

# Atypical Presentation of Left Hepatic Artery Pseudoaneurysm

Murk Niaz, MBBS<sup>1</sup>, Muhammad Arsalan Khan, FCPS<sup>1</sup>, Shah Muhammad, FCPS<sup>1</sup>, and Abdaal Waseem Khan, FRCS<sup>1</sup>

<sup>1</sup>Department of General Surgery, Sindh Institute of Urology and Transplantation, Karachi, Pakistan

## ABSTRACT

Hepatic artery pseudoaneurysm (HAP) commonly occurs after trauma and is rarely seen as a complication of pyogenic liver abscess. Patients with HAP can present with hemobilia secondary to arterobiliary fistula. We report a case of a 29-year-old woman who presented with abdominal pain, fever, and jaundice, who was diagnosed to have a pyogenic liver abscess that had led to the development of left HAP, presenting with hemobilia. The patient was successfully managed with endovascular coil embolization.

## INTRODUCTION

Hepatic artery pseudoaneurysms (HAPs) are the second most common splanchnic artery pseudoaneurysms after splenic artery pseudoaneurysms.<sup>1</sup> There has been an increase in the incidence of hepatic artery aneurysms in recent times, with half of these being pseudoaneurysms. The most common cause of HAP is trauma that can be blunt, penetrating, or iatrogenic. This is due to an increase in the number of percutaneous diagnostic and therapeutic procedures such as liver biopsy and percutaneous transhepatic biliary drainage along with laparoscopic cholecystectomies and liver transplantation surgeries.<sup>2</sup> HAPs can also occur because of surrounding infection or inflammation in the gallbladder or pancreas.<sup>3</sup> However, HAPs are rarely seen as a complication of liver abscess. HAPs can present with hemobilia, abdominal pain, and jaundice. However, patients can also present with the classic Quinke triad (jaundice, biliary colic, and gastrointestinal bleeding).<sup>4</sup> We report a case of HAP secondary to a pyogenic liver abscess that presented with hemobilia, high-grade fever, upper abdominal pain, and jaundice.

