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WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

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Gallbladder hemorrhage—An uncommon surgical emergency: A case report

Maria Rosaria Valenti, Andrea Cavallaro, Maria Di Vita, Antonio Zanghi, Giovanni Longo Trischitta, Alessandro Cappellani

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Abstract

BACKGROUND

Gallbladder hemorrhage is a life-threatening disorder. Trauma (accidental or iatrogenic such as a percutaneous biopsy or cholecystectomy surgery), cholelithiasis, biliary tract parasitosis, vasculitis, vascular malformations, autoimmune and neoplastic diseases and coagulopathies have been described as causes of hemorrhage within the lumen of the gallbladder. The use of non-steroidal anti-inflammatory drugs and anticoagulants may represent a risk factor.

CASE SUMMARY

We report the case of a 76-year-old male patient. An urgent contrast computed tomography scan demonstrated relevant distension of the gallbladder filled with hyperdense non-homogeneous content. The gallbladder walls were of regular thickness. Near the anterior wall a focus of suspected active bleeding was observed. Due to the progressive decrease in hemoglobin despite three blood transfusions, this was an indication for urgent surgery.

CONCLUSION

Early diagnosis of this potentially fatal pathology is essential in order to plan a strategy and eventually proceed with urgent surgical treatment.

Key Words: Gallbladder; Hemorrhage; Anticoagulants; Cholecystectomy; Surgery; Case report

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Core Tip: Gallbladder hemorrhage is an uncommon life-threatening disorder. There are many causes of this condition: trauma, cholelithiasis, biliary tract parasitosis, vasculitis, vascular malformations, autoimmune and neoplastic diseases and coagulopathies. We report the case of a 76-year-old male patient. An urgent contrast computed tomography scan demonstrated relevant distension of the gallbladder filled with hyperdense non-homogeneous content and a focus of suspected active bleeding. The patient underwent urgent surgery to stop the hemorrhage. Early diagnosis of this insidious and potentially fatal pathology is essential to plan the best treatment strategy for patients.

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INTRODUCTION

Gallbladder hemorrhage is a rare condition, which can be difficult to diagnose. It manifests symptoms present in other more common pathologies, such as fever, nausea, abdominal pain, and Murphy's sign. Trauma (accidental or iatrogenic such as a percutaneous biopsy or cholecystectomy surgery), cholelithiasis, biliary tract parasitosis (*e.g.*, ascariasis), vasculitis, vascular malformations, neoplastic diseases, and coagulopathies have been described as causes of hemorrhage within the lumen of the gallbladder. The use of non-steroidal anti-inflammatory drugs (NSAIDs) and anticoagulants may represent a risk factor. During the evolution of flogosis, necrosis of the gallbladder mucosa may result in bleeding from the vessels located within the organ wall. The use of imaging methods such as ultrasound, computed tomography (CT) and angiography can be useful in diagnosing this uncommon condition. As a medical emergency with a reported mortality rate of 15%-20%, early diagnosis is mandatory and can result in a better outcome for the patient[1-4]. We describe the case of a patient treated with NSAIDs and anticoagulants, who developed severe anemia due to intracolecystic hemorrhage that required urgent surgery.

CASE PRESENTATION

Chief complaints

The patient complained of abdominal pain and constipation.

History of present illness

We report the case of a 76-year-old male patient who attended the emergency room due to abdominal pain and constipation.

History of past illness

In the anamnesis he presented osteoporosis, parkinsonism, vertebral stabilization (metal plates and screws) for L2-L3 arthrodesis (2016), L1-L2 spondylodiscitis, chronic pain in the lumbar region, stiffness in the upper limbs and lower limbs, small steps and impairment of the extensor muscles of the spinal column with bent spine syndrome. In July 2020, due to trauma, he attended the emergency room, where, lacking diagnostic evidence, he was discharged and transferred to a rehabilitation institution. He had been taking the following drugs for the last few years at home: Pantoprazole, CardioASA, Bromazepam, Durogesic, and Cardicor.

Personal and family history

No relevant personal and family history.

Physical examination

On physical examination, the patient appeared oriented, cooperative, eupnoic, malnourished, with muscle atrophy and widespread hypotonia. Abdominal examination demonstrated diffuse abdominal pain. His heart rate was 68 bpm, blood pressure was 120/70 mmHg, and temperature was 36°C.

