

Hepatic Artery Pseudoaneurysm Associated with Plastic Biliary Stent

Jeong Youp Park, Hanjak Ryu, Seungmin Bang, Si Young Song, and Jae Bock Chung

Division of Gastroenterology, Institute of Gastroenterology, Department of Internal Medicine, Yonsei University College of Medicine, Seoul, Korea.

The increased use of interventional procedures and laparoscopic cholecystectomy in the management of hepatobiliary disorders is associated with an increased incidence of hemobilia and hepatic artery aneurysm. Here we report a case of hepatic artery pseudoaneurysm associated with a plastic biliary stent. Multiple factors were involved in the formation of the hepatic artery aneurysm (HAA) and it was successfully treated by embolization.

Key Words: Hemobilia, hepatic artery aneurysm, biliary stent, embolization

INTRODUCTION

The increased use of interventional procedures and laparoscopic cholecystectomy in the management of hepatobiliary disorders is associated with an increased incidence of hemobilia and HAA.¹⁻³ HAA accounts for nearly 10% of hemobilia cases.⁴ Hemobilia and HAA have been associated with percutaneously placed stents⁵⁻⁷ and HAA with endoscopically placed expandable metal stents.^{8,9} A single case has been reported of massive hemobilia due to HAA after the extraction of a plastic biliary endoprosthesis.¹⁰ Here we report a case of hepatic artery pseudoaneurysm associated with a plastic biliary stent. Multiple factors were involved in the formation of the HAA and it was successfully managed by embolization.

CASE REPORT

A 62-year-old woman was admitted to the hospital with fever and jaundice. She had been diagnosed with Klatskin tumor, Bismuth type IIIa. Two months before admission, percutaneous transhepatic biliary drainage catheters were inserted to segment 5 and 6 of the liver, and a plastic biliary stent (pigtail type, 10Fr, 10cm) was inserted into the left hepatic bile duct. One month before admission she underwent concurrent chemoradiotherapy. Computerized tomography shortly after chemoradiotherapy showed no dilatation of intrahepatic bile duct. On admission, the physical examination revealed jaundice and fever. Computerized tomography at admission showed multiple abscesses in both lobes of the liver and intrahepatic bile duct dilatation, but the percutaneous biliary drainage catheter and plastic biliary stent were well positioned (Fig. 1). Laboratory evaluation showed an elevation in total bilirubin to 11.2 mg/dL and in white blood cell count to 18360/ μ L. The level of hemoglobin was 10.4 g/dL, and the hematocrit was 31.4%. Two days after admission hematemesis occurred. Hemoglobin levels dropped to 7.7 g/dL and hematocrit to 23.0%. Endoscopic evaluation showed hemobilia and migration of the biliary stent. Hepatic angiography revealed a pseudoaneurysm of 2 cm in size at the proximal portion of segment 3 branch of the left hepatic artery where the tip of the plastic biliary stent was originally positioned prior to migration (Fig. 2). Two tornado coils, 4 mm and 3 mm (Cook, Denmark) were placed at the aneurysm. However, hematemesis occurred again four days after embolization, and a second angiography was

Received December 2, 2005

Accepted June 20, 2006

Reprint address: requests to Dr. Jae Bock Chung, Division of Gastroenterology, Institute of Gastroenterology, Department of Internal Medicine, Yonsei University College of Medicine, 250 Seongsanno, Seodaemun-gu, Seoul 120-752, Korea. Tel: 82-2-2228-1945, Fax: 82-2-393-6884, E-mail: jbchung@yumc.yonsei.ac.kr

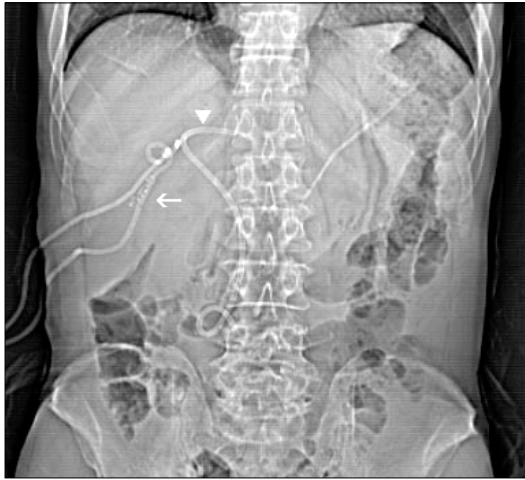


Fig. 1. Abdominal film shows well positioned percutaneous transhepatic biliary drainage catheter (arrow) and plastic biliary stent (arrowhead) at the time of admission.

