

Case Report

A noteworthy presentation on plain abdominal film: a case of chronic pancreatitis with calcified pseudocyst

Po-Cheng Liang^{1,2,3*}, Jee-Fu Huang^{2,3}, Nai-Jen Hou³, Shih-Chang Chuang⁴

¹Institute of Clinical Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

²Hepatobiliary Division, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

³Department of Internal Medicine, Kaohsiung Municipal Hsiao-Kang Hospital, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

⁴Department of Surgery, Kaohsiung Municipal Hsiao-Kang Hospital, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

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Pseudocyst is a typical complication of acute or chronic pancreatitis. Herein, we present a plain abdominal X-ray from a unique case of chronic pancreatitis with calcified pseudocysts. Calcified pseudocysts are rare and may occur in patients with chronic pancreatitis. Calcifications make the pseudocyst visible on plain abdominal film. Clinicians should be informed of this uncommon condition and should consider arranging a plain abdominal radiograph as the first step in cases of suspected chronic pancreatitis.

Keywords: Pancreatic pseudocyst, Chronic pancreatitis, Pancreatic calcification, Calcified pseudocyst

Introduction

Pancreatitis, most common pancreatic disease worldwide, is an inflammatory condition of pancreas parenchyma. Alcohol abuse and common bile duct stone are the main causes. Other etiology includes drugs, obstructive lesions, hypertriglyceridemia, hypercalcemia, viral infections, autoimmune, post endoscopy or trauma, scorpion sting, etc. Pseudocysts, the most common form of pancreatic cystic lesions, are a typical complication of acute or chronic pancreatitis, which are more prevalent in the latter. The term "pseudocysts" signifies the cystic wall consists of fibrotic or inflammatory tissue rather than a true covering epithelium. They result from the leakage of digestive juice in pancreatic duct and usually develop in middle-aged male patients with alcoholism. Additionally, they are frequently presented with a solitary cyst and observed over lesser sac of upper abdomen 1-4 weeks after an acute episode, accounting for approximately 15% of all the complications of acute pancreatitis. They must be distinguished from other cystic lesions of pancreas, such as pancreatic cystic neoplasm, cystic degeneration of a solid pancreatic tumor, or retention cysts. A correct diagnosis could be made by a positive history of

pancreatitis, fluid accumulation surrounded by a well-defined wall on imaging study, and high amylase/lipase concentration according to cystic fluid analysis. Most cases resolve spontaneously by time, whereas some cases become more organized with peripheral thickening wall of granulation tissue and central fluid collection of enzyme, blood, and necrosis. (Habashi and Draganov, 2009) External, endoscopic, or surgical drainage is indicated when it grows in size, the symptoms persist, or infection process develops. (Gumaste and Aron, 2010) In terms of clinical course, pancreatitis is classified as acute, chronic, or acute on chronic pancreatitis. Chronic pancreatitis is an indicator of both pancreatic endocrine and exocrine insufficiency. Moreover, pancreatic calcifications are critical and specific imaging features occurring in patients with chronic pancreatitis. (DiMagno and DiMagno, 2010) Here, we introduce a case of chronic pancreatitis presenting both a pseudocyst and

*Corresponding author. E-mail: pocheng.liang@gmail.com

cystic wall calcifications.

Case Presentation

The patient is a 47-year-old man with a history of diabetes mellitus, alcoholism, fatty liver, and pancreatitis episodes. Regular follow-up was conducted through the endocrinology outpatient department. The patient has since received oral antidiabetic drugs with basal insulin. He reported consuming alcohol daily with at least 200 ml of beer or wine for more than 10 years. He visited our emergency room presenting increasingly persistent epigastralgia radiating posteriorly for one month. He also reported body weight loss (5 kg in 3 months) and chronic diarrhea for 6 months.

A physical examination revealed an approximately 8-cm-long firm mass lesion with tenderness over the upper abdomen area. The laboratory data revealed mild elevated amylase (124 U/L, normal range 33–96 U/L) and lipase (63.4 U/L, normal range <38 U/L). Plain abdominal film revealed radioopacity spots over the epigastric region (Figure 1). Subsequently, contrast abdominal computed tomography (CT) revealed extensive calcified stones over the pancreas, atrophic parenchyma, and a pseudocyst from the uncinata process with wall calcifications (Figures 2 and 3). Finally, the patient was admitted for laparotomy exploration and external insertion of a drainage tube. Turbid and dark brownish content was noted and the fluid analysis indicated markedly elevated amylase (19,600 U/L) and lipase (9260 U/L) with a further negative culture result.