Laboratory examinations

Blood chemistry showed the following: hemoglobin 11.2 g/dL; white blood cell count 10.790/μL; total bilirubin 0.50 mg/dL; aspartate aminotransferase 40 U/L; alanine aminotransferase 28 U/L; alkaline

phosphatase 115 U/L; amylase 406 U/L; C-reactive protein: 150 mg/L.

Imaging examinations

To assess the suspicion of chronic pancreatitis, the patient underwent abdominal ultrasound, and the pancreas showed multiple calcifications in the parenchyma. Moreover, the aorta demonstrated an irregular caliber with progressive stenosis. This finding required an in-depth study; therefore, CT angiography was performed and the common right artery demonstrated CT signs of dissection and ulcerated atheromatous plaque at the origin. Dilated gallbladder, slightly dilated extrahepatic biliary tract, increased volume in the pancreatic gland with small hypodense formations in the pancreas head (maximum diameter 3 mm) were also highlighted. Due to the finding of ulcerated atheromatous plaque, Fondaparinux 2.5 mg/d was administered as suggested by the vascular surgeon consultant.

However, the persistence of continuous lumbar pain led the patient to NSAIDs and morphine-like analgesic self-administration, the dosage of which was increased and reduced according to the patient's symptoms relief. Approximately 10 d after Fondaparinux administration, the patient suddenly experienced severe anemia, hyperbilirubinemia, increased cholestasis and transaminase. On physical examination the abdomen was painless. No blood was found in the stool. An urgent abdominal ultrasound, with the patient still in bed, was performed. Evidence of distended gallbladder filled with non-homogeneous hyperechoic material and a slightly dilated intrahepatic biliary tract were observed (Figure 1). The common bile duct was not visible due to intestinal gas.

Therefore, the patient underwent an urgent CT scan, which demonstrated relevant distension of the gallbladder filled with hyperdense non-homogeneous content. The gallbladder walls were of regular thickness. Near the anterior wall, a focus of suspected active bleeding was noted. Intra- and extra-hepatic biliary ducts demonstrated wider dilatation when compared to the previous CT scan (Figure 2).

FINAL DIAGNOSIS

Gallbladder hemorrhage.

TREATMENT

Our hospital is an emergency referring center, with multidisciplinary expertise readily available. An interventional radiological consultation was sought with the aim of evaluating the risk-benefit ratio of cystic artery embolization and/or cholecystostomy. The risk of gallbladder necrosis due to cystic artery occlusion and the risk of hemoperitoneum due to percutaneous drainage led the surgical team to select upfront surgery. The decrease in hemoglobin despite three blood transfusions, coagulation disorders and worsening of his general condition required an effective and timely solution. Therefore, the patient underwent urgent surgery. Open cholecystectomy was performed. Choledocotomy with Kehr tube apposition completed the surgery due to the presence of dilated hepatocoele (approximately 25 mm) (Figure 3A). When the gallbladder was inspected at the backtable, it appeared entirely occupied by clots (Figure 3B).

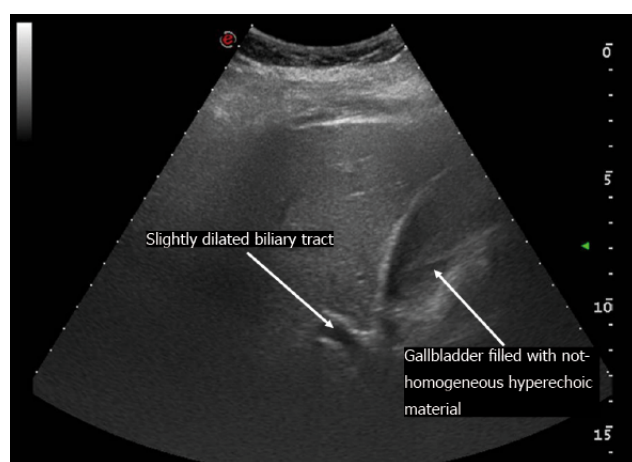
OUTCOME AND FOLLOW-UP

A further blood transfusion, plasma and supportive medical therapy were administered during the perioperative period. The patient had a regular post-operative course until discharge. The T tube was removed 50 d after surgery. Histological examination demonstrated acute lithiasic cholecystitis without any relevant finding.

