin, G.L. (1985) Improved Survival in 45 Patients with Pancreatic Abscess. *Annals of Surgery*, **202**, 408-417. https://doi.org/10.1097/00000658-198510000-00002

[6] Stanten, R. and Stanten, R. (1990). Comprehensive Management of Acute Necrotizing Pancreatitis and Pancreatic Abscess, *Archives of Surgery*, **125**, 1269-1275. https://doi.org/10.1001/archsurg.1990.01410220053008

[7] Lowenfels, A.B., Maisonneuve, P., Cavallini, G., Ammann, R.W., Lankisch, P.G., Andersen, J.R., Dimagno, E.P., Andrén-Sandberg, A. and Domellöf, L. (1993) Pancreatitis and the Risk of Pancreatic Cancer. *The New England Journal of Medicine*, **328**, 1433-1437. https://doi.org/10.1056/NEJM199305203282001

[8] Bakshi, S. (2020) Pancreatic Abscess within Hepato-Gastric Ligament: Case Report of an Extremely Rare Disease. *BMC Surgery*, **20**, Article No. 20.

https://doi.org/10.1186/s12893-020-0688-0

[9] Bishop, M.A. and Simo, K. (2022) Pancreatectomy. StatPearls Publishing, Tampa. https://www.ncbi.nlm.nih.gov/books/NBK564309/

[10] Sheng, Q.S., Chen, D.Z., Lang, R., Jin, Z.K., Han, D.D., Li, L.X., Yang, Y.J., Li, P., Pan, F., Zhang, D., Qu, Z.W. and He, Q. (2008) Laparoscopic Cystogastrostomy for the Treatment of Pancreatic Pseudocysts: A Case Report. *World Journal of Gastroenterology*, **14**, 4841-4843. https://doi.org/10.3748/wjg.14.4841