CASE REPORT

Management of patient with a ruptured pancreatic pseudocyst at Ndola Teaching Hospital, Zambia: Case report and literature review

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ABSTRACT

A pancreatic pseudocyst (PP) is a localized collection of pancreatic juice in pancreatic tissue or peripancreatic space reach, in amylase and other enzymes, surrounded by a cyst wall composed of fibrous wall or granulation tissue, and a cyst wall lacking epithelium. A PP develops after acute pancreatitis, chronic pancreatitis, pancreatic trauma, or obstruction of the main pancreatic duct. PP commonly presents with symptoms of abdominal pain, early satiety, nausea and vomiting in the setting of an abdominal mass. Diagnosis is based on clinical and laboratory tests (persistent high levels of amylase) and on imaging by abdominal ultrasound or computer tomography (CT) scan of a persistent pancreatic fluid collection present for at least 4 weeks. Pseudocysts cannot be removed until 6 weeks after an episode of pancreatitis, to allow the walls to thicken to at least 6mm and the pseudocyst to grow to at least 6cm in size; however, pseudocyst formation is difficult to date. We present a patient who had a ruptured PP and therefore underwent emergency laparotomy. The cyst wall was immature and therefore a cyst-enterostomy was not possible. PP excision was chosen because the PP was already ruptured and had dense immature cyst-bowel adhesions, a thin wall and absence of abnormality of pancreatic main duct; in addition, expertise was available. Our patient recovered well without complications in the 90-day follow-up and was subsequently discharged.

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INTRODUCTION

A pancreatic pseudocyst (PP) is a localized collection of pancreatic juice in pancreatic tissue or peripancreatic space reach, in amylase and other enzymes, surrounded by a cyst wall composed of fibrous wall or granulation tissue, and a cyst wall lacking epithelium. A PP develops after acute pancreatitis, chronic pancreatitis, pancreatic trauma, or obstruction of the main pancreatic duct.[1,2,3] PP was first described by Morgagni in 1761 as a condition that results from disruption of the main pancreatic duct caused by inflammation and trauma.[4] The first surgical drainage of PP was described by Bozeman in 1882, while the first internal drainage was described in 1921 by cyst-enterostomy or cyst-gastrostomy anastomosis.[5] PP has an incidence of 1.6-4.5% per 100,000 population, with a prevalence of 10-26% in acute pancreatitis and 20-40% in chronic pancreatitis.[6,7] PP is higher in men who are in the fourth and fifth decades of life.[4,8].

According to Atlanta Classification, an acute pseudocyst is a consequence of acute pancreatitis or trauma, while a chronic pseudocyst arises in the setting of chronic pancreatitis without an episode of acute pancreatitis.[3,9] If a PP communicates with the main pancreatic duct or its branches, its fluid is rich

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in amylase, lipase, and zymogen enzymes, while a non-communicating PP has protease-free serous fluid.[3] PP, to be considered significant, must be present for more than 4 weeks with or without communication to the main pancreatic duct.[4,7]

PP commonly presents with symptoms of abdominal pain, early satiety, nausea and vomiting in the setting of an abdominal mass.[6] The highest incidence of PP is found in chronic pancreatitis due to alcohol.[3,5] Diagnosis is based on clinical and laboratory tests (persistent high levels of amylase) and on imaging by abdominal ultrasound or computer tomography (CT) scan of a persistent pancreatic fluid collection, present for at least 4 weeks.[3,5] Management includes internal surgical drainage, percutaneous external drainage, endoscopic internal drainage or surgical resection.[3,7,9]

The aim of this paper is to describe management of a PP by excision of the pseudocyst, done on a 21-year-old at Ndola Teaching Hospital.

CASE REPORT

A 21-year-old male was referred to our facility with complaints of body hotness and recurrent generalized abdominal pain and distention for three days, not associated with vomiting or constipation. The patient had seven months of on-and-off abdominal pain in the epigastrium, burning in nature, which started after treatment for acute pancreatitis. The patient had early satiety and had no history of trauma to the abdomen. He had had normal bowel and urinary habits for the previous seven months. The patient had a history of significant weight loss over the previous five months but no history of night sweats, and no history of yellowing of eyes, but but he did have a history of chronic alcohol intake and a 1-year history of 1 pack a day tobacco smoking.