DISCUSSION

Gallbladder hemorrhage is a rare complication of cholelithiasis, and is difficult to diagnose due to the non-specificity of the symptoms, which may easily lead to possible thoracic aortic dissection for back pain or acute cholecystitis for right hypochondrium pain. It can also manifest with fever, nausea, jaundice, melena and increased indices of inflammation and markers of liver damage in blood tests (neutrophilic leukocytosis, hypertransaminasemia, hyperbilirubinemia)[1-4].

Among the causes of gallbladder hemorrhage, trauma, neoplasms of the biliary tract, lithiasic cholecystitis, parasitosis, vasculitis, autoimmune diseases, and primary or secondary coagulopathies (e.g., liver cirrhosis, renal failure) have been reported[5-10]. Most patients diagnosed with gallbladder hemorrhage have comorbidities and most take anticoagulants and NSAIDs. To date, approximately 51



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Figure 1 Ultrasound scan. Distended gallbladder filled with non-homogeneous hyperechoic material and slightly dilated intrahepatic biliary tract, the common bile duct was not visible due to intestinal gas.



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Figure 2 Computed tomography scan of intra- and extra-hepatic biliary ducts demonstrated wider dilatation.

case reports have been reported in the literature since 1980[5]. We performed a brief revision of the cases reported in the literature, and their treatment strategies (Table 1). Among the reports, over 80% of patients underwent surgery with cholecystectomy. Of these, 6/45 patients underwent elective laparoscopic cholecystectomy after conservative treatment. Open surgery was dominant in the urgent setting (24 vs 15 patients), and we could hypothesize that this surgical technique was chosen with the aim of better evaluation and control of extra-gallbladder sources of hemorrhage.

The elevated prevalence (47%) of patients treated with antiplatelet agents and/or anticoagulants clearly underlines these drugs as risk factors. However, the role of other causes of hemorrhage (accidental or iatrogenic trauma, cholelithiasis, neoplasm, vascular anomalies and coagulopathies) in patients who did not take the aforementioned drugs is not insignificant.

Finally, we can assume that the incidence of this rare pathology is somehow underestimated, given the small number of cases in the literature. In the case described in this report, the patient had been taking cardioaspirin at home.

Moreover, the finding of dissection of the right iliac artery and ulcerated atheromatous plaque, and the thromboembolic risk derived from the patient's bed rest due to chronic lumbar pain suggested the administration of low molecular weight heparin. The self-administration and potential abuse of NSAIDs may have represented an additional risk factor.

Cholelithiasis and the intake of antithrombotic drugs may have played a primary role in the etiology of gallbladder hemorrhage. The damage caused by gallbladder mucosal stones usually heals spontaneously, but this may not occur in patients taking anticoagulants, creating blood oozing that can result in

