

The Occurrence of a Pseudoaneurysm of the Hepatic Artery within the Thrombosed Portal Vein of a Patient with Chronic Pancreatitis: A Case Report¹

Eun Soo Kim, M.D., Kyung Mi Jang, M.D., Min-Jeong Kim, M.D., Hoi Soo Yoon, M.D.,
Hyun Lee, M.D., Eui Yong Jeon, M.D., Kwanseop Lee, M.D., Yul Lee, M.D.

A pseudoaneurysm is an uncommon but important life threatening complication of chronic pancreatitis. The arteries most commonly affected by a pseudoaneurysm are (in decreasing percent occurrence), the splenic (40%), gastroduodenal (30%), pancreaticoduodenal (20%), gastric (5%), hepatic (2%), and others (superior mesenteric, jejunal, ileocecal, and aorta) (1 - 3%). Thrombosis of the splenic or portal vein is another important complication of chronic pancreatitis. In this case report, we present a rare complication in the form of a right hepatic artery pseudoaneurysm which developed within the thrombosed right portal vein of a 35-year-old woman afflicted with chronic pancreatitis.

Index words : Pancreatitis, chronic
Aneurysm, false
Portal vein
Chronic diseases

Chronic pancreatitis can result in a number of vascular complications including thromboses of the portal venous system and the formation of a pseudoaneurysm. Pseudoaneurysms occur in approximately 3.5 - 10.0% of patients with pancreatitis (1). The arteries most commonly affected by pseudoaneurysms are (in decreasing percent occurrence), the splenic (40%), gastroduodenal (30%), pancreaticoduodenal (20%), gastric (5%), hepatic (2%), and others (superior mesenteric, jejunal, ileocecal, and aorta) (1 - 3%) (1, 2). Thrombosis of the portal venous system is another important complication of chronic pancreatitis (1, 3). An isolated splenic vein thrombosis is more common than a portal or superior mesenteric vein thrombosis in patients with chronic pancreatitis (1).

However, as far as we know, a pseudoaneurysm within the thrombosed right portal vein of a patient with chronic pancreatitis has been not reported.

In this case report, we present the case of a right hepatic artery pseudoaneurysm which developed within the thrombosed right portal vein of a 35-year-old woman afflicted with chronic pancreatitis.

Case Report

A 35-year-old, heavy alcoholic woman was presented with sudden epigastric pain. The laboratory data revealed a normal range for WBC (7.1×10^3), a markedly elevated CRP (92.7 mg/L), neutrophil (81.2%), lipase (332 U/L) and amylase (827 U/mL), in addition to decreased hemoglobin (12.2 g/dL) and hematocrit (19.7%).

The patient underwent a dynamic pancreatic CT, which revealed intraductal stones in the pancreatic body (Fig. 1A), atrophy of the pancreas, and diffuse dilatation of the pancreatic duct (Fig. 1B). These CT find-

¹Department of Radiology, College of Medicine, Hallym University
Received December 14, 2007 ; Accepted February 20, 2008
Address reprint requests to : Kyung Mi Jang, M.D., Department of Radiology, Hallym University, College of Medicine, 896 Pyungchondong, Dongan-gu, Anyang-city, Kyungki-do 431-070, Korea
Tel. 82-31-380-3885 Fax. 82-31-380-3878 E-mail: jkm7290@empal.com

ings were consistent with chronic pancreatitis. Furthermore, thrombosis of the portal-splenic vein and multiple collaterals were also demonstrated on CT (Fig. 1B, C). In addition, a small, well-enhanced nodular lesion measuring about 1.5 cm in diameter, was identified at the thrombosed right posterior portal. These findings suggest the occurrence of a right hepatic artery pseudoaneurysm (Fig. 1C). A three-dimensional volume rendering CT image showed a pseudoaneurysm originating in the right hepatic artery. The neck portion of pseudoa-

neurysm had a diameter of about 1 mm (Fig. 1D). Furthermore, small, low attenuation lesions with diameters below 5 cm were noted at the S8 site of the liver and surrounded the S8 thrombotic portal vein branch. The results were interpreted as liver abscesses (Fig. 1E).