On clinical examination, his general condition was ill-looking, normotensive but with tachycardia of 113/min. He was mildly pale, with a hemoglobin of 11g/dl, but not jaundiced. He was afebrile and dehydrated. Respiratory and cardiovascular examination was unremarkable. He had a grossly distended abdomen and generalized tenderness, but no guarding and no rebound tenderness. There was shifting dullness, but no fluid thrill, and bowel sounds were present. A diagnosis of ruptured PP was made and confirmed on abdominal CT scan, which revealed a PP measuring 20cm by 17cm, with a wall thickness of 5mm. There was some free fluid in the abdomen. The patient was prepared for an exploratory laparotomy with cyst-gastrostomy. He had leukocytosis of 11.8 ×10^9, but with normal kidney and liver function.

Intraoperatively, the patient had peritonitis with dark green ascites of 300mls. He had a massive PP, with a wall that was friable in some parts, leaking dark greenish fluid. There were significant bowel adhesions with cyst and interloop adhesions, as shown in Figures 1B and 1C. The PP was dissected and opened, and 4500mls of dark green fluid was aspirated. Figure 1A shows the dissected giant pseudocyst. The pseudocyst had a stalk in the body of the pancreas, with a communicating duct identified as shown in Figure 2. The pseudocyst was completely excised and the communicating duct sutured with prolene 6/0, as shown in Figure 3. The abdomen was washed and drains left in situ.

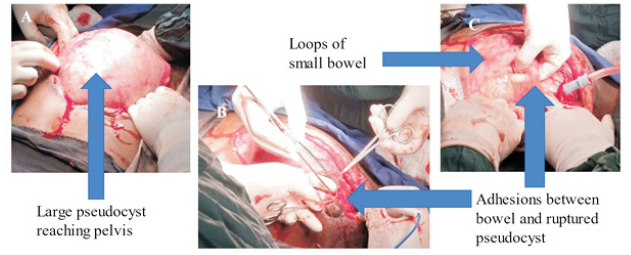

Figure 1: showing A) a giant pancreatic pseudocyst, B) adhesions between small bowel, sigmoid colon and pseudocyst, and C) thick adhesions between small bowel and pseudocyst

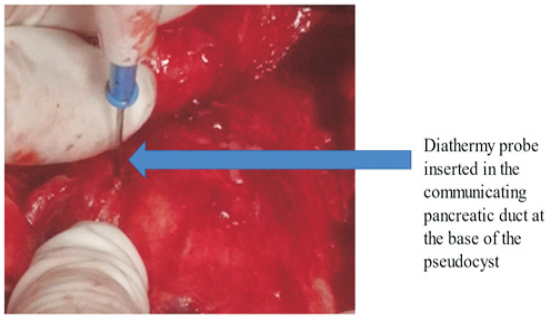

Figure 2: showing location of communicating duct in the body of the pancreas

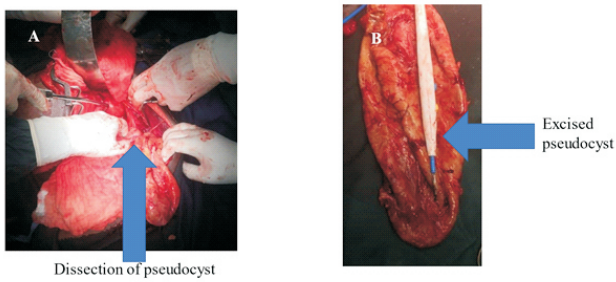

Figure 3: A) showing dissection of pseudocyst on the pancreatic bed and B) excised pseudocyst.

Postoperative recovery was good, with no wound complications or surgical site infection. The abdominal drains were removed on day 3 since the drainage was less than 30mls in 24 hours. The patient was discharged on day 7 postoperatively and followed up for 90 days with serial ultrasound scans done monthly, which did not show free fluid in the abdomen or any other cyst formation in the pancreas.

DISCUSSION

PP are pancreatic fluid collections surrounded by a non-epithelialized wall composed of fibrous or granulation tissue, commonly resulting from alcohol-induced pancreatitis.[4,5] While PP is common in men in the fourth and fifth decades of life with alcohol induced acute pancreatitis[7], our patient was a 21-year-old male with long-standing history of alcohol abuse, who presented with long-standing abdominal pain, easy satiety, weight loss and abdominal mass. The patient had a large PP, 20cm by 17cm, with a thin wall and a communication with the pancreatic duct, without obstruction by stenosis due to a stone. This condition has been described for those who develop PP due to alcohol-induced pancreatitis.[4,5] Giant PPs are defined as be more than 15cm by 10cm. They commonly communicate with the main pancreatic duct and commonly have a thin wall.[4,5]. Common clinical presentation of PP is easy satiety, nausea and vomiting after meals in a patient with or without abdominal mass.[5]

A pseudocyst takes 4-8 weeks to develop after an episode of acute pancreatitis (acute pseudocyst) or in the setting of duct abnormalities such as stenosis or obstruction in the setting of chronic pancreatitis without inflammation (chronic pseudocyst).[4] Our patient had an acute PP. Though not specific to the diagnosis of PP, leukocytosis, elevation of liver enzymes and persistent elevated levels of amylase and lipase enzyme serum support diagnosis of PP in 50% of patients.[3,7] The patient had leukocytosis and a normal liver enzyme while serum amylase was not done because reagents for amylase and lipase were not available.

