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**Left hepatic artery pseudoaneurysm complicating endoscopic retrograde cholangiopancreatography: A case report**

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**Abstract**

**BACKGROUND**

Pseudoaneurysms of the hepatic artery or its branches have been reported following abdominal trauma, iatrogenic injury at the time of many operations such as percutaneous transhepatic biliary drainage and cholecystectomy. Hepatic artery pseudoaneurysms after endoscopic retrograde cholangiopancreatography (ERCP) are uncommon and potentially life threatening and should be identified and treated rapidly.

**CASE SUMMARY**

We report a case of intra-abdominal hemorrhage secondary to a left hepatic artery pseudoaneurysm resulting from guide wire injury at ERCP. The patient primary diagnosis was acute biliary pancreatitis with cholangitis, he underwent ERCP on the third day of admission. During ERCP, the left intrahepatic bile duct was cannulated three times. Over the sixth day, Contrast enhanced computed tomography scan demonstrated left hepatic lobe contusion and a pseudoaneurysm formation. The patient was successfully treated with the embolization of a small branch of left hepatic artery angiographically.

**CONCLUSION**

The common complications of ERCP are pancreatitis, bleeding and perforation. <sup>1</sup>False aneurysms occur as a result of damage to the wall of an artery. As far as we know, it is rare complication has been reported following ERCP. <sup>1</sup>We advise urgent referral for angiographic embolization in this situation to avoid aneurysm rupture.

## **INTRODUCTION**

ERCP has been widely practiced for the diagnosis and treatment of biliary-pancreatic diseases. bleeding as a result of <sup>3</sup>endoscopic sphincterotomy has been reported in 1% to 10% of the patients. Rarely<sup>[1]</sup>, significant bleeding may occur secondary <sup>3</sup>to the injury to the branches of the gastroduodenal artery. Although secondary hemorrhage from pseudoaneurysms developed in the branches of the gastroduodenal artery or pancreatoduodenal artery have been reported<sup>[2-4]</sup>, Pseudoaneurysms developing from the branches of hepatic artery following ERCP are rarely reported<sup>[3-5]</sup>, and most pseudoaneurysms are suspected associated with stent insertion or endoscopic sphincterotomy or inflammatory etiologies such as pancreatitis. We report one case of an 73-year-old man who underwent ERCP for relieving cholangitis and stone removal, and subsequently developed intra-abdominal hemorrhage secondary to a left hepatic artery pseudoaneurysm, which was managed successfully with embolization.

## **<sup>2</sup>CASE PRESENTATION**

### ***Chief complaints***

A 70-year-old Chinese man presented with abdominal pain for 2 days.

### ***History of present illness***

He had acute cholangitis with fever, upper abdominal pain, vomiting and jaundice. The pain was constant, localized to upper abdomen.

### ***History of past illness***

The patient was previously healthy. The patient had <sup>2</sup>no history of abdominal surgery, toxicity, or radiation exposure.

### *Personal and family history*

The patient denied any family history of biliary tract and pancreatic diseases.

### *Physical examination*

Temperature was 99.4°F, pulse was 96 beats/minute, respiration was 18 times/minute and blood pressure was 127/80mmHg, O<sub>2</sub> saturation 96% on room air. The skin sclera yellow dyed, the abdomen was soft, had no distension, had tenderness <sup>5</sup>in the upper abdomen but no rebound tenderness. The Murphy's sign was positive.

### *Laboratory examinations*

Laboratory data were the following: white blood cell count,  $12.0 \times 10^9$  /L [normal  $(4-10) \times 10^9$  /L]; neutrophils, 96.9% (40%-75%); hemoglobin, 132 g/dL (94-122 g/L); serum C-reactive protein, 200mg/L (0-8mg/L); procalcitonin, 60ng/mL (0-0.05ng/mL); aspartate aminotransferase, 31U/L (15-40U/L); alanine aminotransferase, 63U/L (9-50U/L); alkaline phosphatase, 177U/L (40-150U/L); total bilirubin, 92.6umol/L (3-22umol/L); amylase, 100U/L (30-110U/L).

