

HEMORRHAGIC CHOLECYSTITIS: THE FORGOTTEN DIFFERENTIAL DIAGNOSIS

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Abstract

Hemorrhagic cholecystitis, a rare complication of acute cholecystitis, poses diagnostic challenges due to its varied clinical presentation and relative infrequency. This case involves a 59-year-old male with untreated diabetes and obesity, who presented with nonspecific abdominal pain. Initial results were inconclusive, leading to a delayed diagnosis. The patient presented again with worsening symptoms, now including melena, prompting a repeat contrast-enhanced computed tomography (CT) scan that revealed a collapsed gallbladder and signs of intra-abdominal bleeding. Urgent exploratory laparoscopy exposed a gangrenous, perforated gallbladder with active bleeding. He required intensive care postoperatively and recovered without complications. Teaching points include the importance of considering hemorrhagic cholecystitis as a possible diagnosis in patients presenting with upper gastrointestinal bleeding. The case emphasizes the role of imaging, particularly contrast-enhanced CT scans, in diagnosis. Surgical intervention remains the gold standard, highlighting the significance of timely management.

Key words: acute cholecystitis, hemorrhagic shock, diabetes mellitus type 2, gastrointestinal hemorrhage, laparoscopic cholecystectomy

Resumen

Colecistitis hemorrágica: el diagnóstico diferencial olvidado

La colecistitis hemorrágica, una complicación rara de la colecistitis aguda, plantea desafíos diagnósticos debido a su presentación clínica variada y a su relativa infrecuencia. Este reporte presenta el caso de un hombre de 59 años con diabetes no tratada y obesidad, que consultó por dolor abdominal inespecífico por guardia externa. Los resultados iniciales fueron inconclusos, lo que provocó un retraso en el diagnóstico. El paciente consultó nuevamente con síntomas agravados, que incluían melena. Esto llevó a la realización de una nueva tomografía computada (TC) con contraste, que reveló una vesícula biliar colapsada y signos de hemorragia intraabdominal. Una laparoscopia exploradora de urgencia reveló una vesícula biliar gangrenosa y perforada con sangrado activo. Cursó postoperatorio en unidad de cuidados intensivos y se recuperó sin complicaciones. Los puntos de aprendizaje incluyen la importancia de considerar la colecistitis hemorrágica como un posible diagnóstico en pacientes que se presentan con hemorragia digestiva alta. El caso enfatiza el papel de las imágenes, especialmente las TC con contraste, en el

diagnóstico. La intervención quirúrgica sigue siendo el *gold standard*, destacando la importancia del tratamiento temprano.

Palabras clave: colecistitis aguda, shock hemorrágico, diabetes mellitus tipo 2, hemorragia gastrointestinal, colecistectomía laparoscópica

Hemorrhagic cholecystitis is a rare complication of acute biliary tract pathologies and an uncommon cause of upper gastrointestinal bleeding^{1,2}. It is associated with high morbimortality due to delays in diagnosis as a consequence of nonspecific clinical presentation. It may present as a typical acute cholecystitis with or without signs of upper gastrointestinal bleeding. The prevalent symptoms of hemorrhagic cholecystitis are upper right quadrant pain, epigastric pain, nausea and vomiting, fever, hematemesis, melena or even symptoms of biliary obstruction such as jaundice. In severe cases, it can present as hemoperitoneum and hemorrhagic shock²⁻⁴. In this article, we present a patient with perforated hemorrhagic cholecystitis which was treated successfully with surgery, and a review of the literature.

Clinical case

A 59-year-old male patient with a past medical history of untreated type 2 diabetes mellitus, uncontrolled hypertension, and obesity (BMI 43.2), presented to the emergency department with mild pain localized in the right hypochondrium, associated with polydipsia and polyphagia. Laboratory tests revealed high blood sugar at 321 mg/dL (reference range: 70-110 mg/dL), while all other tests for liver function, blood count, urea, and creatinine were within normal ranges. An abdominal ultrasound was unsatisfactory due to inadequate acoustic window and patient intolerance. Subsequently, an abdominopelvic computed tomography (CT) scan revealed severe hepatic steatosis, along with a gallbladder containing hyperdense content and fluid-fluid layering, which was interpreted as bile sludge (Fig. 1A and B). Coronary etiology and pancreatitis were ruled out. He was deemed fit for discharge, and given a referral to his general practitioner.

Forty-eight hours later, the patient returned to the Emergency Department due to worsening abdominal pain, associated with two episodes of melena, sweating, and general discomfort. Physical examination revealed tachycardia, hypotension and mucocutaneous pallor. The

abdomen was distended, soft, depressible and diffusely tender to palpation, but most predominantly in the epigastric area. Digital rectal exam was negative for active bleeding. Laboratory results showed a substantial decrease in hematocrit compared to the previous visit (48% to 34%), leukocytosis of 11 160 mm³ (RR: 5000 – 10 000 mm³), acute renal failure, and slight elevation in total bilirubin of 1.6 mg/dL (RR: 0.1-1.4 mg/dL), conjugated bilirubin of 0.68 mg/dL (RR: < 0.4 mg/dL), alkaline phosphatase of 75 IU/L (RR: 31 - 100 IU/L), aspartate aminotransferase (AST) of 82 IU/L (RR: 10-42 IU/L), and alanine aminotransferase (ALT) of 95 IU/L (RR: 10-40 IU/L).