Table 1 Case reports in the literature since 1980

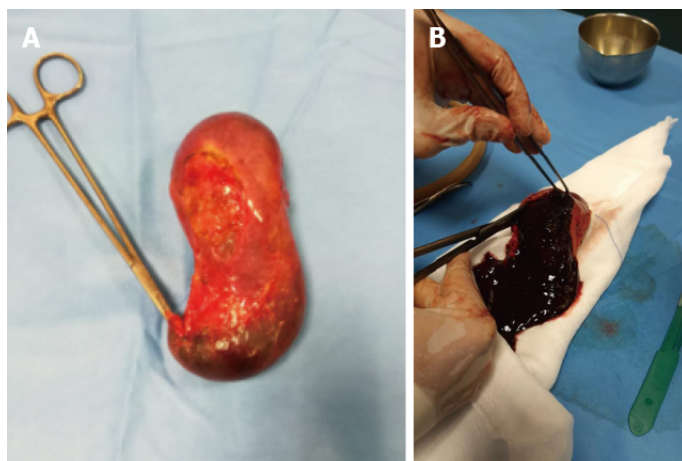
Ref.	Journal	Patient age/gender	Anti-coagulation	Treatment choice
Nguyen D <i>et al</i> [16], 2021	Journal of Radiology Case Reports		N	Cystic artery embolization, cholecystectomy
Chen X <i>et al</i> [17], 2021	Hepatobiliary Surgery and Nutrition	63 F	Not mentioned	ERCP and ENBD, cholecystectomy
Leaning [18], 2021	Journal of Surgical Case Reports	73 M	Y-Apixaban	Laparoscopic Cholecystectomy
Azam <i>et al</i> [19], 2021	Journal of the National Medical Association	55 M	Y-Apixaban	Cholecystectomy
Yam <i>et al</i> [2], 2020	Radiology Case Reports	51 F	N	Cystic artery embolization, cholecystostomy, open cholecystectomy
Gomes <i>et al</i> [20], 2020	BMJ Case Reports	87 M	Y-Aspirin	Open cholecystectomy
Kishimoto <i>et al</i> [21], 2020	Gan To Kagaku Ryoho. Cancer and Chemotherapy	96 F	N	Laparoscopic cholecystectomy
Tarazi <i>et al</i> [5], 2019	Journal of Surgical Case Reports	87 M	Y-Warfarin	Cholecystostomy
		65 F	Y-Warfarin	Conservative with IV antibiotics
		92 F	N	Cholecystostomy
Reens <i>et al</i> [22], 2019	The Journal of Emergency Medicine	76 M	Y-Warfarin	Cholecystostomy
Itagaki <i>et al</i> [23], 2019	Journal of Medical Case Reports	86 F	Y-Edoxaban	Conservative with IV antibiotics, elective laparoscopic cholecystectomy
Honda <i>et al</i> [24], 2019	Journal of Clinical Rheumatology: practical reports on rheumatic & musculoskeletal diseases.	71 M	N	Laparoscopic cholecystectomy
San Juan López C <i>et al</i> [25], 2019	Revista española de enfermedades digestivas: organo oficial de la Sociedad Española de Patología Digestiva.	55 M	N	Laparoscopic cholecystectomy
Ng <i>et al</i> [26], 2018	BMJ Case Reports	68 F	N	Open cholecystectomy
Liefman <i>et al</i> [27], 2018	International Annals of Medicine	73 F	Y-Rivaroxaban	Conservative with IV antibiotics, elective laparoscopic cholecystectomy
López <i>et al</i> [28], 2018	Radiology	84 M	Not mentioned	Laparoscopic cholecystectomy
Berndtson <i>et al</i> [29], 2017	Surgical Infections Case Reports	75 F	N	Open cholecystectomy
Choi <i>et al</i> [30], 2017	Trauma Image and Procedure	65 M	N	Laparotomy + open cholecystectomy
Kinnear <i>et al</i> [31], 2017	BMJ Case Reports	74 M	Y- Apixaban	Laparotomy + open cholecystectomy
Sishida <i>et al</i> [32], 2017	Case Reports in Gastroenterology	79 M	Y-Heparin for dialysis	ERCP and ENBD
Oshiro <i>et al</i> [33], 2017	International Surgery	61 F	Y – Warfarin	Conservative with IV antibiotics, elective laparoscopic cholecystectomy
Yoshida <i>et al</i> [34], 2017	J-Stage	73 M	Y	Laparoscopic cholecystectomy
Tsai <i>et al</i> [35], 2016	Medicine	80 M	N	Cholecystostomy, elective laparoscopic cholecystectomy
Calvo Espino <i>et al</i> [36], 2016	Cirugía Española	59 M	N	Laparotomy + Open cholecystectomy
Cho <i>et al</i> [37], 2015	Korean Journal of Thoracic and Cardiovascular Surgery	61 M	Y-Warfarin	Cholecystostomy drainage
Aljiffry <i>et al</i> [38], 2014	Journal of Surgical Case Reports	57 M	N	Cystic artery embolization + open cholecystectomy
Onozawa <i>et al</i>	International Surgery	58 F	N	Laparoscopic cholecystectomy

