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Case Report

Non-traumatic splenic rupture and pancreatic pseudocyst as a complication of pancreatitis: A case report [☆]

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ABSTRACT

Nontraumatic splenic rupture is a rare pancreatitis complication. We present a 61-year-old chronic alcoholic male with acute on chronic pancreatitis, which progressed to pseudocyst, splenic vein thrombosis, splenic rupture, and eventually hemoperitoneum. Later, the patient required an emergency laparotomy and splenectomy. Early detection and treatment of pancreatitis and pseudocyst can help prevent a rare but potentially fatal complication like an acute rupture.

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Introduction

Pancreatic pseudocyst is a common complication of both acute and chronic pancreatitis [1]. Pseudocysts are formed due to destruction and leakage from the pancreatic duct structure with an accumulation of pancreatic juice leading to hemorrhage and fat necrosis and are not lined by true epithelium [2]. Various complications have been associated with pancreatic pseudocyst like rupture into the peritoneal cavity, infec-

tion, hemorrhage, and fistula formation to adjacent organs [3]. While splenic rupture is common following blunt abdominal trauma, there are numerous other causes of nontraumatic splenic rupture, one of which is pancreatic pseudocyst [3]. Here, we present a case of a 61-year-old male with pancreatitis that was complicated by splenic vein thrombosis and acute splenic rupture. Low occurrence and poor understanding of acute nontraumatic splenic rupture secondary to pancreatic pseudocyst make this a vital topic for emergency general surgeons' awareness.

Abbreviations: CT, computed tomography imaging; HU, Hounsfield unit.

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Table 1 – Relevant laboratory investigations during the initial workup.

Test	Lab findings
Hemoglobin	7.5 g/dL
Random blood sugar	120 mg/dl
Serum amylase	189 U/L
Serum lipase	554 U/L
Platelets	311,000 cells/mm ³

Bold value means abnormal lab value.

Case report

A 61-year-old male patient farmer by occupation came to the emergency department of Bir Hospital with acute on chronic abdominal pain focused on the epigastric and left subcostal region with radiation to the left scapular region. The pain was associated with nausea without vomiting. He also complained of a dull aching, on and off epigastric pain for the last six months with a history of chronic consumption of alcohol. He reported no history of any chronic disease like diabetes mellitus or hypertension. He does not report any previous medical treatment or intervention with no significant family history. During examination in the emergency department, his vitals were stable. The abdomen was tender to palpation, predominantly on the left subcostal region. Biochemical analyses revealed the following results (Table 1).

Subsequently, a contrast-enhanced computed tomography was done at the department of radiology in Bir Hospital which showed calcification in pancreatic parenchyma and main pancreatic duct, without obvious atrophy of the pancreatic tissue. Minimal peripancreatic fat stranding was noted adjacent to the tail of the pancreas. A well-defined nonenhancing cystic lesion measuring approximately 29 × 28 mm was noted in the tail of the pancreas adjacent to the splenic hilum. The spleen showed multiple ill-defined nonenhancing hypodense areas within the parenchyma. The mild collection was noted in the subcapsular region of the spleen with extension into the perisplenic space. The perisplenic collection was approximately 250 mL in volume with different attenuation in dependent (HU + 19) and nondependent portions (HU + 56). Mild-free fluid (HU + 35) was noted in the peritoneal cavity which was likely hemoperitoneum. On portal phase images, an eccentric nonenhancing filling defect (likely a thrombus) was noted in the splenic vein. Minimal-free fluid was also noted in the bilateral pleural spaces with collapse/consolidation of the adjacent lung parenchyma. These computed tomography (CT) findings were suggestive of an acute on chronic pancreatitis with a modified CT severity score of 6 (moderate), a complicated pseudocyst formation, splenic vein thrombosis, and splenic rupture resulting in hemoperitoneum.

After emergency splenectomy, the patient's condition improved and soon stabilized with his pre-discharge hemoglobin being 10.5 g/dL (Fig. 1).