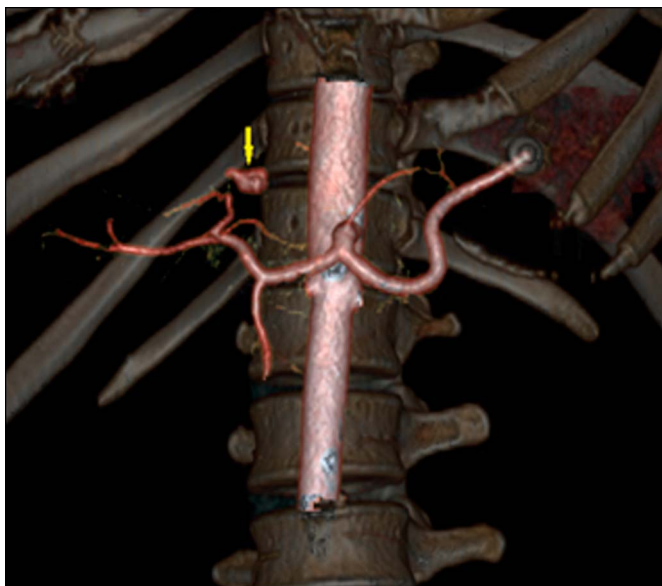
## CASE REPORT

A 29-year-old woman presented to our outpatient department with a history of high-grade fever, right hypochondria and epigastric pain, vomiting, and yellow discoloration of the eyes for the past 20 days. According to the patient, she developed pain in the right upper quadrant of the abdomen radiating to the back and epigastric region that had increased in intensity over time. The pain was associated with occasional green-colored vomiting. She also described multiple episodes of fever up to 103°F associated with rigors and chills. On examination, she was vitally stable, with no fever documented at admission, but was jaundiced and anemic. On abdominal examination, there was tenderness over the right upper quadrant with the liver palpable 3 cm below the costal margin. Laboratory test results revealed hemoglobin 8.2 g/dL, white blood cell count 20,000/mm<sup>3</sup>, platelet count 148,000/mm<sup>3</sup>, abnormal liver function tests (total bilirubin 2.51 mg/dL, direct bilirubin 1.26 mg/dL, alkaline phosphatase 283 IU/L, aspartate aminotransferase 23 U/L, alanine aminotransferase 67 U/L, and gamma-glutamyl transferase 303U/L), amylase 193 U/L, negative hepatitis B surface antigen, and positive anti-hepatitis C virus antibody. Ultrasound of the abdomen was obtained that showed 2 heterogeneous lesions, likely hepatic abscesses in the liver, one involving the segments II/III and IV measuring 5.6 × 6.2 cm and another in the segments V and VI measuring 11.9 × 6.9 cm in size with mild intrahepatic ductal dilation and a common bile duct measuring 0.4 cm. Antibiotic tazobactam/piperacillin was started empirically along with intravenous fluid and antiemetics. An ultrasound-guided percutaneous drain using a 12-Fr pigtail catheter was placed in the larger of the 2 liver lesions, which resulted in the drainage of hemorrhagic fluid. The fluid was sent for culture, which grew *Escherichia coli* sensitive to antibiotic tazobactam/piperacillin, which had already been started empirically. *Entamoeba histolytica* serum immunoglobulin G (IgG) was negative. The percutaneous pigtail catheter continued to drain hemorrhagic fluid at the rate of approximately 400 mL/24 hours. On day 4 of the admission, the complete blood count showed a drop in the hemoglobin to 4.1 g/dL, white blood cell count of 6,500/mm<sup>3</sup>, and platelet count of 565,000/mm<sup>3</sup>. The patient was transfused 2 pints of packed cell volume that

increased the hemoglobin to 7.9 g/dL. On day 8 of the admission, the patient developed 1 episode of melanic stools with no history of melena. Upper gastrointestinal endoscopy was performed that showed a shallow ulcer in the distal duodenum with no active bleeding. The biopsy of antral tissue showed moderate chronic active nonspecific gastritis. On day 11 of the admission, with concern for hemobilia, earlier planned endoscopic retrograde cholangiopancreatography was deferred. A computed tomography angiogram was obtained instead, which demonstrated a large abscess cavity measuring  $16.4 \times 6.0 \times 9.2$  cm in both lobes of the liver with the pigtail catheter tip in situ along with a small pseudoaneurysm arising from the sub-branch of the left hepatic artery measuring  $0.9 \times 0.9$  cm just after it enters the liver parenchyma (Figure 1). Superselective angioembolization of the branch of the left hepatic artery pseudoaneurysm was performed (Figures 2 and 3). The output from the pigtail catheter decreased over the following few days with 30 mL/24 hours on the fourth day after the angioembolization. The patient improved clinically and had static hemoglobin levels after the procedure. On the sixth day after the procedure, the patient was discharged with planned weekly follow-ups and monitoring of the drain output. The drain was eventually removed 1 week after discharge when the output reduced to less than 5 mL/24 hours.

## DISCUSSION

HAPs are mostly asymptomatic and found incidentally in non-traumatic cases.<sup>4</sup> In some cases, the patient can present with hemobilia because of communication with the gallbladder and biliary radicles through an arterobiliary fistula. The Quincke triad is the classic presentation of hemobilia that includes right upper quadrant abdominal pain, jaundice, and upper gastrointestinal bleeding. It is very rare to see all 3 present together and occurs in only 22%–35% of the cases.<sup>5</sup> Hemobilia can lead to the