### *Imaging examinations*

Computed tomography (CT) and magnetic resonance cholangiopancreatography (MRCP) were performed, and demonstrated severe dilated common bile duct of 2.5cm, many common bile duct stones, gallstone and cholecystitis. A primary diagnosis was acute biliary pancreatitis with cholangitis. Initially, patient was managed conservatively with antibiotic of Cefperazone-Sulbactam and ornidazole, on the third day of admission, he underwent ERCP.

### **FINAL DIAGNOSIS**

Contrast enhanced computed tomography scan on arterial phase demonstrated left hepatic lobe contusion with hemoperitoneum and a pseudoaneurysm formation.

### **TREATMENT**

The patient underwent blood transfusion and albumin, then had stable vital signs. Transarterial angiography revealed a pseudoaneurysm in the distal left hepatic artery. Transcatheter embolization of hepatic artery was performed using Ivalon particles and 2-3mm diameter platinum coil spring, postembolization angiogram revealed no contrast filling of the aneurysm

### **OUTCOME AND FOLLOW-UP**

The bleeding stopped, we did not perform abdominal paracentesis drainage for hemoperitoneum. Although the patient had left lobe contusion, there was no any evidence of bile leak. The patient had pleural effusion, which was caused by hypoproteinemia, then he underwent pleural puncture and drainage and made full recovery, the patient was discharged home after a few weeks. According to the guidelines, cholecystectomy was recommended, but he refused, he decided to recover for some time before coming back for surgery. During follow-up, the patient developed choledocholithiasis, biliary tract infection and cholecystitis again, he underwent laparoscopic cholecystectomy, choledocholithotomy with choledochoscope and t duct drainage. After that surgery, he did not develop abdominal pain, obstructive jaundice or pancreatitis, he had completely recovered.

### **DISCUSSION**

<sup>1</sup>Complications of ERCP are divided into those related to sedation, endoscopy, cannulation and contrast medium injection and therapeutic procedures<sup>[6]</sup>. Pseudoaneurysms developing from the branches of hepatic artery following ERCP are rarely reported<sup>[3-5]</sup>, in those cases, one patient had a history of plastic stent implantation, the author consider <sup>4</sup>hepatic pseudoaneurysm might have formed as a result of

traumatic stimulation related to the stent placement ,because it had been placed improperly and its tip located at the site of the aneurysm<sup>[4]</sup>. Another patient had cholangitis and underwent a open cholecystectomy, which might be implicated in the information of the false aneurysm<sup>7</sup>. In our patient, despite the patient had cholangitis and biliary pancreatitis, which has been reported the cause of the pseudoaneurysm<sup>[7]</sup>, the pseudoaneurysm is believed to be procedure-related, because CT and MRCP did not disclose any hematoma or pseudoaneurysm before ERCP. Although our patient placed a biliary stent during ERCP, which may have resulted in the formation of a pseudoaneurysm, the pseudoaneurysm was located on the left hepatic artery deep within the left lobe of the liver, far from the stent. In addition, the endoscopist review and angiography showed guide wire entered the left intrahepatic bile duct several times during ERCP. We believe that these findings support our hypothesis that the guide wire penetrated through the biliary tree and traumatized the artery during the ERCP. Hepatic artery pseudoaneurysm as a complication of guide wire associated injury during ERCP is more common than we believe<sup>[8,9]</sup>. Although over the last decade, more attention had been paid to guide wire related complications, and the use of less traumatic guide wires has likely reduced the frequency of iatrogenic hemobilia<sup>[10]</sup>. We want to suggest again that endoscopists ensure the 'soft' of the guide wire is inserted and should avoid the guide wire going too far into the biliary tree. Therapeutic angiographic embolization is the preferred choice for the treatment of pseudoaneurysms, because transarterial angiography can find the precise site of vascular injury, and give a treatment at the same time<sup>[11]</sup>.

## CONCLUSION

False aneurysms is rare complication has been reported following ERCP. <sup>1</sup> We advise urgent referral for angiographic embolization in this situation to avoid aneurysm rupture. Although surgical intervention is another option, surgery is reserved after failure of selective embolization. In the present case, selective embolization of hepatic artery branch has been proven safe and effective.

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