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Case Report Open Access

The Rupture of Isolated Spontaneous Celiac Artery Dissection with Pseudoaneurysm: Report of a Case

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Abstract

Isolated spontaneous dissection of visceral artery without associated aortic dissection is rare, although more cases have recently been reported because of the rapid advancement of diagnostic imaging techniques. Complications are ischemia, aneurysm formation and rupture. We present a case with rupture of isolated dissection of the celiac artery with pseudoaneurysm formation. The patient was a 54-year-old male smoker without any recorded medical history, who underwent sonography, multidetector CT angiography (CTA), contrast-enhanced MR angiography (CE-MRA), and DSA. The final diagnosis was rupture of isolated celiac artery dissection with the formation of pseudoaneurysm. Resection of the pseudoaneurysm was performed. The postoperative course was uneventful except for biliary fistula resulting from ischemia and necrosis of compressed common bile duct. The patient was in good condition in follow-up. This case indicated noninvasive CTA and MRA had an important role in the detection and follow-up of celiac artery dissection and its complications.

Keywords: Celiac trunk dissection; Rupture; common hepatic artery; pseudoaneurysm

Introduction

Arterial dissection is defined as cleavage of the arterial wall by an intramural hematoma between two elastic layers. Aortic dissection has been widely reported and recognized. However, isolated spontaneous visceral artery dissection without aortic dissection has been reported rarely because of nonspecific symptoms and signs, which is usually diagnosed after fatal hemorrhage or ischemia [1]. Most visceral artery dissection reported are located in the superior mesentery artery, no more than 50 isolated spontaneous celiac artery dissection have been reported when we searched in Pubmed with the term of isolated spontaneous celiac artery dissection. However, the rupture of isolated celiac trunk dissection with pseudoaneurysm has rarely been reported [2], to the best of our knowledge. Herein, we report a case of the rupture of isolated spontaneous celiac artery dissection with a massive pseudoaneurysm formation.

Case Report

In 2012, a 54 year old male smoker was admitted into our hospital because of epigastric discomfort for one month, xanthochromia for 5 days, and weight loss of 8 kilograms. No any previous medical history has been reported. Blood liver function tests showed that total bilirubin value was 166.3 μmol/L (reference value of 1.7-17.1 μmol/L) and alanine transarninase 406 U/L (reference value of 5-40 u/L). Ultrasononograhy showed a cystic mass around pancreatic head. Then, contrast-enhanced CT of the abdomen and chest was performed. The aorta was normal; however, a dissection of the celiac artery was detected with an intimal flap in the celiac artery extending to the common hepatic artery and splenic artery (Figure 1A). A large aneurysm with the size of 5.0 cm×3.8 cm was visualized around the pancreas head resulting from the rupture of celiac artery dissection, rupture site can be clearly shown, but the common hepatic artery was not clearly visualized (Figure 1B and 1C). The pseudoaneurysm compressed the inferior segment of common bile duct resulting in dilated extra- and intra-hepatic bile ducts (Figure 1A). Three-dimensional contrast-enhanced MR angiography (CE-MRA) showed the similar findings as that in CTA (Figure 2), and magnetic resonance cholangiopancreatography (MRCP) showed the dilatation of intra- and extra-hepatic bile ducts (Figure 3A and 3B). DSA was then performed, demonstrating the diagnosis of the celiac artery dissection and aneurysm, rupture size and orifice but the common hepatic artery was not clearly visualized. With the consideration of high total bilirubin value, poor liver function and vaguely visualized hepatic artery at DSA, endovascular treatment was not considered.