Following this assessment, the patient underwent medical conservative treatment (antibiotics, NPO, for four weeks. A follow-up CT scan conducted two weeks after the onset of medical treatment illustrated the disappearance of the hepatic artery pseudoaneurysm (Fig.

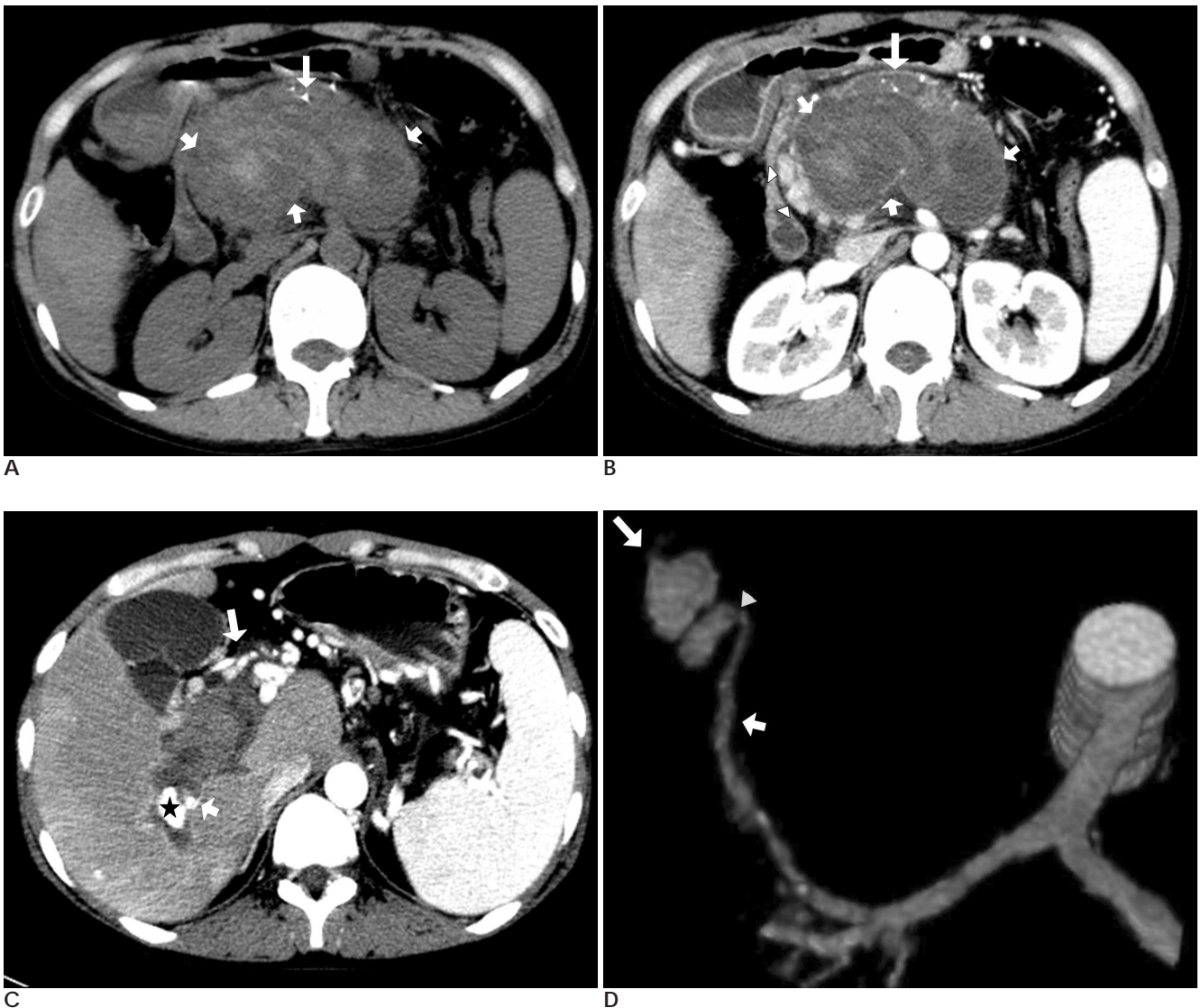


Fig. 1. A. The unenhanced axial CT scan reveals the intraductal stones (long arrow) in the pancreatic body and a high density thrombosis at the portal-splenic vein (short arrows). B. The arterial phase CT scan shows the decreased pancreatic volume and duct dilatation, representing chronic pancreatitis (long arrow). The axial CT reveals thrombosis (short arrows) at the portal-splenic vein with collateral vessels (arrowheads). C. An approximately 1.5 cm well-enhanced nodular lesion (asterisk) is observed within the thrombosed right posterior portal vein with collateral vessels (long arrows) on an arterial phase CT scan. This lesion originated from the right hepatic artery (short arrow), which suggests a hepatic artery pseudoaneurysm. D. A three-dimensional volume rendering CT image shows the pseudoaneurysm (long arrow), which developed from the right hepatic artery (short arrow). The neck portion (arrowhead) of the pseudoaneurysm had a diameter of 1 mm.

