HAEMOCHOLECYST: A SOURCE OF GASTROINTESTINAL BLEEDING IN A COVID-19 PATIENT

ABSTRACT

Aims: To elucidate the potential complications and management strategies for Haemocholecyst (HC), particularly in a patient with concurrent conditions such as end-stage renal failure (ESRF) and COVID-19, and to stress the importance of recognizing and addressing this rare condition promptly to prevent adverse outcomes.

Presentation of Case:A 72-year-old male with a history of ESRF presented with symptoms of reduced effort tolerance, shortness of breath, and was concurrently diagnosed with COVID-19 pneumonia. His clinical examination demonstrated a lack of abdominal tenderness or visible bleeding but exhibited a significant reduction in hemoglobin levels. Multiple transfusions and investigations were conducted, leading to the discovery of HC through a CT angiogram. Despite surgical intervention, the patient unfortunately succumbed postoperatively.

Discussion:HC's etiology can be both primary and secondary. Elevated urea levels in ESRF patients and COVID-19 infections have been hypothesized to contribute to the occurrence of spontaneous gallbladder bleeding, with the latter potentially causing acute acalculous cholecystitis (AAC) via the ACE2 receptor. Given its rarity, HC presents a significant diagnostic challenge, and a diverse diagnostic approach is crucial when the source of bleeding remains unidentified post-endoscopic procedures.

Conclusion: While simple HC may be managed conservatively, complicated cases require invasive interventions, like surgery or embolization. Early detection and intervention are paramount to managing HC effectively, and meticulous evaluation is crucial in cases of obscure gastrointestinal bleeding, contributing to the knowledge and management of this condition.

Keywords: Haemocholecyst (HC); Cholecystitis; COVID-19; Obscure Gastrointestinal Bleeding, Cholecystectomy.

1. INTRODUCTION

Bleeding in the gallbladder, or Haemocholecyst (HC), is a clot-filled gallbladder caused by bleeding into its lumen. It is a rare disorder with less than 50 cases documented in the English publication [1]. HC usually leads to several complications, including cholecystitis, haemobilia, cholangitis, pancreatitis, and upper gastrointestinal bleeding. Secondary HC is predominantly observed and is often associated with pre-existing pathologies like gallstones, neoplasms, aneurysms, trauma, or iatrogenic causes [2]. This report describes a rare case

of primary (spontaneous) HC in an end-stage renal failure (ESRF) patient concurrently diagnosed with COVID-19 pneumonia, highlighting the importance of understanding, and addressing this rare condition to prevent adverse outcomes.

2. PRESENTATION OF CASE

A 72-year-old gentleman, with a history of end-stage renal failure (ESRF), presented with a one-week history of reduced effort tolerance, shortness of breath, and palpitations. Clinical examinations revealed a pale and sallow complexion; however, there was no abdominal tenderness or discernible evidence of bleeding. Laboratory findings demonstrated a significant reduction in hemoglobin levels, measured at 4.9 g/dl. Concurrently, he tested positive for COVID-19 and was admitted with category 3 pneumonia. Despite receiving multiple transfusions during admission, his hemoglobin levels remained persistently low.

While in the ward, the patient passed malenic stool, prompting multiple esophagogastroduodenoscopies (OGDS) and colonoscopies to identify potential bleeding sources; however, no such sources were identified. A subsequent contrast-enhanced computed tomography angiogram scan (CTA) of the abdomen disclosed an arterial blush and pooling of contrast within the gallbladder. In our limited district setting, minimally invasive interventions like angioembolization were not available.As a result, an open cholecystectomy was performed to address a bleeding gallbladder. The bivalved gallbladder specimen revealed multiple internal blood clots. Unfortunately, despite intervention, the patient succumbed after an extended ICU stay postoperatively.

The final histopathological examination displayed a focally necrotic gallbladder wall with acute inflammatory cell infiltrates and Aschoff-Rokitansky sinuses, indicative of acute cholecystitis.