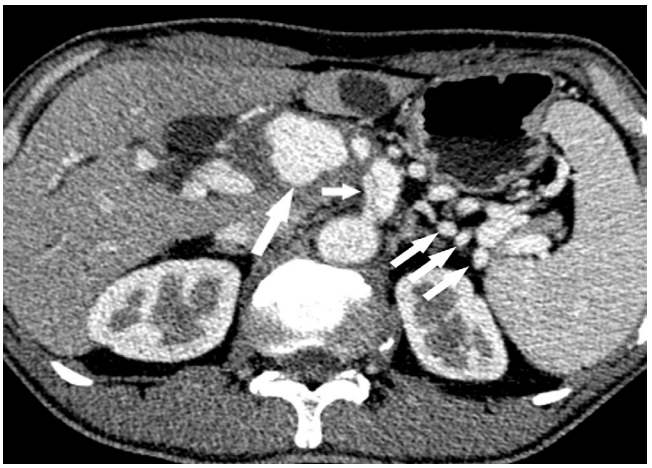

Figure 1A: CT finding of the celiac artery dissection.

Axial contrast-enhanced CT of the abdomen shows an intimal flap in the celiac artery (shortest arrow) and the rupture of the dissection and formation of pseudoaneurysm (long arrow), but the common hepatic artery was not clearly visualized. Three shorted arrows shows splenic artery.

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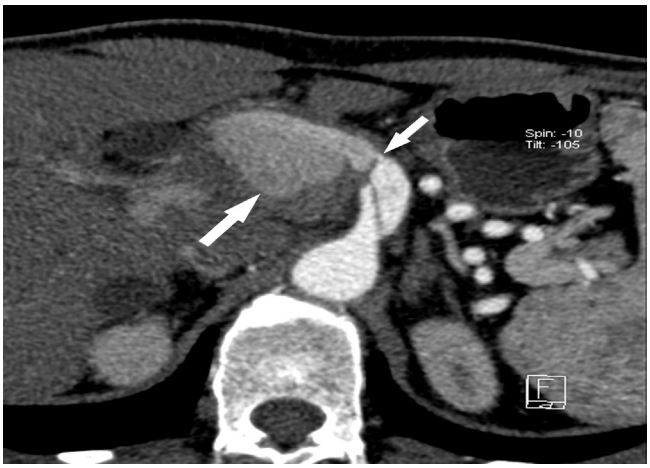

Figure 1B: CT finding of the celiac artery dissection.

Oblique reformatted CT image clearly shows the dissection rupture site and orifice (shortest arrow) and the pseudoaneurysm (long arrow).

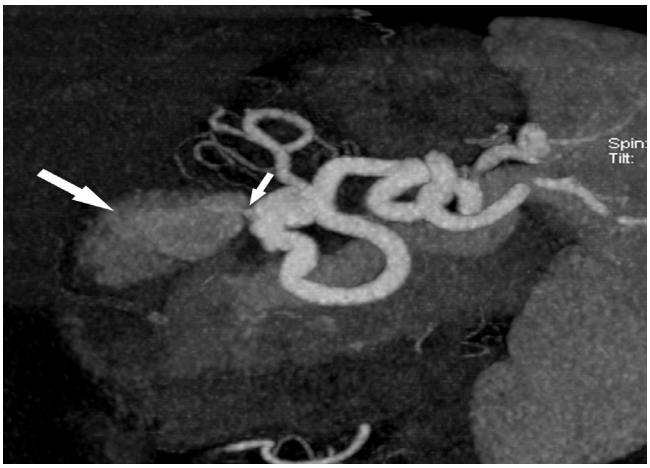

Figure 1C: CT finding of the celiac artery dissection.

Maximal intensity projection reformatted CT image shows the dissection rupture site and orifice (shortest arrow) and associated pseudoaneurysm (long arrow).

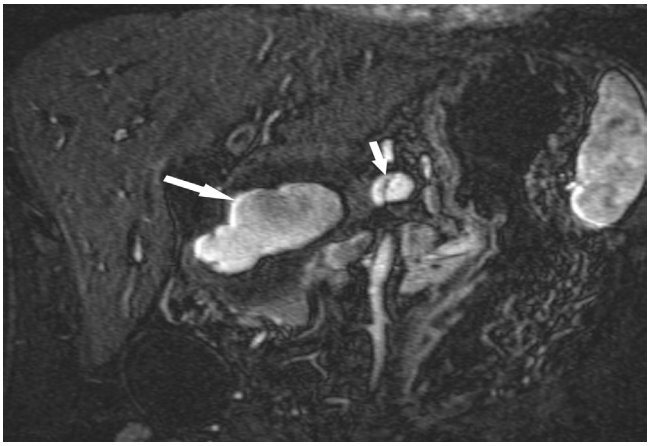

Figure 2: CE-MRA illustrates the celiac artery dissection (short arrow) and formation of pseudoaneurysm (long arrow).