[39], 2014				
Matsukiyo <i>et al</i> [40], 2014	J-Stage	68 F	Y-thrombolysis	Laparotomy + open cholecystectomy
Seok <i>et al</i> [41], 2013	Korean Journal of Internal Medicine	84 M	N	Laparoscopic cholecystectomy
Taniguchi <i>et al</i> [42], 2013	J-Stage	48 M	Y-Heparin for dialysis	Laparotomy + open cholecystectomy
Choi[43], 2012	Zeitschrift für Gastroenterologie	36 M	Y-Aspirin and Clopidogrel	Laparoscopic cholecystectomy
Kwon <i>et al</i> [1], 2012	Korean Journal of Hepatobiliary Pancreatic Surgery	75 M	Y-Warfarin	Laparoscopic cholecystectomy
Perez <i>et al</i> [10], 2011	Revista Española De Enfermedades digestivas	24 F	N	Laparoscopic to open cholecystectomy + intra-operative cholangiography
Jung <i>et al</i> [44], 2011	Journal of the Korean Surgical Society	55 M	N	Laparoscopic cholecystectomy
Parekh <i>et al</i> [7], 2010	JAMA Surgery	60 M	N	ERCP + Laparoscopic cholecystectomy
		50 M	N	Laparoscopic to open cholecystectomy
Lin <i>et al</i> [45], 2010	Journal of Internal Medicine of Taiwan	80 M	Y-Warfarin	Laparoscopic cholecystectomy
Chen <i>et al</i> [46], 2010	The American Journal of the Medical Sciences	Elderly M	Y-Heparin	Laparoscopic cholecystectomy
Miyamoto <i>et al</i> [5], 2009	J-Stage	42 F	N	Conservative with IV antibiotics, elective laparoscopic cholecystectomy
Oh <i>et al</i> [47], 2009	Journal of the Korean Society of Magnetic Resonance in Medicine	40 M	Not mentioned	Laparoscopic cholecystectomy
Lai <i>et al</i> [8], 2009	Journal of Chinese Medical Association	81 M	Y-Heparin for dialysis	Conservative with IV antibiotics, elective laparoscopic cholecystectomy
Morris <i>et al</i> [48], 2008	Case Reports in Gastroenterology	91 F	N	Open cholecystectomy
Pandya <i>et al</i> [6], 2008	Abdominal Imaging	85 F	Y-Warfarin	Conservative with IV antibiotics
Kim <i>et al</i> [49], 2007	World Journal of Gastroenterology	55 M	N	Cholecystostomy drainage
Gremmels <i>et al</i> [50], 2004	Journal of Ultrasound in Medicine	66 M	N	Laparotomy + open cholecystectomy
Hanaki <i>et al</i> [5], 2000	J-Stage	66 M	Not mentioned	Laparotomy + open cholecystectomy
Nishiwaki <i>et al</i> [51], 1999	Journal of Gastroenterology	58 M	N	Laparotomy + open cholecystectomy
Stempel <i>et al</i> [14], 1993	Journal of Vascular and Interventional Radiology	78 M	Y-Heparin during AAA repair	Cholecystostomy drainage
Brady <i>et al</i> [9], 1985	Disease of the Colon & Rectum	79 M	N	Open cholecystectomy
Berland <i>et al</i> [52], 1980	Journal of Computed Assisted Tomography	56 M	N	Laparotomy + open cholecystectomy

ERCP: Endoscopic Retrograde Cholangiopancreatography.

acute bleeding. The patient's medical history, physical examination, laboratory tests and radiological imaging are relevant to the diagnosis, to exclude other pathologies[11,12], in order to promptly plan a strategy, as gallbladder hemorrhage represents a potentially fatal surgical emergency. An initial evaluation with ultrasound can be carried out. Most cases of gallbladder hemorrhage demonstrate ultrasound features not common in acute cholecystitis.

The sonographic findings in hemorrhagic cholecystitis include focal wall thickening, intraluminal membranes and non-shadowing, non-mobile intraluminal echogenic material. There may be some echogenic layering material for which the differential diagnosis includes sludge[13]. The suspicion can be further confirmed by CT examination, which may demonstrate high attenuation within the gallbladder lumen with layering high attenuation fluid-fluid level representing blood or sludge. An early phase contrast-enhanced CT helps to detect active extravasation of contrast and blush within the lumen of the gallbladder[5,6].



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Figure 3 Surgical specimen. A: When open cholecystectomy was performed, choledocotomy with Kehr tube apposition completed the surgery due to dilated hepatocolodocus (approximately 25 mm); B: When the gallbladder was inspected at the backtable, it appeared entirely occupied by clots.

The most suitable treatment for gallbladder bleeding is urgent laparoscopic or laparotomic cholecystectomy. In some selected cases, it is possible to plan a non-interventional strategy with antibiotic therapy and supportive medical therapy, postponing subsequent cholecystectomy surgery[5, 10].

Rarely, in the case of patients ineligible for surgery, a percutaneous cholecystostomy may be indicated[14,15]. In our case, given the patient's sudden anemia, despite blood transfusions and supportive medical therapy, due to the persistence of hemodynamic instability we proceeded with urgent surgery.

CONCLUSION

Gallbladder hemorrhage is a life-threatening complication of cholelithiasis. Early diagnosis of this potentially fatal pathology is essential in order to plan a treatment strategy and eventually proceed with urgent surgical treatment, to ensure timely life-saving decisions and the best results for the patient.

FOOTNOTES

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