Initially, an upper gastrointestinal endoscopy (UGIE) was ordered due to upper gastrointestinal bleeding. However, escalating abdominal pain prompted a second CT scan with intravenous contrast, which revealed a collapsed gallbladder along with free perihepatic and perisplenic fluid, extending into both paracolic gutters and the pelvis (Fig. 1B and C).

The patient was taken to the operating room for exploratory laparoscopy, with the possibility of an intraoperative UGIE. Broad-spectrum antibiotic therapy was initiated. Exploratory laparoscopy revealed hemoperitoneum in all four quadrants, with abundant clots located in the right hypochondrium, a gangrenous gallbladder perforated at the fundus with active bleeding from the lumen, and a cirrhotic-looking liver (Fig. 2). Peritoneal lavage was performed. Intraoperative cholangiography was conducted through the perforation to identify anatomy, revealing a nondilated bile duct with adequate contrast passage into the duodenum. A laparoscopic cholecystectomy was conducted, leading to the definitive diagnosis and initiation of treatment, thus obviating the need for UGIE.

The patient was transferred to the Intensive Care Unit (ICU), requiring intraoperative transfusion of two units of red blood cells, mechanical ventilation, and low-dose vasopressor support for the first 48 hours after surgery. The patient was extubated five days later, and then transferred to the general ward on the sixth day. Intravenous antibiotic therapy was completed for a total of 7 days. He progressed favorably and was discharged from the hospital on day nine without complications. Follow-up appointments were scheduled.

The final pathological evaluation revealed transmural inflammation with areas of necrosis, consistent with necrohemorrhagic cholecystitis.

The patient provided informed consent for the scientific communication of the case.

Figure 1 | A and B: Abdominal computed tomography (CT) with oral and intravenous contrast in axial and coronal planes respectively from the first visit. This shows the gallbladder without thickening of the wall and with hyperdense material inside, along with fluid-fluid layering. The gallbladder is highlighted with arrows. C and D: Abdominal CT with intravenous contrast in portal phase in axial and coronal planes respectively from the second visit showing a collapsed gallbladder and free perihepatic and perisplenic fluid, extending into both paracolic gutters and the pelvis

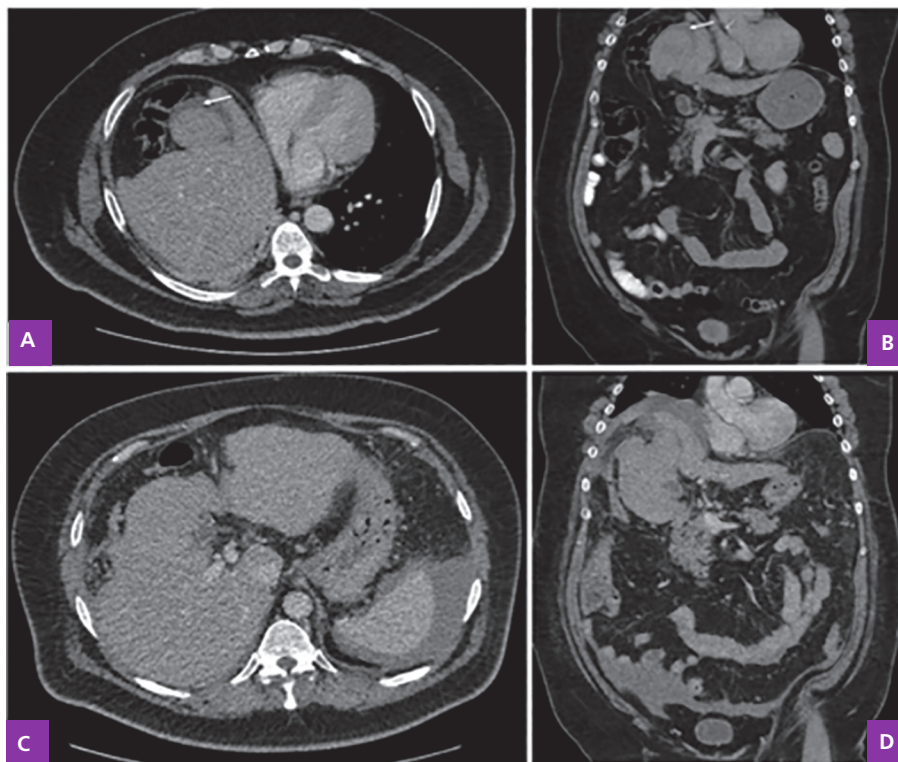
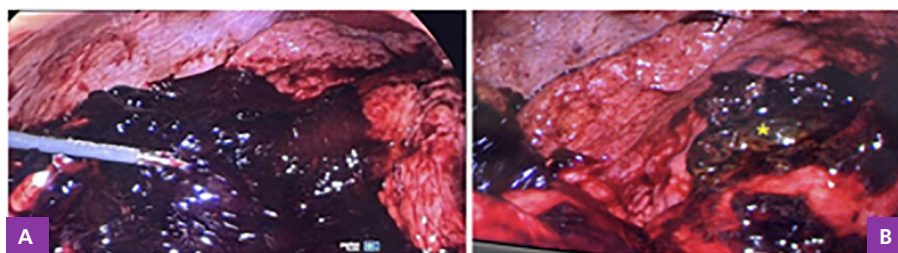