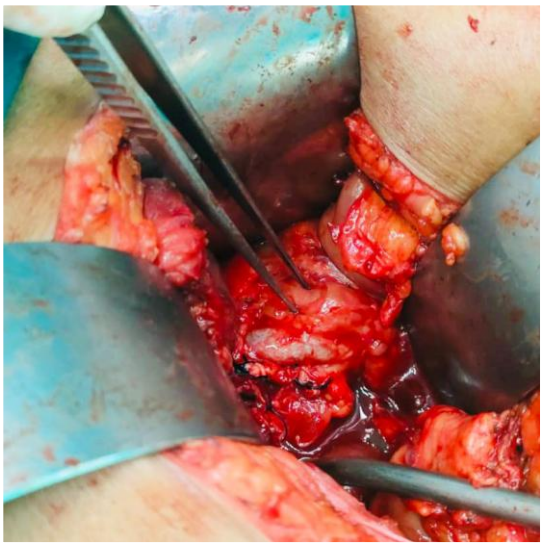

Image 1. Intraoperative picture of gallbladder (pointed by forceps) during laparoscopic converted open cholecystectomy.

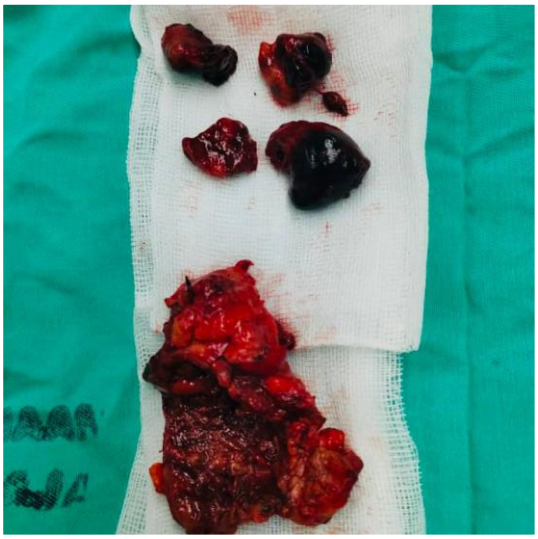

Image 2. Blood clots within the gallbladder upon bivalved.

Image 3. CT Angiography showed arterial blush with possible feeding vessels along the gallbladder wall.

3. DISCUSSION

The etiology of HC can be primarily or secondarily classified. It is hypothesized that the spontaneous gallbladder bleeding in this case could be attributed to underlying bleeding diathesis. Elevated urea levels in ESRF patients can induce platelet dysfunction, vessel wall anomalies, and altered blood flow, potentially leading to HC [3]. However, the absence of bleeding in other locations in this patient renders this theory less probable.

There are hypotheses suggesting that a COVID-19 infection can contribute to an increased tendency for coagulopathy. A few reports have been published showing COVID-19 causing acute acalculous cholecystitis (AAC). Although no direct pathophysiology has been proven, it is thought that the COVID-19 virus mainly enters cells through the angiotensin-converting enzyme 2 receptor (ACE2) [4]. Incidentally, ACE2 receptors are also found in the epithelium of the gallbladder [5]. Many cases of acalculous cholecystitis exhibit necrosis or mucosal erosion, which can lead to bleeding [6]. It's worth noting that diagnosing ACC is challenging

due to its non-specific symptoms and unclear diagnostic criteria. Prompt detection and treatment are vital to prevent complications like bleeding, as observed in our case [7].Up to this point in time, there are no reported cases of a bleeding gallbladder in a COVID-19 patient.

Haemocholecyst (HC) is rare, accounting for less than 1% of gastrointestinal bleeding cases. Given its rarity, HC is often situated low on the differential diagnoses for gastrointestinal bleeding, presenting a substantial diagnostic challenge to clinicians. When exploring cases such as these, it is crucial to consider the methodologies used to approach obscure gastrointestinal bleeding, defined as recurrent bleeding where the source remains unidentified post-endoscopic procedures. Bleeding injuries anywhere between the mouth and the rectum can lead to hidden blood loss [8].The recommended treatment algorithm advocates for the exhaustive utilization of available methods, including endoscopy, angiography, radionuclide imaging, laparoscopy, or intraoperative enteroscopy [9].In advanced centers of the current century, we now utilize balloon-assisted enteroscopy (BAE) and capsule endoscopy to diagnose and treat obscure bleeding originating from the small bowel—areas that were previously inaccessible [8].

In the case under discussion, we identified the unusual source of bleeding through a repeated CT-angiography following negative outcomes from both upper and lower endoscopies. Typically, many HC cases present symptoms consistent with cholecystitis, allowing for a more straightforward approach. However, this patient experienced a painless obscure gastrointestinal bleed, contrasting typical presentations. Our center's limited facilities constrained our ability to perform radionuclide imaging. If a bleed persists, the subsequent step will likely involve a laparotomy coupled with intraoperative enteroscopy [10].

