Replaced Right Hepatic Artery Pseudoaneurysm Rupture and Hemorrhagic Cholecystitis: A Case of Chicken or the Egg

Kendra Grundman, DO[1]; Kathryn Wanat, DO[1]; Miranda Schmidt, MSIV[2]; Daniel Vera, MD[1]

[1]Franciscan Health, Olympia, Fields; [2]Midwestern University Chicago College of Osteopathic Medicine

Introduction

Replaced right hepatic artery pseudoaneurysm rupture and hemorrhagic cholecystitis are extremely rare and life-threatening complications that have never before been reported concomitantly. We present the case of an 82-year-old male with hemoperitoneum secondary to a replaced right hepatic artery pseudoaneurysm rupture and hemorrhagic cholecystitis that was successfully treated. A comprehensive literature review on visceral artery pseudoaneurysm rupture and hemorrhagic cholecystitis was conducted as well as a proposed treatment algorithm.

Case Report

An 82-year-old male with a past medical history significant for hypertension, cerebral cavernous malformations, pulmonary embolism, paroxysmal atrial fibrillation on eliquis, coronary artery disease and endocarditis complicated by vegetations status post recent coronary artery bypass graft and heart valve repair presented from cardiac rehab to the emergency department for syncope, chest pain, and abdominal pain.

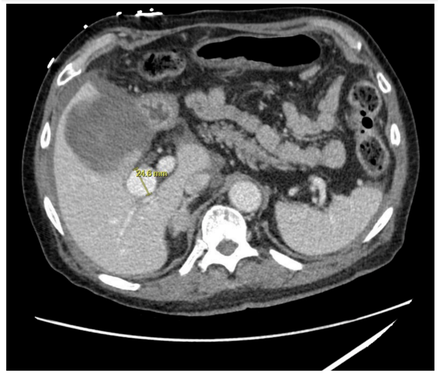
On presentation the patient was afebrile, hypotensive to the 70s systolic, tachycardic, and tachypneic. On physical exam his abdomen was soft, mildly distended with right upper quadrant tenderness to palpation. His labs included a hemoglobin 9.9, uptrending troponin, lactic acid 5.57, and grossly unremarkable liver function enzymes and bilirubin.
A CT angiogram showed active arterial extravasation from a replaced right hepatic pseudoaneurysm as well as intracholecystic hemorrhage.

The patient was given prothrombin complex concentrate and resuscitated with intravenous fluid and blood products. The patient underwent successful coil embolization of the replaced right hepatic artery and subsequent laparoscopic cholecystectomy the following day.

The patient recovered well and was discharged on hospital day five.



Enhancement of replaced right hepatic artery coursing from SMA to aneurysm



Replaced right hepatic a. aneurysm; intracholecystic hemorrhage within a distended gallbladder



Aneurysmal rupture causing intrahepatic and intracholecystic hemorrhage with hemoperitoneum



Layering blood products within gallbladder and extravasation adjacent to pseudoaneurysm

Discussion

Hemorrhagic cholecystitis is a potentially fatal disease due to its rare incidence and non-specific clinical presentation that is often difficult to distinguish from other common gallbladder pathologies. There is limited literature with less than 40 English language cases reported and only 4 case reports indicating cystic artery pseudoaneurysms as the etiology of hemorrhagic cholecystitis. This is the first known report of replaced right hepatic artery pseudoaneurysm rupture and concomitant hemorrhagic cholecystitis.

It is difficult to discern whether the nearby visceral artery pseudoaneurysm occurred as a consequence of infection and inflammation of the gallbladder or if hypotension secondary to blood loss from a pseudoaneurysm rupture caused ischemia to and resulting cholecystitis.

Conclusions

Given that hemorrhagic cholecystitis is similar to that of other hepatobiliary pathologies, this case highlights the importance of having a high index of suspicion to expedite diagnosis and intervention. The potentially fatal disease needs to be considered in those presenting with abdominal pain, particularly in those with a history of increased bleeding susceptibility, hemodynamic instability, and concerns for gastrointestinal bleed.

Given the existing but limited literature, a timely diagnosis of this rare and potentially fatal condition is critical and involves an integrated approach including adequate resuscitation, coagulopathy reversal, arterial embolization and cholecystectomy.

References

1. Pandya R, O'Malley C. Hemorrhagic cholecystitis as a complication of anticoagulant therapy: role of CT in its diagnosis. *Abdom Imaging*. 2008; 33(6): 652–53.
2. Kinnear N, Hennessey DB, Thomas R. *BMJ Case Rep* Published Online First: [*2017*]. doi:10.1136/bcr-2016- 214617.
3. Parekh J, Corvera CU. Hemorrhagic cholecystitis. *Arch Surg.* 2010;145:202–4.
4. Jiang B, Bingmer K, Ammori J. Hemorrhagic Cholecystitis. *ACS Case Reviews in Surgery.* 2020;2(5):56–60.
5. Tavernaraki K, Sykara A, Tavernaraki E, Chondros D and Lolis ED. Massive intraperitoneal bleeding due to hemorrhagic cholecystitis and gallbladder rupture: CT findings. *Abdom Imaging*. 2011;36:565-8.