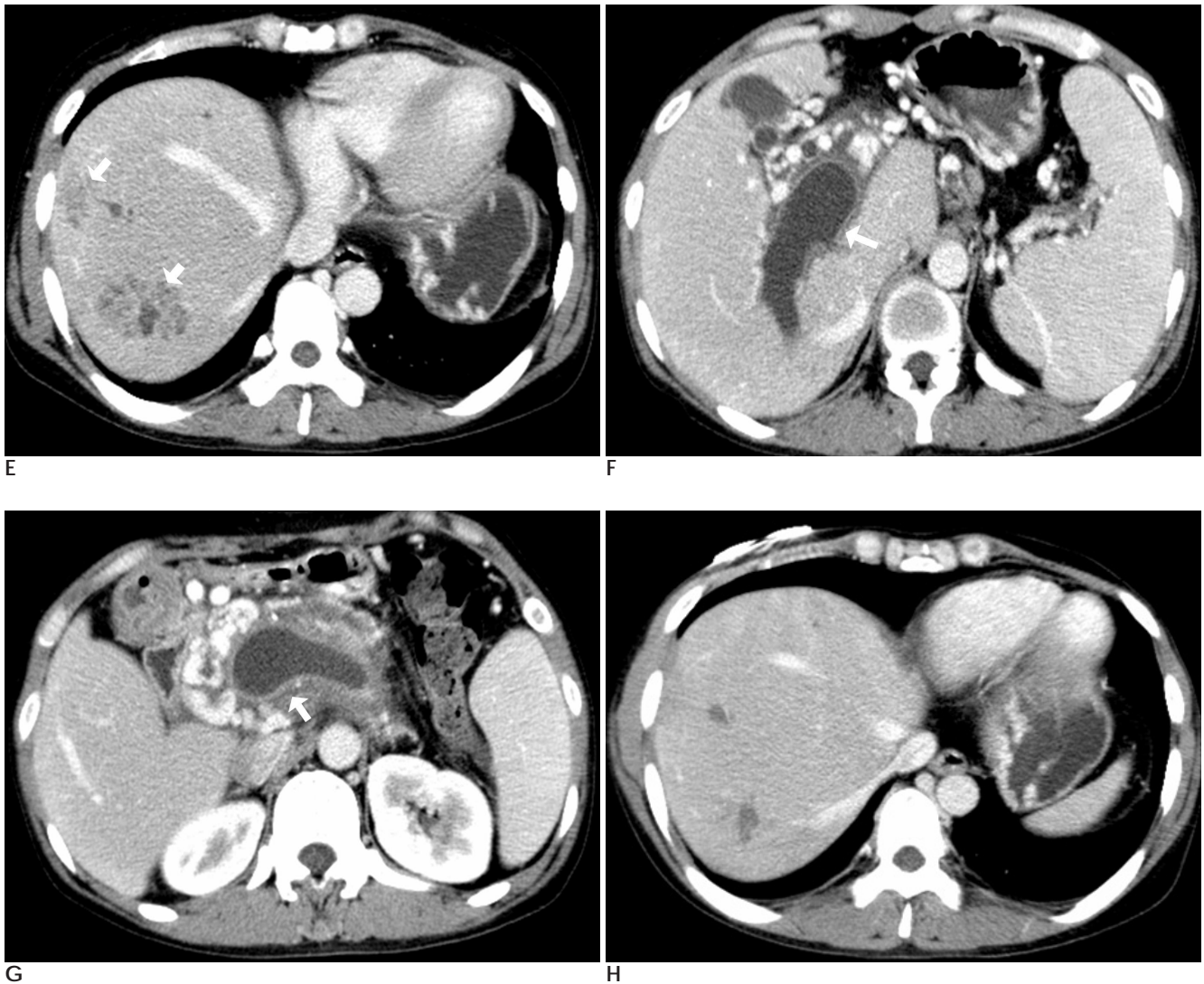


Fig. 1. E. Two clustered small low density lesions (arrows) are noted at the right hepatic lobe surrounding thrombosed S8 portal vein, which was interpreted as liver abscesses on a portal venous phase CT scan.
 F. The portal venous phase CT scan conducted two weeks after medical treatment shows the disappeared hepatic artery pseudoaneurysm at the thrombosed right portal vein (arrow).
 G. The portal venous phase CT scan conducted two weeks after medical treatment indicates that the previously identified thrombosis at the portal-splenic vein is liquefied and has a decreased diameter at the main portal vein (arrow).
 H. The last follow-up portal venous phase CT scan conducted 4 weeks after medical treatment reveals an improvement in the previously identified liver abscesses.

1F), and the liquefaction of thrombosis at the portal-splenic vein (Fig. 1F, G). The last follow-up CT scan, conducted 4 weeks after medical treatment found an improvement in the previously identified liver abscesses (Fig. 1H).

Discussion

Chronic pancreatitis has a number of vascular complications, including thromboses of the portal venous system and the formation of a pseudoaneurysm. Moreover,