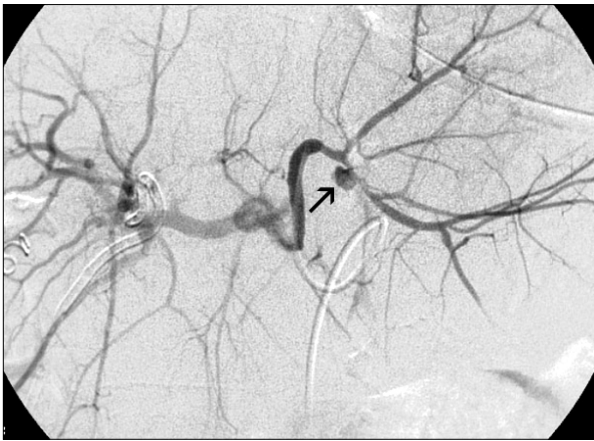


Fig. 2. Hepatic angiogram shows about pseudoaneurysm (arrow) at proximal segment 3 branch of the left hepatic artery.

performed, involving embolization with 1 ml of a mixture of histoacryl 1 ml and lipiodol 2 ml. After the second embolization, cholestasis improved and no evidence of bleeding was noted. The patient was discharged 20 days later.

DISCUSSION

Many factors are associated with hemobilia, including aneurysm of the hepatic artery.^{4,11,12} In this case, we suspect that the stent was the cause of the aneurysm because the tip of the stent was at the site of the aneurysm. However, this may

not be the only cause. Before the episode of hemobilia, we found multiple abscesses in the liver and elevated levels of bilirubin, suggesting increased intraductal pressure and cholangitis, and both could affect the formation of aneurysm.⁸ It has also been reported that radiation therapy increases the risk of stent-related complications.¹³ It therefore seems likely that the stent induced the aneurysmal change of the hepatic artery in combination with radiation therapy, increased intrabiliary pressure, and cholangitis. Bleeding from the aneurysm started when the stent migrated, similar to the previously documented case where hemobilia occurred after the extraction of a plastic biliary stent.¹⁰

Since the mortality rate associated with rupture is 21%, aggressive treatment is recommended. Treatment modalities include embolization, reconstructive surgery, or ligation. For intrahepatic artery aneurysms, such as that presented here, embolization is the accepted treatment of choice.^{1,2}

In summary, we report a case of hepatic artery pseudoaneurysm associated with a plastic biliary stent and successfully treated by embolization. The possibility of hepatic artery aneurysm should be suspected when hemobilia is associated with the migration of a biliary plastic stent.

REFERENCES

- Green MH, Duell RM, Johnson CD, Jamieson NV. Hemobilia. *Br J Surg* 2001;88:773-86.
- O'Driscoll D, Olliff SP, Olliff JF. Hepatic artery aneurysm. *Br J Radiol* 1999;72:1018-25.
- Rai R, Rose J, Manas D. An unusual case of hemobilia. *Eur J Gastroenterol Hepatol* 2003;15:1357-9.
- Harlaftis NN, Akin JT. Hemobilia from ruptured hepatic artery aneurysm. Report of a case and review of the literature. *Am J Surg* 1977;133:229-32.
- Vanangunas A, Ehrenpreis E. Endoscopic evacuation of hemobilia induced by large bore self-expanding biliary mesh stent. *Gastrointest Endosc* 1991;37:101-3.
- Lammer J, Neumayer K. Biliary drainage endoprosthesis: experience with 201 placements. *Radiology* 1986;159:625-9.
- Mueller PR, Ferrucci JT Jr, Teplick SK, vanSonnenberg E, Haskin PH, Butch RJ, et al. Biliary stent endoprosthesis: analysis of complications in 113 patients. *Radiology* 1985;156:637-9.
- Monroe PS, Deeter WT, Rizk P. Delayed hemobilia secondary to expandable metal stent. *Gastrointest*

- Endosc 1993;39:190-1.
9. Rai R, Rose J, Manas D. Potentially fatal haemobilia due to inappropriate use of an expanding biliary stent. *World J Gastroenterol* 2003;9:2377-8.
 10. Conio M, Caroli-Bosc FX, Buckley M, Chiamondia M, D'Addazio G, Munizzi F. Massive hemobilia after extraction of plastic biliary endoprosthesis. *J Clin Gastroenterol* 1997;25:706.
 11. Strickland SK, Khoury MB, Kiproff PM, Raves JJ. Cystic artery pseudoaneurysm: a rare cause of hemobilia. *Cardiovasc Intervent Radiol* 1991;14:183-4.
 12. Fagan EA, Allison DJ, Chadwick VS, Hodgson HJ. Treatment of haemobilia by selective arterial embolization. *Gut* 1980;21:541-4.
 13. Siersema PD, Hop WC, Dees J, Tilanus HW, van Blankenstein M. Coated self-expanding metal stents versus latex prostheses for esophagogastric cancer with special reference to prior radiation and chemotherapy: a controlled, prospective study. *Gastrointest Endosc* 1998;47:113-20.