Discussion

Pancreatitis is the inflammation of the pancreatic parenchyma. Acute and chronic pancreatitis are the 2 major types. Different complications of pancreatitis include acute fluid collection, pseudocyst of the pancreas, walled-off necrosis, pseudo aneurysm, splenic vein thrombosis, and portal vein thrombosis [1,3]. As in this case, acute on chronic pancreatitis can be complicated by pseudocyst formation. A pseudocyst is formed when there is rupture of the pancreatic duct. It is encapsulated and contains fluid inside the capsule [3]. The spleen is also involved in pancreatitis in different ways like the formation of the pseudocyst, parenchymal hematomas, infarction, and splenic rupture [4,5]. The involvement of the spleen and different splenic complications secondary to pancreatitis is due to close proximity of the tail of the pancreas with the splenic hilum [4]. Trauma is the most common cause of splenic rupture. Although spontaneous rupture of a healthy spleen is rare, it may be found in patients with pancreatitis [3,4]. Splenic vein thrombosis is a complication of both acute and chronic pancreatitis with the overall incidence of pancreatitis-induced splenic vein thrombosis being 14.2% [6]. In our case, there was an eccentric filling defect in the splenic vein in the background of acute on chronic pancreatitis with the presence of a pseudocyst, thus making splenic vein thrombosis the most likely diagnosis.

There are different mechanisms through which splenic rupture occurs secondary to pancreatitis and pseudocyst, including perisplenic adhesions, diffusion of proteolytic enzymes to the splenic hilum, secondary to splenic vein thrombosis, or due to acute inflammation [3,5]. In our case, there was formation of a pseudocyst in the pancreatic tail and splenic vein thrombosis which led to splenic rupture. The clinical features included nonspecific symptoms like abdominal pain, nausea, and vomiting. If there is splenic rupture, patients may present with left subcostal pain with or without radiation to the left shoulder and tachycardia [2,4,5]. Patients may present with features of hemorrhagic shock in case of excessive blood loss [5]. Both chronic and acute pancreatitis are the risk factor for splenic vein thrombosis [6]. Our patient presented with chronic abdominal pain for 6 months, decreased appetite and sudden onset of left subcostal pain radiating to the left shoulder, and generalized tenderness in the abdomen during palpation.

Pancreatitis can be diagnosed clinically and biochemically without imaging [1]. Modified CT severity index are generated by estimating inflammation in pancreas, necrotic areas in pancreas and extra pancreatic complications with total score of 10 [7] (Table 2).

However, since there is a good correlation between clinical and imaging pancreatitis score, imaging is not always necessary to evaluate the severity [7]. Furthermore, in case of suspected pancreatitis complications, a contrast-enhanced CT scan is the diagnostic modality of choice which can clearly identify the status of the pancreas, peripancreatic collection, site and size of the pseudocyst, splenic vein thrombus, splenic rupture, splenic hemorrhage, perisplenic collection, peritoneal collection or pleural effusion [1,4]. CT can also differentiate hemoperitoneum from ascitic fluid and can detect