Simple HC may warrant conservative treatment; however, complicated HC with recurrent bleeding necessitates more invasive management, such as surgery or embolization, with laparoscopic cholecystectomy being the preferred treatment.In cases of HC due to pseudoaneurysm formation, microcoil embolization of the bleeding cystic artery followed by delayed cholecystectomy is also effective when the patient is critically ill and unable to tolerate invasive procedures [11].

4. CONCLUSION

HC in ACC is uncommon and presents a significant clinical challenge. It requires clinicians to maintain a heightened awareness, especially when encountering atypical presentations.This case underscores the importance of recognizing and addressing this rare condition and emphasizes the need for meticulous evaluation and intervention in obscure gastrointestinal bleeding. Early detection and intervention are crucial to manage this condition effectively, and this unique case adds valuable insights to the existing knowledge and management of HC.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

CONSENT

As per international study or institution standard, patient(s) written consent has been collected and preserved by the author(s)

ETHICAL APPROVAL

As per international study or institution standard, written ethical approval has been collected and preserved by the author (s)

AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

REFERENCES

1. Ray S, Ghosh R, Khamrui S, Kumar Das A, Saha S, Kumar D. Haemocholecyst related to gallbladder malignancy. Tropical Doctor. 2020;50(3):243-245. doi:10.1177/0049475520917264
2. KonstantinosBlouhos, Konstantinos A. Boulas, Dimitrios G. Tselios, and AnestisHatzigeorgiadis. 'Spontaneous hemocholecyst in an end-stage renal failure patient on low molecular weight heparin hemodialysis'. Case Reports in Surgery. 2012, 1–4. DOI:10.1155/2012/363924.
3. Yi-Chun Lai, Der-CherngTarng.HemorrhagicAcalculousCholecystitis: An Unusual Location of Uremic Bleeding. J Chin Med Assoc 2009;72(9):484–487.
4. Fuad I. Abaleka,BisratNigussie, GenanewBedanie, Amir Mohammed, SelinGaliboglu, Abaleka, F.I. et al. Acute acalculous cholecystitis due to covid-19, an unusual presentation'. Cureus 2021. 13(6): e15431. DOI 10.7759/cureus.15431
5. Zong H, Yin B, Zhou H, Cai D, Ma B, Xiang Y. Loss of angiotensin-converting enzyme 2 promotes growth of gallbladder cancer. Tumour Biol. 2015 Jul;36(7):5171-7. DOI: 10.1007/s13277-015-3171-2. Epub 2015 Feb 9. PMID: 25663464.
6. E. Mattone, M. Sofia, E. Schembari, V. Palumbo, R. Bonaccorso, V. Randazzo et al. Acute acalculous cholecystitis on a COVID-19 patient: a case report. Annals of Medicine and Surgery 2020, 58:73-75.
7. Mossaab G, Ben Khlifa M, Karim N, Moez B, Oussama J, Hajer N et al. Acute acalculous cholecystitis in hospitalized patients in intensive care unit: study of 5 cases. Heliyon. 2022 Nov 11;8(11):e11524. doi: 10.1016/j.heliyon.2022.e11524. PMID: 36411913; PMCID: PMC9674906.
8. FabiánJuliaoBaños. What is the best diagnostic approach for obscure gastrointestinal bleeding? Rev Col Gastroenterol. 2010;25 (2): 170-177.
9. Bong Sik Matthew Kim, Bob T Li, Alexander Engel, Jaswinder S Samra, Stephen Clarke, Ian D Norton et al. Diagnosis of gastrointestinal bleeding: A practical guide for clinicians.World J GastrointestPathophysiol 2014 November 15; 5(4): 467-478. DOI: 10.4291/wjgp.v5.i4.467.

10. Kunihara S, Oka S, Tanaka S, Tsuboi A, Otani I, Chayama K. Management of occult obscure gastrointestinal bleeding patients based on long-term outcomes. TherapAdvGastroenterol. 2018 Jul 16;11:1756284818787408. doi: 10.1177/1756284818787408. PMID: 30034534; PMCID: PMC6048613.
11. Goshi Fujimoto. Precordial pain caused by a hemocholecyst due to gallbladder cancer: A case report. International Journal of Surgery Case Reports. 2023; Volume 102. doi.org/10.1016/j.ijscr.2022.107851.