Discussion

The final diagnosis was chronic pancreatitis with calcified pancreatic pseudocyst, the first mention of which was reported by Ghahremani. (Ghahremani et al., 1981) It is a rare presentation of chronic pancreatitis leading to visualization on a plain abdominal radiograph because of the calcification of the cystic wall. Plain radiography of the abdomen typically indicates complications, etiology or severity of pancreatitis, including sentinel loop (small bowel ileus), pancreatic stones (chronic pancreatitis), gall bladder stones (gallstone pancreatitis), gas in the retroperitoneum (pancreatic abscess), and ascites (severe pancreatitis).

Besides plain abdominal x-ray, there are other noninvasive cross-sectional imaging studies for the evaluation of pancreatitis and pseudocysts. Firstly, transcutaneous ultrasonography of abdomen is most convenient but depends on operator's skills and patient's cooperation. Pancreas is often poorly visible for the sake of overlying bowel gas. Using high epigastric view (to avoid colonic gas) or drinking 500 ml water (to remove gastric gas) before examination might solve this barrier. (Sirlı and Sporea, 2010) Secondly, contrast-enhanced abdominal CT is the most often used imaging technique,

playing an important role in the diagnosis, severity grading, recognition of complications and guiding diagnostic or therapeutic interventions. (Busireddy et al., 2014) Thirdly, magnetic resonance cholangiopancreatography can establish the clear relationship of a pseudocyst and pancreatic duct. Finally, endoscopic ultrasound can be used for indentifying biliary microlithiasis and most importantly, allows for sampling of cyst fluid or tissue. (Brugge, 2009)

The patient's plain film indicated radiopaque lesions of a linear distribution between T12 and L1 on the spine (indicated by black arrows in Figure 1). The linear radiopaque spots were considered to be pancreatic calcification, thus indicating chronic pancreatitis. (Babu, 2007) However, another group of calcification lesions with an arc-shape distribution were observed (indicated by white arrows in Figure 1). A subsequent contrasted abdominal CT test revealed a pseudocyst with calcifications deposited on the cystic wall (indicated by white arrows in Figure 2 and black arrows in Figure 3b), which was compatible with the arc-shape lesion on plain film.

The differential diagnosis of the radioopaque lesions in the upper abdomen area include pancreatic cystic neoplasm, pancreatic hydatid cyst, abscess, mesenteric calcified cyst, calcified liver cyst, calcified lymph node, and vascular calcification. (Lee et al., 2006; Tsai and Chen, 2010) This condition was diagnosed as a pseudocyst on the basis of the patient's long term history of alcohol consumption, as well as his chronic pancreatitis status and high amylase levels observed in the cystic fluid.

Alcohol has impact on the exocrine function of pancreas, leading to the formation of protein plugs and even stones. The mechanism of pancreatic lithogenesis has been hypothesized to be associated with pancreatic stone protein (PSP), a protein secreted by acinar cells of pancreas and initially isolated from the stones of patients with chronic calcifying pancreatitis. (De Caro et al., 1988) In vitro studies, PSP acted as a stabilizer to inhibit the precipitation of supersaturated calcium salt in pancreas juice. In the clinical aspect, PSP level was lower significantly in patients with chronic calcifying pancreatitis versus controls. Although later investigations demonstrated that its role on pancreatic stones formation was not specific and its level in patients with chronic pancreatitis was controversial, PSP still considered to be involved with lithogenesis. (Patard et al., 2003)

Asymptomatic and nonenlarging pseudocysts can be observed clinically without treatment. However, infected, symptomatic, or larger-size pseudocysts can be decompressed by percutaneous, surgical, or endoscopic procedures. (Rana et al., 2015) The general treatment principle is to build up the connection between the cyst and gastro-intestine tract for allowing pancreas juice return to bowel lumen. In our case, the cystic wall may have been calcified first in the pancreas parenchyma,