patients afflicted with chronic pancreatitis were subjected to the possible erosion of the peripancreatic vessels to the cross-tissue planes and boundaries via the pancreatic enzymes, which resulted in formation of a pseudoaneurysm (2). The hepatic artery is documented as being less commonly affected (2%) (1, 2). Two-thirds of hepatic artery pseudoaneurysm cases are extrahepatic and the right hepatic artery is involved more frequently than the left (4). The rupture of a pseudoaneurysm has been accompanied with mortality in greater than 90% of cases (1). Therefore, immediate surgery is the gold standard

if the patient is hemodynamically unstable. Patients with chronic pancreatitis and a bleeding pseudoaneurysm should undergo prompt initial angiographic evaluation and embolization if possible (5). On the other hand, patients who are hemodynamically stable and have angiographic evidence of bleeding can be treated by transcatheter embolization (1).

For patients with chronic pancreatitis, the occurrence of an isolated splenic vein thrombosis is more common than thrombosis of the portal and superior mesenteric vein, in relation to the close proximity of the splenic vein to the pancreas (1, 6).

In our case study, a hepatic artery pseudoaneurysm occurred within the thrombosed portal vein of a patient with chronic pancreatitis. Furthermore, liver abscesses were also associated. Until now, the association of portal/splenic vein thrombosis, intrahepatic pseudoaneurysm, and liver abscesses has not been reported in patients with chronic pancreatitis.

