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CASE REPORT | ENDOSCOPY

Endoscopic Ultrasound-Guided Cholecystoenterostomy for Acute Hemorrhagic Cholecystitis Drainage

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ABSTRACT

Hemorrhagic cholecystitis is a rare entity with few cases reported in the literature. We report a case of a 42-year-old man with cirrhosis who presented to the hospital with abdominal pain in the right upper quadrant radiating to the back. Computed tomography scan showed findings consistent with acute cholecystitis. Owing to decompensated cirrhosis, he was not a good candidate for cholecystectomy. Endoscopic ultrasound-guided cholecystoenterostomy was performed that immediately yielded a large amount of old blood with clots along with some bile consistent with acute hemorrhagic cholecystitis. After the drainage, he had an uneventful hospitalization.

INTRODUCTION

Acute hemorrhagic cholecystitis is a rare and potentially fatal entity predominantly associated with cholelithiasis. Intragallbladder (GB) hemorrhage is a consequence of GB wall inflammation leading to erosion and subsequent mucosal perforation.[1] This condition has been associated with trauma, anticoagulation use, biliary neoplasm and parasite infection, renal failure, and cirrhosis.[2–4] Diagnosis can be performed using abdominal ultrasound, computed tomography, or magnetic resonance imaging. Cholecystectomy is recommended as to avoid GB perforation;[5] however, it may not be appropriate in patients with comorbidities and high risk of complications. In this study, we present a case of hemorrhagic cholecystitis in a patient with decompensated cirrhosis who underwent an endoscopic ultrasound (EUS)-guided cholecystoenterostomy.

CASE REPORT

A 42-year-old man with a history of decompensated cirrhosis secondary to alcohol presented with right upper quadrant abdominal pain radiating to the back. Physical examination showed stable vital signs: blood pressure: 106/66 mm Hg; pulse: 83 beats per minute; respiratory rate: 14; and temperature: 36.9°C. Abdominal examination was remarkable for a positive Murphy sign and distended abdomen with positive fluid waves. Abdominal ultrasound showed nodular liver, splenomegaly, moderate ascites, recanalized umbilical vein, distended GB with heterogeneous echogenic material without internal vascularity, and no pericholecystic fluid or GB thickening. An abdominopelvic computed tomography scan with intravenous contrast showed distended GB lumen with heterogeneous luminal density, mild wall thickening, and normal intrahepatic or extrahepatic bile ducts. A hepatobiliary iminodiacetic acid scan was consistent with acute cholecystitis. Laboratory workup showed white blood cell: 3.5 × 10E3/μL; hemoglobin level: 9.7 g/dL; platelets: 154 × 10E3/μL; international normalized ratio: 1.64; albumin level: 2.8 g/dL; aspartate aminotransferase: 33 U/L; alanine aminotransferase: 21 U/L; alkaline phosphatase: 157 U/L; and total bilirubin: 2.0 mg/dL. The patient was evaluated by surgery for cholecystectomy, but the patient was deemed a poor surgical candidate because of a Model for End-stage Liver Disease-Na score of 19 and Child-Pugh B. Percutaneous GB drainage was attempted by interventional radiology, but the procedure was aborted because of the large amount of perihepatic ascitic fluid. The patient was then referred to gastrointestinal service for EUS-guided cholecystoenterostomy. Using a linear array echoendoscope with the transducer in the duodenal bulb, the GB was interrogated. The GB contained thick hyperechoic material believed to be sludge. The GB and duodenal wall were in close proximity with no intervening ascites; thus, aspiration of ascitic fluid was not attempted. Doppler imaging was used to identify a window devoid of intervening blood vessels, and a cholecystoenterostomy was performed with a 10 × 15 mm AXIOS stent (Boston Scientific, Marlborough, MA). Immediately after deployment, old blood with clots along with some bile drained through the stent consistent with