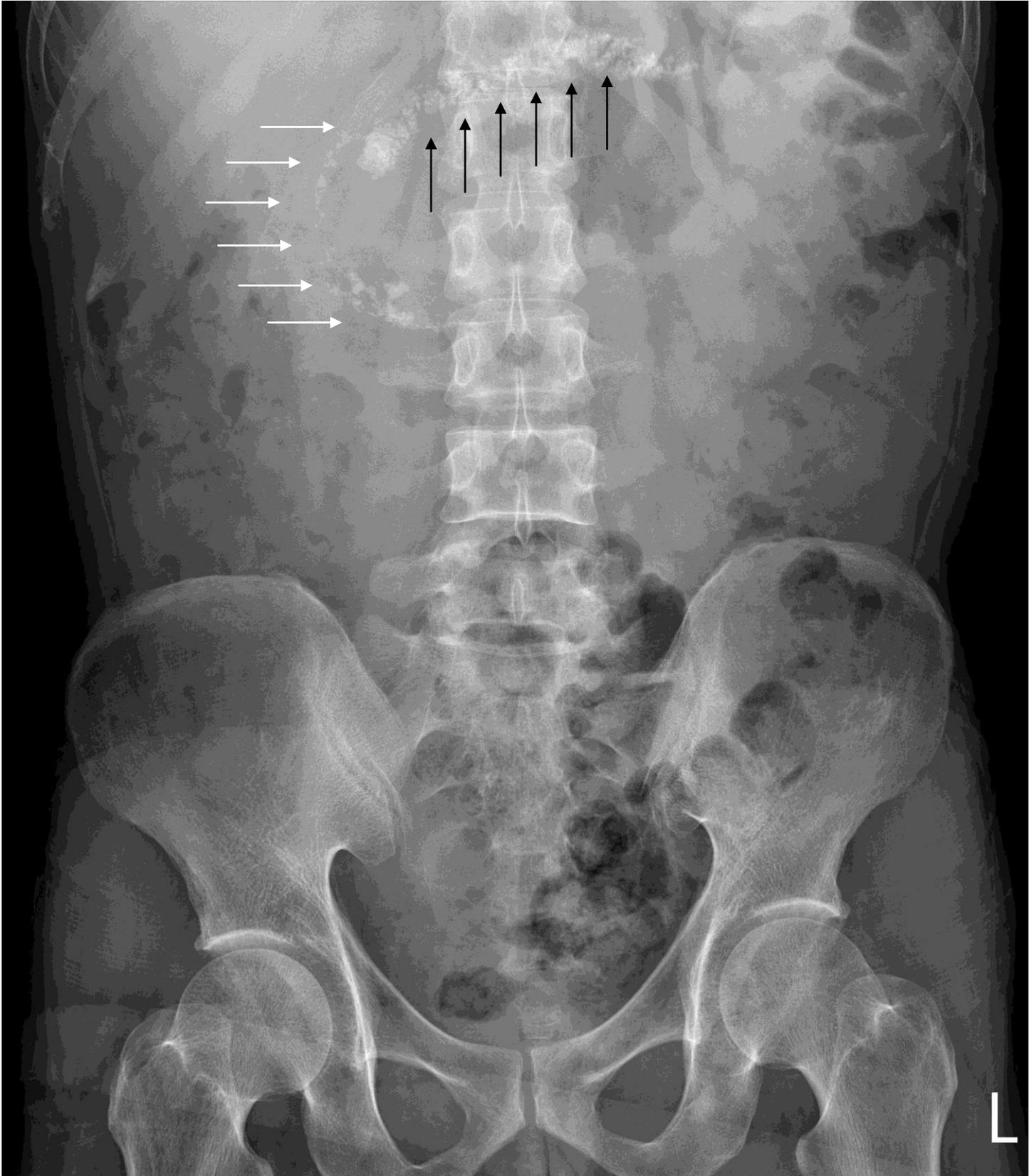


Figure 1. Abdominal plain film showed calcification groups over epigastric area. The black arrows indicate one linear calcification group between T12-L1 spine level; the white arrows point out another arc-shaped calcification group, which is the calcifications on the wall of pancreatic pseudocyst according to further abdomen CT scan.



Figure 2. The coronal view of abdominal CT revealed a pseudocyst over pancreatic uncinate lobe with wall calcifications (shown by the white arrows) and calcifications in the parenchyma of pancreatic body (indicated by the black arrows).