Resection of the pseudoaneurysm was performed (Figures 4 and 5); however, the celiac artery dissection was conservatively managed. Some details about surgical procedures were as followed: an aneurysm bordering retroperitoneal pancreatic of about 10 cm long was visible when cut the gastrocolic ligament with ultrasonic knife and exposure of pancreatic. Along the edge of the pancreas, operators looked for splenic artery using ultrasonic knife carefully and separated splenic artery gap and its surrounding tissue and splenic vein carefully, wearing the 8th catheter to make traction. Separation along the splenic artery and its junction with hepatic artery, it is obvious that the aneurysm came from hepatic artery. Then they kept looking and separating to the depths of the celiac trunk and abdominal aorta and blocked blood flow with the 8th catheter. Hepatic artery aneurysm wall was then cut to exhausted accumulated blood in aneurysm. A cleavage was found in back wall of hepatic artery aneurysm. At last, they closed the common hepatic artery in the proximal of hepatic artery and loosened the ligation of the celiac axis to recover the celiac blood flow.

The postoperative course was uneventful except for biliary fistula resulting from the ischemia of the compressed common bile duct. Histopathological examination of the ruptured vessel confirmed

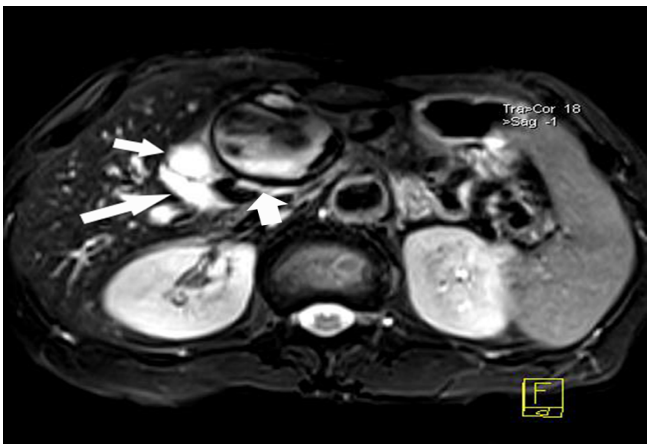

Figure 3A: Axial planar T2-wegithed MRI shows dilation of cystic duct (short arrow) and common bile duct (long arrow) compressed by pseudoaneurysm (fat short arrow).

Figure 3B: MRCP image demonstrates a cut-off of common bile duct (long arrow) and low biliary obstruction.

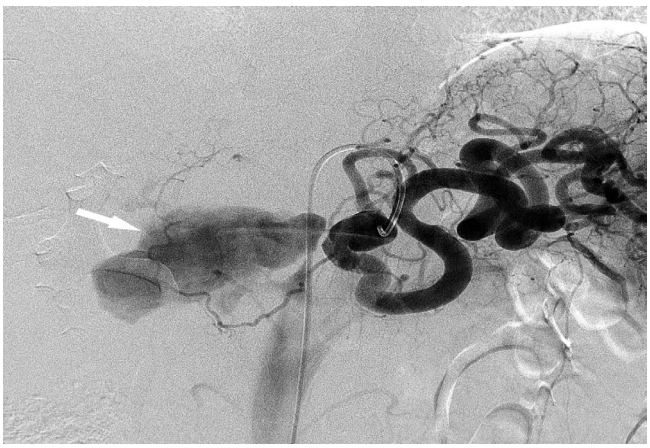

Figure 4: DSA demonstrates the diagnosis of the celiac artery dissection and aneurysm formation (arrow), the hepatic artery is not clearly visualized.