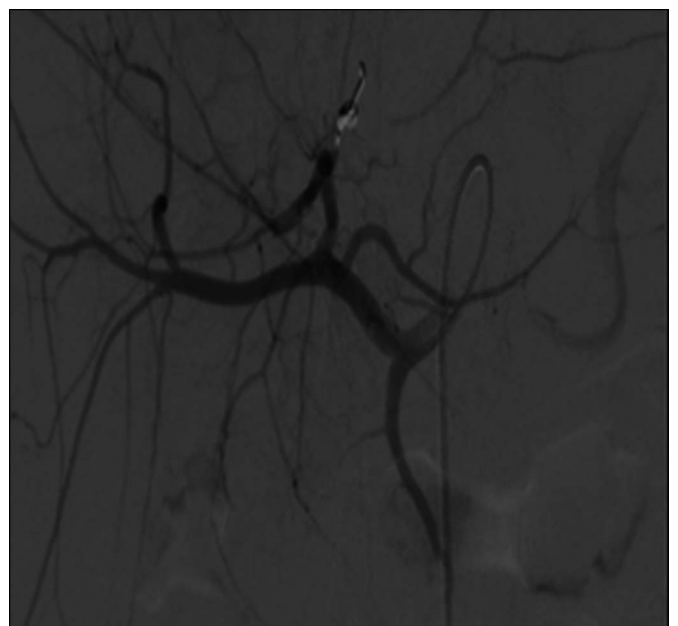


**Figure 1.** Computed tomography angiogram shows a left hepatic artery sub-branch pseudoaneurysm.



**Figure 2.** Arteriogram showing the left hepatic artery sub-branch pseudoaneurysm.

development of blood clots in the biliary tree, which can lead to obstructive jaundice and right upper quadrant or epigastric pain.<sup>3</sup> HAP associated with a liver abscess in the absence of iatrogenic injury has been rarely reported. There have been a few cases of amoebic liver abscess reported leading to HAP,<sup>1,6–8</sup> but only a couple of cases have been reported to date owing to pyogenic liver abscess.<sup>1,9</sup> The pathogenesis of HAP secondary to liver abscess is not clearly defined. However, one of the suggested causes is that the abscess can spread to the surrounding liver tissue and cause erosion of the hepatic artery wall, leading to the formation of an arterobiliary fistula and pseudoaneurysm.<sup>9</sup> In such a case, the patient may present with hemobilia, which was the presentation in our case. Most HAPs are extrahepatic in location comprising approximately 80%, with the common hepatic artery



**Figure 3.** Angiogram showing complete occlusion of the left hepatic artery sub-branch pseudoaneurysm after coil embolization.

as the most common site of extrahepatic HAP, followed by right hepatic and left hepatic arteries being the least common locations.<sup>2</sup> Intrahepatic HAPs occur in 20% of the cases and are found more frequently in the right hepatic artery.<sup>2</sup> The treatment of choice in HAPs is endovascular coil embolization of the feeding artery because it has a lower rate of morbidity and mortality as compared with conventional surgical intervention, which involves hepatic artery ligation or hepatic resection.<sup>10</sup> HAP should be kept in the differentials of a patient with hemobilia because significant mortality can be prevented with timely management in such cases.

HAP secondary to pyogenic liver abscess is a rare presentation. Patients with hemobilia, abdominal pain, and jaundice with no history of trauma should raise a suspicion of HAP. Careful attention should be given to patients with liver abscess because of the rare but fatal vascular complications reported. Angioembolization is a safe and effective treatment modality for HAP. Prompt workup should be advised in such cases to prevent morbidity and mortality-related to rupture and bleeding.

## DISCLOSURES

Author contributions: All authors contributed equally to this article. M. Niaz is the article guarantor.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received August 31, 2021; Accepted April 25, 2022

## REFERENCES

1. Kim MD, Kim H, Kang SW, Jeong BG. Nontraumatic hepatic artery pseudoaneurysm associated with acute leukemia: A possible complication of pyogenic liver abscess. *Abdom Imaging*. 2002;27(4):458–60.
2. Arneson MA, Smith RS. Ruptured hepatic artery aneurysm: Case report and review of literature. *Ann Vasc Surg*. 2005;19(4):540–5.
3. 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(2):162–6.
4. Singh P, Scibelli N, Gosal K, Bostick A, Morgan DC. Hepatic artery pseudoaneurysm presenting as gastrointestinal hemorrhage. *Cureus*. 2021;13:e14190.
5. Luckhurst CM, Perez C, Collinworth AL, Trevino JG. Atypical presentation of a hepatic artery pseudoaneurysm: A case report and review of the literature. *World J Hepatol*. 2016;8(18):779–84.
6. Gopanallikar A, Rathi P, Sawant P, Gupta R, Dhadphale S, Deshmukh HL. Hepatic artery pseudoaneurysm associated with amoebic liver abscess presenting as upper GI hemorrhage. *Am J Gastroenterol*. 1997;92(8):1391–3.
7. Yadav AK, Gupta S, Hariprasad S, Kumar A, Ghuman SS, Gupta A. Amoebic liver abscess with hepatic artery pseudoaneurysm: Successful treatment by interventional radiology. *J Clin Exp Hepatol*. 2015;5(1):86–8.
8. Khan A, Pal KM, Khan H. Hepatic artery pseudoaneurysm; a rare complication of amoebic liver abscess. *JPMA J Pakistan Med Assoc*. 2011;61(8):839–40.
9. Lee JY, Lee HN, Lee WH, Shin HC, Kim SS, Hwang JA. Liver abscess caused by *Klebsiella oxytoca* with hepatic artery pseudoaneurysm: A case report. *J Korean Soc Radiol*. 2020;81(6):1448–52.
10. Berry R, Han JY, Kardashian AA, LaRusso NF, Tabibian JH. Hemobilia: Etiology, diagnosis, and treatment. *Liver Res*. 2018;2(4):200–8.

**Copyright:** © 2022 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of The American College of Gastroenterology. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.