

# Jaundice, occult blood and acute cholecystitis: hemobilia as the initial presentation of acute cholecystitis complicated by a pseudoaneurysm

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## ABSTRACT

Identifying the presence of hemobilia can be clinically important since it might change the therapeutic approach to patient management. Here, we report a 56-year-old man with clinical symptoms of acute cholecystitis. Multidetector-row computed tomography of the abdomen showed a ruptured pseudoaneurysm arising from the right hepatic artery. Angiography, with transarterial coil embolization of the pseudoaneurysm, was performed before surgery to reduce the risk of hemostatic complications.

**Key words:** pseudoaneurysm, hepatic artery, hemobilia, multidetector-row computed tomography, transarterial embolization

## Introduction

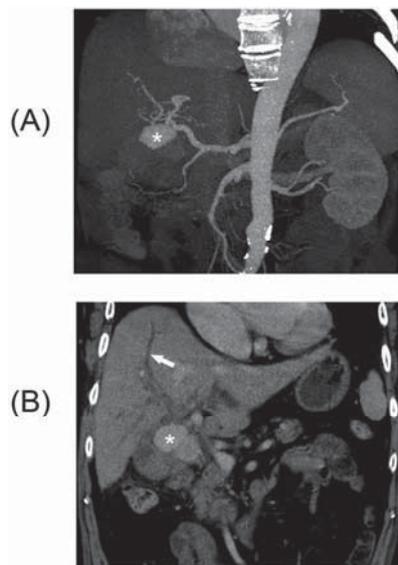
Hemobilia can be easily missed without a high index of suspicion. However, identifying the presence of hemobilia, in a patient with acute cholecystitis, can be crucial since it might alter the therapeutic approach. We report a patient who was found to have occult blood in the stool and hyperbilirubinemia, in addition to classical physical and sonographic findings of acute cholecystitis. Enhanced computed tomography (CT) of the abdomen suggested the diagnosis of acute cholecystitis complicated

by a pseudoaneurysmal formation of the right hepatic artery. Trans-arterial embolization (TAE) was performed to avoid potential haemostatic complications during surgery.

## Case report

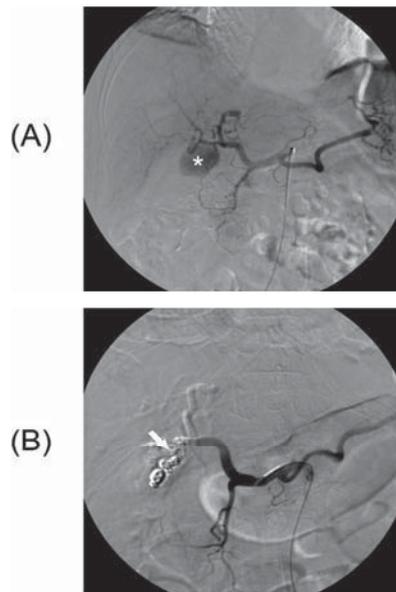
A 56-year-old man presented to our emergency department with a 2-day history of intermittent right-upper-quadrant abdominal pain, passage of tarry stools (melena) and fever. He denied having any history of trauma, systemic or family illness. Physical examination disclosed a fever (38.3°C), mildly icteric sclera and a positive Murphy's sign. Laboratory examinations revealed leucocytosis (16,500/mm<sup>3</sup> with segmented neutrophils of 89.6%), normocytic

anemia (11.3 mg/dL), elevated alanine aminotransferase (57 U/L), and hyperbilirubinemia (direct bilirubin 2.1 mg/dL, total bilirubin 3.2 mg/dL, normal 0–0.8 mg/dL). There was a positive stool guaiac test that confirmed the presence of fecal occult blood. The remaining laboratory tests, including a platelet count, amylase and albumin levels, prothrombin time/partial thromboplastin time and renal function, were normal. An ultrasound of the whole abdomen revealed multiple gallstones with acoustic shadowing, increased gallbladder wall thickness and “sonographic” Murphy's sign, confirming the diagnosis of acute cholecystitis. However, in view of the findings of hyperbilirubinemia, a diagnosis of