Diagnostic imaging modalities include abdominal ultrasound and CT scan.[3,6,7] Where available, the preferred imaging is abdominal CT scan, since it has a sensitivity of 90-100% and a specificity of 98-100% . A CT scan provides information necessary for planning surgical intervention by giving information such as location, size, and cyst wall thickness of a PP; anatomy of the biliary and pancreatic duct systems; the presence of any gallstones causing pancreatic duct obstruction, and septations within the cyst that may suggest the presence of an abscess.[3,5,7] In the absence of a CT scan, abdominal ultrasound can be done since it has a sensitivity of 75-90% and a specificity of 92-98%, but the drawback is that it is operator dependent.[3,6,7] Our patient had both an abdominal CT scan and an ultrasound. A CT should be done for a giant PP with a thickness of 5mm in the body of the pancreas, ascitic fluid in the abdomen, with normal pancreatic and biliary duct anatomy without obstruction.

Pseudocysts cannot be surgically treated until 6 weeks after an episode of pancreatitis, to allow the pseudocyst walls to thicken to at least 6mm and the pseudocyst size to grow to at least 6cm; however, pancreatitis episodes are difficult to diagnose in our low-resource setting and therefore pseudocyst formation is difficult to date. In the absence of life-threatening conditions such as peritonitis, the wall can be allowed to mature and allow anastomosis with low risk of anastomotic leak, and duration is taken from time of first diagnosis of PP.[6,7,9] However, an infection of PP demands immediate external drainage, either surgical or percutaneous.[9] In the unlikely discovery of an immature cyst wall, excision or surgical resection can be undertaken.[9] A PP and a neoplasm of the pancreas may be distinguished using carcinoembryonic antigen (CEA), an accurate predictor of neoplasm in the pancreas.[4] Our patient had a ruptured PP and therefore underwent emergency laparotomy. The cyst wall was immature, and therefore a cyst-enterostomy was not possible. Surgical resection was also difficult in the presence of peritonitis and bowel adhesions. Therefore, our patient had pseudocyst excision. Inflammation and bowel adhesions have been described as a challenge for surgical resection and internal drainage of a PP by anastomosis of the cyst and gastrointestinal tract.[9]

Surgical drainage by cyst-gastrostomy, cyst-duodenostomy and cyst-jejunostomy is historically the method of choice for internal drainage of the PP and can be done by laparoscopy or open surgery using sutured or stapled anastomosis.[6] There is no established opinion regarding which of the available methods of drainage of PP whether by internal surgical drainage, internal endoscopic drainage, external percutaneous or surgical drainage, is best.[7,10] Surgical drainage, which aims to evacuate the contents of a PP, has a complication rate of 11-25%, a mortality rate of 5-9% and a recurrence rate of 5-8%; it is considered the preferred treatment for PP.[7,9] Which method to use depends on patient characteristics, pancreatic duct anatomy, and available surgical expertise.[3,7,9] For our patient, PP excision was chosen because the PP was already ruptured and had dense immature cyst-bowel adhesions, a thin wall, absence of abnormality of pancreatic main duct, and available expertise.[3,7,9] Since it was a communicating PP, the duct opening was identified and ligated. Resection was not considered for our patient since pancreatic anatomy in relation to surrounding organs was obscured and there were no abnormalities in the main pancreatic duct.[7,9]

Recurrence of PP has a range of 0-12%, depending on the cause.[5,9] Surveillance is not required and has not been standardized or studied, but where there is need, it can be done by abdominal ultrasound or CT scan.[4] In our patient, follow-up with imaging was done for 3 months with abdominal ultrasound because the communicating duct was ligated.

CONCLUSION

A PP is a rare condition and is common in male patients in the fourth and fifth decades of life, with a history of alcohol-induced pancreatitis. Common clinical symptoms include nausea and vomiting after meals, easy satiety and the presence or absence of abdominal mass. Surgical drainage by cyst and gastrointestinal lumen is the historical standard for treatment of a PP, though excision and resection remain an option in the presence of obscured pancreas anatomy.

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