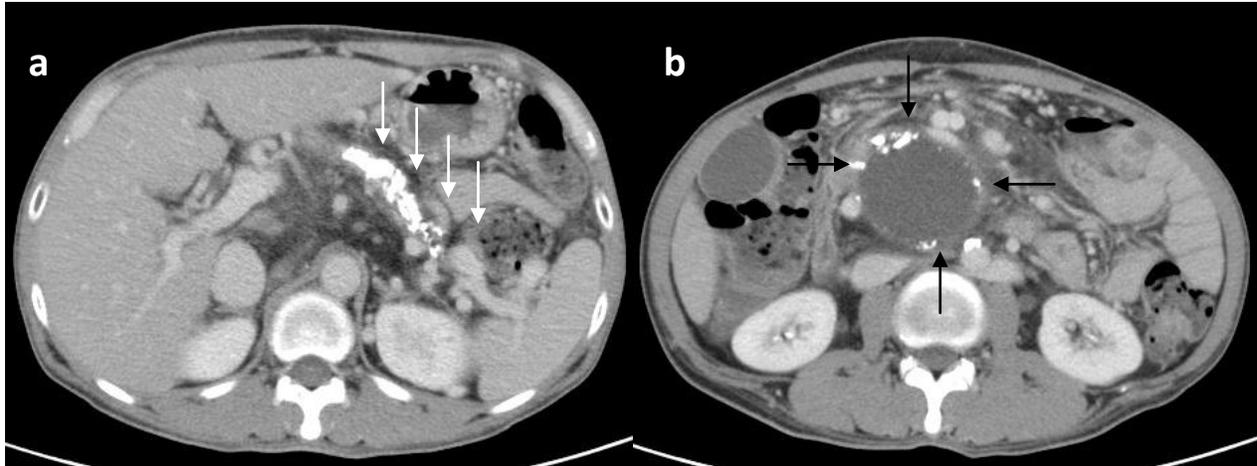


Figure 3. On axial reconstruction, the Abdominal CT showed calcifications in atrophic pancreas parenchyma (white arrows in figure a) and calcified pseudocyst (black arrows in figure b).

which may have subsequently been pushed away by the growing pseudocyst. Another explanation is that calcifications developed in the cystic wall after a long period of time. Regardless, calcified pseudocysts represent chronic process, in which spontaneous shrinkage is difficult. (Munn et al., 1987) Therefore, further treatment intervention was considered at the time of diagnosis. The patient eventually received 8Fr pig-tail drainage tube insertion. Subsequently, the epigastralgia improved considerably and the drainage tube was removed upon visiting the outpatient department. There was no evidence of pseudocyst recurrence or pancreatic tumor during 24 months of follow-up period.

Conclusion

Pancreatic pseudocysts, which should be generally observed during ultrasonography, CT, or magnetic resonance imaging, might also be visible on plain abdomen radiograph—particularly in cases involving calcified pseudocysts. In addition, calcified pseudocysts indicate chronicity, and further drainage intervention might be necessary. Hence, when chronic pancreatitis is suspected, clinicians should consider arranging a plain abdominal X-ray because it can yield additional information for further treatment strategies.

References

- Babu V (2007). Image in clinical medicine. Chronic calcific pancreatitis. *The New Eng. J. Med.*, 356: e24.
- Brugge WR (2009). The use of EUS to diagnose cystic neoplasms of the pancreas. *Gastrointestinal endoscopy*, 69:S203-209.
- Busireddy KK, AlObaidy M, Ramalho M, Kalubowila J, Baodong L, Santagostino I, Semelka RC (2014). Pancreatitis-imaging approach. *World J. Gastrointestinal Pathophysiol.*, 5:252-270.
- De Caro A, Multigner L, Dagorn JC, Sarles H (1988). The human pancreatic stone protein. *Biochimie*, 70:1209-1214.
- DiMagno MJ, DiMagno EP (2010). Chronic pancreatitis. *Current opinion in gastroenterology*, 26: 490-498.
- Ghahremani GG, Hemmati M, Savage JL (1981). Calcified pseudocyst of the pancreas. *Digestive Diseases and Sciences*, 26: 1138-1143.
- Gumaste VV, Aron J (2010). Pseudocyst management: endoscopic drainage and other emerging techniques. *J. clin. Gastroenterol.*, 44:326-331.
- Habashi S, Draganov PV (2009). Pancreatic pseudocyst. *World J. Gastroenterol.*, 15:38-47.
- Lee KF, Yau CK, Lai PB (2006). Image of the month: calcified pancreatic pseudocyst. *Archives of surgery*, 141: 419-420.
- Munn J, Altergott R, Prinz RA (1987). Calcified pancreatic pseudocysts. *Surgery*, 101:511-513.
- Patard L, Lallemand JY, Stoven V (2003). An insight into the role of human pancreatic lithostathine. *JOP : J. Pancreas*, 4:92-103.
- Rana SS, Sharma V, Sharma R, Gupta R, Bhasin DK (2015). Endoscopic ultrasound-guided transmural drainage of calcified pseudocyst in a patient with chronic calcific pancreatitis. *Ann. Gastroenterol.*, 28: 290.
- Sirli R, Sporea I (2010). Ultrasound examination of the normal pancreas. *Med. Ultrasonography*, 12:62-65.
- Tsai MJ, Chen HC (2010). Calcified cysts in the upper abdomen. *Cleveland Clin. J. Med.*, 77: 96-97.