Figure 2 | A: Laparoscopic image showing hemoperitoneum and abundant clots in the right hypochondrium. B: Laparoscopic image showing a gangrenous gallbladder (asterisk) and liver with cirrhotic appearance



Discussion

Hemorrhagic cholecystitis is a rare complication of acute cholecystitis, associated with high mortality. The most common pathophysiological mechanism described in the literature suggests that intravesicular bleeding, due to

inflammatory changes, leads to mucosal ulceration followed by ischemia and necrosis^{5,6}. The increased pressure caused by bleeding distends the gallbladder, leading to its rupture and subsequent hemoperitoneum. The fundus is the most common location for perforation due to the rel-

actively poor blood supply in this region⁷. Additionally, cases of cystic artery pseudoaneurysm have been described as a separate, and less frequent, pathophysiological cause of hemorrhagic cholecystitis^{4,6}.

The clinical presentation can vary widely, ranging from pain in the right upper quadrant, nausea, and vomiting to manifestations of biliary obstruction such as jaundice, often caused by a clot in the biliary tract^{3,4}. Some patients may experience a hemorrhagic acute abdomen, which is associated with higher rates of morbidity and mortality. This sometimes leads to blood entering the gastrointestinal tract and presenting as an upper gastrointestinal bleeding with hematemesis and melena¹. In 22% of cases, hemorrhagic cholecystitis may present with Quincke's triad of hemobilia: right hypochondrial pain, upper gastrointestinal bleeding, and jaundice⁵⁻⁸.

Risk factors include prolonged use of oral anti-coagulants, antiplatelet agents, coagulopathies, use of nonsteroidal anti-inflammatory drugs and corticosteroids, trauma, cirrhosis, diabetes mellitus, chronic kidney disease, atherosclerosis of the gallbladder wall, percutaneous interventions such as liver biopsy and instrumentation of the biliary tract, neoplasms, and parasitic infections^{4,5,7-10}. Both calculous and acalculous cases of hemorrhagic cholecystitis have been described in the literature, so the presence of stones would not be a risk factor for the condition. However, there is a higher frequency of gallbladder perforation in lithiasic cases⁷.

Given its variability in clinical presentation, the use of imaging techniques is essential for diagnosing hemorrhagic cholecystitis. Currently, abdominal ultrasound serves as the initial method for assessing pain in the right hypochondrium. However, its efficacy is limited; in up to 74% of cases, the gallbladder may exhibit atypical features such as focal wall irregularities and immobile echoes without acoustic shadow^{1,2,6,11}. Abdominopelvic CT is the preferred diagnostic tool, enabling the detection of wall thickening,

gallbladder distension, heterogeneous hyperdense contents or fluid-fluid layers, and contrast extravasation in the arterial phase^{8,11}. Additionally, if the gallbladder ruptures, signs of hematoma in the gallbladder fossa and the presence of free fluid from hemoperitoneum would be evident^{1,5,11}.

Surgery, either performed laparoscopically or via laparotomy, combined with antibiotic therapy, remains the gold standard for treating hemorrhagic cholecystitis^{2,5-7,9}. However, there is an ongoing debate regarding the use of cholecystostomy for managing hemodynamically unstable patients.

In this case, initial laboratory tests and imaging yielded inconclusive results, and coupled with the patient's presentation of diabetes symptoms, this led to a diagnostic delay. As the abdominal pain intensified, a decision was made to conduct a second CT scan before proceeding with an UGIE, which revealed an acute hemorrhagic abdomen. This required exploratory laparoscopy to establish an intraoperative diagnosis, emphasizing the importance of repeat imaging when the cause of bleeding is unclear. As previously stated, hemorrhagic cholecystitis can pose a significant risk of mortality, hence the continuous monitoring and ICU stay this patient required. Finally, upon reviewing his risk factors, untreated type 2 diabetes is believed to have impacted his clinical presentation and increased the risk of gallbladder perforation.

Hemorrhagic cholecystitis can be challenging to diagnose due to its varied clinical presentation. We emphasize the importance of considering this complication in patients with acute abdominal pain or upper gastrointestinal bleeding, as well as the impact of diabetes on its presentation. This case highlights the need for thorough clinical evaluation for proper management of this condition. Early diagnosis and timely surgical intervention significantly reduce associated morbidity and mortality.

Conflict of interest: None to declare

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