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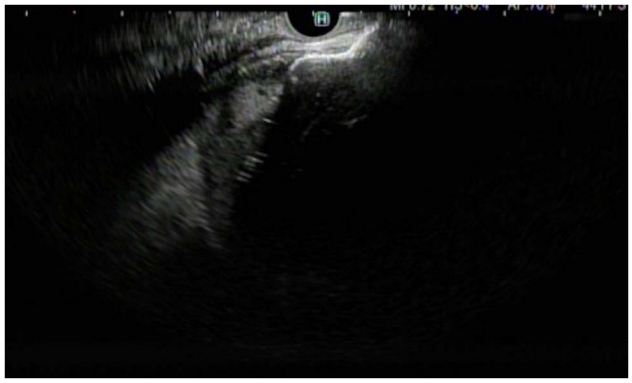

Figure 1. Cholecystoenterostomy was performed with a 10 × 15 mm AXIOS stent (Boston Scientific, Marlborough, MA).

hemorrhagic cholecystitis. Owing to concern of ongoing bleeding after cholecystoenterostomy, the patient was placed in a telemetry unit for continuous monitoring. After 48 hours of monitoring, no bleeding was documented and his pain improved significantly. The patient was discharged home 2 days after the procedure with oral antibiotics (Figures 1 and 2).

DISCUSSION

Acute hemorrhagic cholecystitis was first described in 1979 by Shah and Clegg[6] presenting as a cause of hemobilia and gastrointestinal hemorrhage. Blood within the GB is an exceedingly rare cause of acute cholecystitis. The pathophysiology is believed to be related to the ongoing inflammatory process that leads to ischemia and erosion of blood vessels of the mucosa and subsequent hemorrhage that can drain into the GB or abdominal cavity.[7] Clinical presentation can vary, and it may include peritonitis, jaundice and gastrointestinal bleeding, obstructive cholangitis, or melena secondary to the blood entering the bowel lumen.[7] Blood within the biliary tract can also present as a triad with right upper quadrant abdominal pain, jaundice, and gastrointestinal bleeding, and it is called the Quincke triad.[8] In our case, the patient presented with typical features of acute cholecystitis, and no rectal bleeding was reported. Hemorrhagic cholecystitis commonly occurs in the setting of anticoagulation use and bleeding diathesis.[9] Interestingly, hemorrhagic cholecystitis occurring in the setting of severe acute respiratory syndrome coronavirus 2 infection and nonsteroidal anti-inflammatory drug use has also been reported.[10,11]

Figure 2. Immediately after deployment, old blood with clots along with some bile drained through the stent consistent with hemorrhagic cholecystitis.

Diagnosis often shows nonspecific findings on ultrasound, and it may include irregular GB wall, intraluminal membranes, and/or coarse nonshadowing intraluminal echoes.[12] Cholecystectomy is the standard of care for treatment and management to avoid the risk of perforation that could be fatal.[13] A recent case series reported 31 patients with hemorrhagic cholecystitis undergoing successful laparoscopic cholecystectomy, with 4 of them requiring conversion with open surgery; nevertheless, no mortality was reported.[5] Our patient was a poor surgical candidate because of decompensated cirrhosis; thus, decision was made to perform a percutaneous transhepatic cholecystostomy. However, owing to intervening ascites, this was not possible, and therefore, an EUS-guided cholecystoenterostomy was performed. Patients with liver disease carry major risks of complications during cholecystectomy, and this is because of the underlying imbalance in coagulation factors, immunosuppressed state, and malnutrition that can lead to major bleeding and infection.[14] In a recent retrospective study, it was a found that EUS-guided GB drainage for patients with cirrhosis showed a clinical success rate of 93.3%. Most patients had a Child-Pugh score B, and the major indication for the procedure was due to acute nonhemorrhagic cholecystitis.[15]

Moreover, EUS-guided cholecystoenterostomy has demonstrated to be superior to percutaneous transhepatic cholecystostomy in high-risk surgical patients by demonstrating less adverse effects and less risk of reintervention, readmission, and recurrent cholecystitis, in addition to having better quality of life after the procedure.[16–18] We believe that it should be the preferred method for patients who are not surgical candidates.

Data regarding hemorrhagic cholecystitis are limited to case reports. Our case highlights the increased risk of hemorrhagic cholecystitis in patients with cirrhosis, as well as the safety and efficacy of EUS-guided cholecystoenterostomy in its management in poor surgical candidates like the one described in this case report.