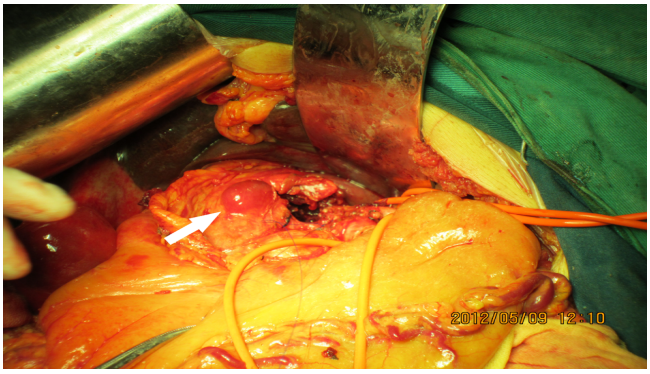

Figure 5: Intraoperative photo shows the pseudoaneurysm (arrow).

the artery dissection. The patient was discharged after 41 days after spontaneous cure of biliary fistula. Follow-up CTA showed disappeared pseudoaneurysm and unchanged celiac artery dissection. The patient was in good condition at the time of this writing.

Discussion

Isolated spontaneous celiac artery dissection is uncommon, the risk factors, causes, and natural history of isolated visceral artery dissection are unclear due to its rarity. The average age of patients is approximately 55 years, and men outnumber women in a ratio of 5:1 [3]. Hypertension and smoking are considered to be risk factors. Other possible causes mentioned include atherosclerosis, fibromuscular dysplasia, iatrogenic damages, and vasculitis in the majority of the cases reported [4]. Also there is one case reported that rapidly increasing intraperitoneal pressure may be a rare cause of isolated visceral artery dissection [5].

Contrast-enhanced CTA is considered the primary technique in diagnosing celiac artery dissection; however, MR angiography, sonography, also can be used [6]. CTA findings include an intimal flap, which is pathognomonic, or eccentric mural thrombus in the celiac lumen, which should raise suspicion for dissection. Because the intimal flap is not always visible, mural thrombus may be the only clue to the presence of dissection. In such instances, misdiagnosis of the dissection as thromboembolization can lead to unnecessary pharmacologic thrombolysis [7]. D'Ambrosio et al. [4] reported that infiltration of the fat surrounding the celiac axis was a secondary sign of acute spontaneous celiac artery dissection. Although a small cohort of patients was described, this finding may be predictive of the acuity of dissection and predisposition toward extension of dissection into adjacent vessels. Multi-detector CTA, in our case, clearly visualized the celiac artery dissection and associated pseudoaneurysm; even the rupture location and orifice was clearly shown, which is very important for clinical management for this patient. Thus, CTA should be the optimal modality to demonstrate the diagnosis and provide detailed preoperative information of the celiac artery dissection for the patients suspected of this entity.

Although many treatment strategies have been used in the patients with celiac artery dissection [8-10], however, no consensus has been reached. Certainly, emergent exploration and surgical repair of the dissection should be performed if there is any evidence of transmural bowel infarction or active bleeding. Endovascular stenting and/or embolization can also be used as an alternative treatment if indicated. Prophylactic surgical or endovascular therapy does not appear warranted. Some recent studies also indicate conservative treatment is suitable strategy in patients with superior mesentery artery dissection [11,12]. Our patient underwent the resection of pseudoaneurysm because of the rupture of the celiac artery dissection; however, conservative treatment for the celiac artery dissection was recommended. The patient was not administrated any medical treatment, such as anticoagulation or antiplatelet therapy. Prophylactic surgical or endovascular therapy does not appear warranted, and prophylactic anticoagulation or antiplatelet therapy is also not recommended, which will cause coagulation disorder. Emergent surgical repair of the dissection should be performed if there is any evidence of visceral ischemia, active bleeding or progression of the dissection.

In conclusion, isolated spontaneous celiac artery dissection is uncommon. We reported a rare case of isolated spontaneous celiac artery dissection with pseudoaneurysm formation successfully resected. Non-invasive CTA has an important role in the detection and follow-up of isolated spontaneous celiac artery dissection.

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