The Journal of Emergency Medicine, Vol. 44, No. 1, pp. 100–103, 2013

0736-4679/$ - see front matter

ELSEVIER

doi:10.1016/j.jemermed.2011.08.021

Clinical Communications: Adults

HEPATIC ARTERY PSEUDOANEURYSM RUPTURE: A CASE REPORT AND REVIEW OF THE LITERATURE

Dena A. Reiter, MD,* Aaron M. Fischman, MD,† and Bradley D. Shy, MD*

*Department of Emergency Medicine and †Department of Interventional Radiology, Mount Sinai School of Medicine, New York, New York
Reprint Address: Dena A. Reiter, MD, Department of Emergency Medicine, Mount Sinai School of Medicine, One Gustave L. Levy Place, Box 1620, New York, NY 10029

☐ **Abstract—Background: Ruptured hepatic artery pseudoaneurysm, a type of visceral artery aneurysm, is a rare condition that is life threatening if not diagnosed and treated rapidly in the emergency department (ED). Patients presenting with this condition require aggressive resuscitation. Endovascular embolization is the first-line treatment option. Objectives: We present a case of spontaneously ruptured hepatic artery pseudoaneurysm and provide a review of the current literature on this topic, focusing on appropriate ED management. Case Report: A 41-year-old woman with a history of systemic lupus erythematosus and multiple hepatic bilomas presented to the ED in critical condition with sudden onset of severe abdominal pain and hemodynamic instability. She was found to have a ruptured hepatic artery pseudoaneurysm with marked hemoperitoneum on computed tomography angiography. She was aggressively resuscitated and successfully managed via endovascular embolization. Conclusion: Ruptured hepatic artery pseudoaneurysm is a life-threatening condition that must be rapidly diagnosed and managed in the ED. Visceral artery aneurysm rupture is a diagnosis that should be considered in any patient presenting to the ED with hemodynamic instability and abdominal pain. Definitive management is with endovascular embolization.** © 2013 Elsevier Inc.

☐ **Keywords—pseudoaneurysm; hemoperitoneum; embolization; resuscitation; critical care**

INTRODUCTION

Hepatic artery pseudoaneurysm is a rare condition infrequently reported in the medical literature. The incidence of all hepatic artery aneurysms is estimated at approximately 0.002%, and approximately 50% of hepatic artery aneurysms are pseudoaneurysms (1,2). Such aneurysms are at high risk of spontaneous rupture, resulting in abdominal vascular catastrophe. Reported mortality rates of any visceral artery aneurysm rupture is estimated between 25% and 70% (1,3). We present a case of ruptured right hepatic artery pseudoaneurysm associated with systemic lupus erythematosus and multiple hepatic bilomas. To our knowledge, no such case has ever been reported in the medical literature.

CASE REPORT

A 41-year-old woman with a history of systemic lupus erythematosus, autoimmune hepatitis, primary sclerosing cholangitis, antiphospholipid antibody syndrome, and pulmonary embolus (receiving warfarin therapy) presented to the Emergency Department (ED) reporting sudden-onset severe diffuse abdominal pain. At triage, her vital signs were: temperature 36.0°C, blood pressure 114/71 mm Hg, heart rate 123 beats/min, respiratory rate 20 breaths/min, and oxygen saturation 100% on room air. Shortly after arrival in the ED, the patient had a syncopal episode. After her collapse, we found her minimally responsive with agonal breathing and weak femoral pulses. She quickly regained consciousness with brief bag mask ventilation, at which point she became very agitated, reporting unbearable abdominal and chest pain.

RECEIVED: 10 March 2011; FINAL SUBMISSION RECEIVED: 1 July 2011;
ACCEPTED: 28 August 2011

Figure 1. Computed tomography demonstrating right hepatic artery pseudoaneurysm with hepatic capsular rupture (arrow) and extravasation into the peritoneal cavity.