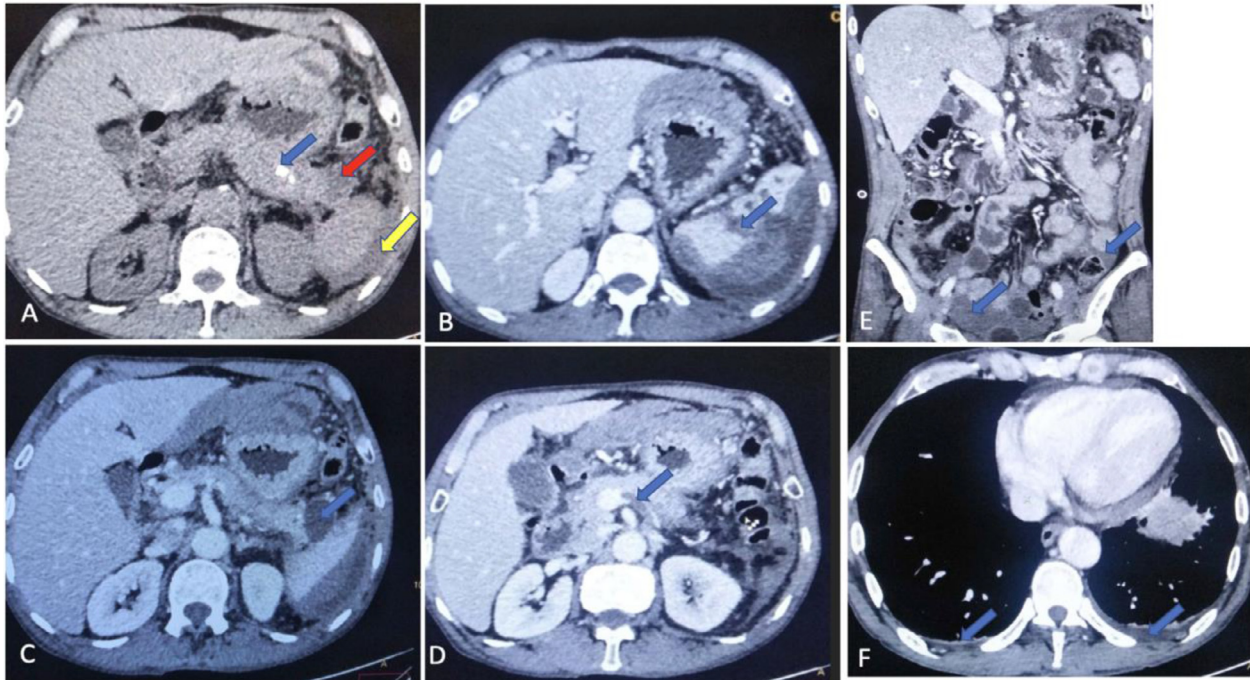


Fig. 1 – CT images. (A) Noncontrast axial image showing calcification of pancreatic tail (blue arrow) and a well-defined hypodense lesion adjacent to the tail of pancreas (red arrow) with perisplenic collection (yellow arrow). (B-D) Contrast-enhanced axial images showing nonenhancing hypo-attenuating areas in the splenic parenchyma (blue arrow in B), with perisplenic collection of different attenuation, a nonenhancing cystic lesion adjacent to the tail of the pancreas (blue arrow in C) (pseudocyst) and a nonenhancing eccentric filling defect in the splenic vein demonstrating by blue arrow in D (likely a thrombus). (E) Contrast-enhanced coronal image showing mild fluid in peritoneal cavity (blue arrows). (F) Minimal-free fluid in bilateral pleural cavities (blue arrows).

Table 2 – Modified CT severity index (CTSI).

Parameters	Score
Pancreatic inflammation	
• Normal pancreas	0
• Intrinsic pancreatic abnormalities with or without inflammatory changes in peripancreatic fat	2
• Pancreatic or peripancreatic fluid collection or peripancreatic fat necrosis	4
Pancreatic necrosis	
None	0
30% or less	2
More than 30%	4
Extra-pancreatic complications	
One or more extra pancreatic complications	2
Total	10
0-2→mild pancreatitis.	
4-6→ moderate pancreatitis.	
8-10→severe pancreatitis.	

any active bleeding from the ruptured spleen or from other sites [1]. Most of the cases of splenic rupture are managed surgically by splenectomy, but in hemodynamically stable patients, percutaneous drainage and arterial embolization can also be done. This case gives us an idea about how frequent

monitoring is necessary in terms of chronic pancreatitis and pseudocyst formation to prevent adverse events like splenic vein thrombosis and rupture of the spleen. Since the patient presented for the first time to the hospital we were not able to assess the patient before the complication occurred, and this gives us a lesson to regularly monitor patients with chronic pancreatitis by imaging modalities like CT scan.

Conclusion

Pancreatitis can be complicated by the formation of pseudocyst, splenic vein thrombosis and nontraumatic rupture of the spleen. Because of the close proximity of the pancreatic tail to the spleen, complications are more commonly seen in the splenic region. Nontraumatic rupture of the spleen is a rare but important complication of pancreatitis, which if undetected, may lead to shock. Contrast-enhanced CT is the modality of choice in a suspected case of nontraumatic splenic rupture. It is important to manage cases of pancreatitis and pseudocyst as early as possible before the occurrence of fatal complications like a splenic rupture. Hemodynamically unstable patients are commonly managed by laparotomy and splenectomy, while hemodynamically stable patients can be managed by minimally invasive surgery [4].

Patient consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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