A case of portal-splenic vein thrombosis accompanied with liver abscesses may suggest a case of pylephlebitis. Portal-mesenteric vein thrombosis, pylephlebitis and liver abscesses have been reported as rare complications of inflammatory bowel disease and appendicitis (7, 8). We believe that the portal vein thrombosis occurred as a complication of chronic pancreatitis, and the occurrence of pyephlebitis was probably due to a secondary infection at the portal vein thrombosis site. Next, the propagation of inflammation to the hepatic artery may be the cause of the pseudoaneurysm.

In our case study, a hepatic artery pseudoaneurysm was improved only with medical treatment. Spontaneous thrombosis of the visceral pseudoaneurysm has rarely been reported (9, 10). The suggested medical factors that may have contributed to the aneurysm thrombosis include decreased flow and increased coagulability of blood due to factors such as hypotension, dehydration, vasospasm, local damage to the arterial wall, and occult malignancy (11). However, none of these factors was present in our patient. The high ratio between aneurysmal size (maximum diame-

ter: 17 mm) and the aneurysmal neck size (about 1 mm), in our case, may be related to a spontaneous resolution. In aneurysms with a relatively small neck, intraluminal thrombosis cases have been documented (11, 12).

In conclusion, we experienced an extremely rare case of a hepatic artery pseudoaneurysm within the thrombosed portal vein in a patient with chronic pancreatitis.

References

1. Ismail HR, Marc CW. Vascular complications of pancreatitis. *J Pancreas* 2004;5:328-337
2. Suzuki T, Ishida H, Komatsuda T, Oyake J, Miyauchi T, Heianna J, et al. Pseudoaneurysm of the gastroduodenal artery ruptured into the superior mesenteric vein in a patient with chronic pancreatitis. *J Clin Ultrasound* 2003;31:278-282
3. Albertyn LE. Case report: Acute portal vein thrombosis. *Clinical Radiology* 1987;38:645-648
4. Kang M, Bapuraj JR, Khandelwal N, Kochhar R, Kalra N, Verma GR. Liver abscess associated with hepatic artery pseudoaneurysm with arteriovenous fistula: imaging and interventional management. *Acta Radiol* 2006;47:162-166
5. Udd M, Leppaniemi AK, Bidel S, Keto P, Roth WD, Haapiainen RK. Treatment of bleeding pseudoaneurysms in patients with chronic pancreatitis. *World J Surg* 2007;31:504-510
6. Weber SM, Rikkers LF. Splenic vein thrombosis and gastrointestinal bleeding in chronic pancreatitis. *World J Surg* 2003;27:1271-1274
7. Aguas M, Bastida G, Nos P, Beltran B, Grueso JL, Grueso J. Septic thrombophlebitis of the superior mesenteric vein and multiple liver abscesses in a patient with Crohn's disease at onset. *BMC Gastroenterol* 2007;12:7:22
8. Nishimori H, Ezoe E, Ura H, Imaizumi H, Meguro M, Furuhashi T, et al. Septic thrombophlebitis of the portal and superior mesenteric veins as a complication of appendicitis: report of a case. *Surg Today* 2004;34:173-176
9. Vanlangenhove P, Defreyne L, Kunnen M. Spontaneous thrombosis of a pseudoaneurysm complicating pancreatitis. *Abdom Imaging* 1999;24:491-493
10. Tang LJ, Zipser S, Kang YS. Temporary spontaneous thrombosis of a splenic artery pseudoaneurysm in chronic pancreatitis during intravenous octreotide administration. *J Vasc Interv Radiol* 2005;16:863-866
11. Brownlee RD, Tranmer BI, Sevvick RJ, Karmy G, Curry BJ. Spontaneous thrombosis of an unruptured anterior communicating artery aneurysm : an unusual cause of ischemic stroke. *Stroke* 1995;26:1945-1949
12. Black SPW, German WJ. Observation on the relationship between volume and size of the orifice of experimental aneurysms. *J Neurosurg* 1960;17:984-990