The patient was ill-appearing, agitated, confused, and diaphoretic. Her post-syncope vital signs were: heart rate 126 beats/min, blood pressure 66/43 mm Hg, respiratory rate 25 breaths/min, and oxygen saturation of 100% on an oxygen non-rebreather mask. Her abdomen was non-distended and diffusely tender to palpation. Bedside pregnancy test was negative and initial bedside ultrasound examination did not reveal intraperitoneal free fluid. Fluid resuscitation was started and the patient was hemodynamically stabilized. Immediate computed tomography (CT) angiogram imaging was obtained as there was concern for aortic dissection or rupture; it demonstrated multiple bilomas within the liver, a ruptured right hepatic artery pseudoaneurysm (4.7 cm by 4.8 cm), rupture of the lateral hepatic capsular wall with active extravasation into the biloma and into the peritoneal cavity, and marked hemoperitoneum (Figures 1, 2). Laboratory analyses were notable for a hemoglobin level of 5.9 g/dL, an international normalized ratio of 2.5, and a lactate of 13.3 mmol/L.

Blood products (uncross-matched packed red blood cells, fresh frozen plasma, and prothrombin complex concentrate) were started immediately. She was taken to the interventional radiology suite for emergent embolization. A replaced right hepatic artery with descending intrahepatic branch feeding a large pseudoaneurysm with active extravasation was visualized (Figure 3A). She successfully underwent embolization of the right hepatic artery using n-butyl cyanoacrylate glue (Figure 3B).

The patient was transferred to the intensive care unit. She remained hemodynamically stable. Her hospital course was complicated by bacteremia. She was discharged home after 28 days. Her warfarin therapy was stopped. At routine follow-up 4 months after discharge, she was alive and well.

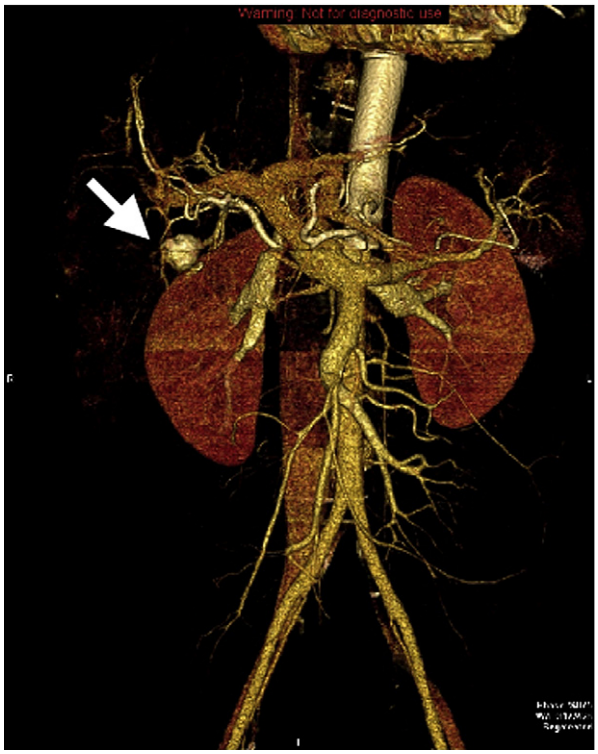

Figure 2. Three-dimensional reconstructed image of computed tomography angiography demonstrating right hepatic artery pseudoaneurysm (arrow).

DISCUSSION

Ruptured hepatic artery aneurysm is a rare condition with very high mortality. It was first described in 1809 by James Wilson, who conducted an autopsy on a clergyman who had died after its rupture. It was noted to have "the color, shape and size of the heart" (4). Incidence of false aneurysms may be increasing since the advent of percutaneous diagnostic and therapeutic biliary procedures, and detection may also be rising since the advent of CT scanning after trauma (5). Additionally, patients who have undergone liver transplant are at increased risk. There has been an increase in number of reported hepatic artery aneurysms, which may be attributed to increased awareness, improved imaging modalities, and increase in number of percutaneous biliary procedures, as well as liver biopsy and drainage (1,5,6). Overall, there have been fewer than 400 cases reported in the literature, with 80% presenting with rupture as the initial clinical event (5).

Of all visceral arterial aneurysms, hepatic aneurysms have the highest reported rate of rupture at 44% (7). Of those that rupture, 50% rupture into the biliary tract, resulting in gastrointestinal hemorrhage (8). Another 20–30% rupture into the peritoneal cavity (1,2). Although the frequency of death from aneurysmal rupture in humans is unknown, the reported mortality rate once rupture into the peritoneal cavity has occurred is 82% (9).