DISCLOSURES

Author contributions: P. López-Marte, F. Arroyo-Mercado, and A. Abbass acquired, analyzed, and interpreted the data. A. Mendoza-Ladd revised the manuscript. P. López-Marte is the article guarantor.

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REFERENCES

1. Ramírez Calderón JZ, Martínez Chamorro E, Ibáñez Sanz L, Albillos Merino JC, Borruel Nacenta S. Hemorrhagic cholecystitis: Ultrasound and CT

imaging findings: A retrospective case review series. *Emerg Radiol*. 2021; 28(3):613–20.
2. Pickell Z, Raghavendran K, Westerhoff M, Williams AM. Acute hemorrhagic cholecystitis with gallbladder rupture and massive intra-abdominal hemorrhage. *Autops Case Rep*. 2021;11:e2020232.
3. Kwon JN. Hemorrhagic cholecystitis: Report of a case. *Korean J Hepatobiliary Pancreat Surg*. 2012;16(3):120–2.
4. Shah R, Klumpp LC, Craig J, Patel P, Jordan J. Hemorrhagic cholecystitis in a patient with cirrhosis and rectal cancer. *Cureus*. 2020;12(4):e7882.
5. Khan Hotak M, Fadia M, Gananadha S. The clinical significance of hemorrhagic cholecystitis. *JSLS*. 2022;26(2):e2022.00030.
6. Shah VR, Clegg JF. Haemorrhagic cholecystitis. *Br J Surg*. 1979;66(6):404–5.
7. Morris DS, Porterfield JR, Sawyer MD. Hemorrhagic cholecystitis in an elderly patient taking aspirin and cilostazol. *Case Rep Gastroenterol*. 2008;2(2):203–7.
8. Berry R, Han JY, Kardashian AA, LaRusso NF, Tabibian JH. Hemobilia: Etiology, diagnosis, and treatment. *Liver Res*. 2018;2(4):200–8.
9. Karaisli S, Celik SC, Kokulu I, Coskun HT, Haciyanli M. Perforated hemorrhagic cholecystitis in a patient with Bernard-Soulier syndrome. *Clin J Gastroenterol*. 2022;15(2):480–3.
10. Cirillo B, Brachini G, Crocetti D, Sapienza P, Mingoli A. Acalcolous hemorrhagic cholecystitis and SARS-CoV-2 infection. *Br J Surg*. 2020;107(11):e524.
11. Zhang X, Zhang C, Huang H, Wang J, Zhang Y, Hu Q. Hemorrhagic cholecystitis with rare imaging presentation: A case report and a lesson learned from neglected medication history of NSAIDs. *BMC Gastroenterol*. 2020;20(1):172.
12. Chinn DH, Miller EI, Piper N. Hemorrhagic cholecystitis. Sonographic appearance and clinical presentation. *J Ultrasound Med*. 1987;6(6):313–7.
13. Ng ZQ, Pradhan S, Cheah K, Wijesuriya R. Hemorrhagic cholecystitis: A rare entity not to be forgotten. *BMJ Case Rep*. 2018;2018:bcr2018226469.
14. Friedman LS. The risk of surgery in patients with liver disease. *Hepatology*. 1999;29(6):1617–23.
15. James TW, Krafft M, Croglio M, Nasr J, Baron T. EUS-guided gallbladder drainage in patients with cirrhosis: Results of a multicenter retrospective study. *Endosc Int Open*. 2019;7(9):E1099–104.
16. Lyu Y, Li T, Wang B, Cheng Y, Chen L, Zhao S. Endoscopic ultrasound-guided gallbladder drainage versus percutaneous transhepatic gallbladder drainage for acute cholecystitis with high surgical risk: An up-to-date meta-analysis and systematic review. *J Laparoendosc Adv Surg Tech A*. 2021; 31(11):1232–40.
17. Teoh AYB, Serna C, Penas I, et al. Endoscopic ultrasound-guided gallbladder drainage reduces adverse events compared with percutaneous cholecystostomy in patients who are unfit for cholecystectomy. *Endoscopy*. 2017;49(2):130–8.
18. Fugazza A, Colombo M, Repici A, Anderloni A. Endoscopic ultrasound-guided gallbladder drainage: Current perspectives. *Clin Exp Gastroenterol*. 2020;13:193–201.