**Figure 1a.** The reformatted CT image using a volume rendering technique showing a giant saccular aneurysm (asterisk), measuring 2.9x3.0x3.7 cm, arising from the right hepatic artery. **1b.** The coronal reconstructed CT image shows dilatation of the intra-hepatic ducts (arrow). There is no evidence of choledocholithiasis.

choledocholithiasis or ascending cholangitis should be suspected; in addition, the presence of melena raised the concern of hemobilia. An enhanced multidetector-row computed tomography (MDCT) of the abdomen was performed and was consistent with the sonographic findings of acute cholecystitis. A low-attenuation mass just medial to the gallbladder in the non-enhancing imaging was noted. The post-enhanced imaging identified that the mass had the same high attenuation as the aorta, indicating the presence of a vascular lesion. The reformatted CT images, using a volume rendering technique, showed a giant saccular aneurysm, measuring 2.9x3.0x3.7 cm, arising from the right hepatic artery (figure 1a). Dilatation of the intra-hepatic ducts was also demonstrated by the coronal reconstructed CT images (figure 1b). Digital subtraction angiography further confirmed the diagnosis of pseudoaneurysm of the right hepatic artery. Trans-arterial embolization with



**Figure 2a.** Digital subtraction angiography confirms that the pseudoaneurysm (asterisk) is arising from the right hepatic artery. **2b.** Trans-arterial embolization with platinum coils (arrow) was performed to totally obstruct the distal supply of the right hepatic artery.

platinum coil (Fibered platinum coil, Boston Scientific, USA) was performed to avoid haemostatic complications during surgery (figures 2a and 2b). Exploratory laparotomy with cholecystectomy was performed subsequently. During dissection, the gallbladder revealed hematic content with clots, and an ovoid vascular structure was dissected from the gallbladder's wall. The patient had an uncomplicated post-operative course.

## Discussion

Hemobilia, which denotes an abnormal communication between a vessel of the hepatosplenic circulation and the biliary system, is usually inconsequential and most of the times not even diagnosed. Clinical presentation of hemobilia (Quinke's triad) includes: colicky abdominal pain, jaundice and gastrointestinal bleeding. (1,2) The most common cause of hemobilia is hepatic trauma in 48% of cases, followed by infection in 28%, gall stones, aneurysms, and

(rarely) hepatic tumor. Pseudoaneurysm of the cystic or hepatic artery is a rare cause of hemobilia. (3) An ancillary diagnostic modality should be used. Color-Doppler ultrasonography was proved to be useful in equivocal cases. (4,5) However, the use of color Doppler may not be a routine part of the procedure during whole abdominal scanning; without the use of a multi-planar approach to avoid obscuration by the acoustic shadow, the diagnosis of pseudoaneurysm may be easily missed, especially if one does not harbor a high index of suspicion. On axial arterial phase CT, pseudoaneurysms appear as well defined, focal enhancing lesions that may simulate hypervascular tumors. MDCT with image processing can easily delineate the size and extent of the aneurysm and establishes communication with its supplying artery. (6,7) Thus, MDCT can facilitate clinical decision-making of pre-operative TAE and planning the surgical approach. Management of patients with hemodynamic significant hemobilia is aimed at stopping the bleeding, maintaining a continuous flow of the biliary system, and curing the underlying cause. Although there is no consensus regarding the management of acute cholecystitis associated with a pseudoaneurysm, haemostatic complications remain a concern during surgical intervention and TAE has been suggested in some case reports. (8,9) Also, the location of the pseudoaneurysm might influence the selection of an appropriate surgical procedure. (10)

In a patient who had occult blood in the stool and hyperbilirubinemia, in addition to the classical findings of acute cholecystitis, hemobilia as a consequence of acute cholecystitis complicated by a pseudoaneurysmal formation should be considered. In suspected cases, with the use of MDCT, a pre-operative diagnosis of pseudoaneurysm can easily be made to facilitate clinical decision-making of pre-operative TAE. TAE should be considered if there is concern about haemostatic complications during cholecystectomy.

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