



Case Report

COVID-19 patients presenting with gangrenous acalculous cholecystitis: Report of two cases

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ABSTRACT

Introduction and importance: COVID-19 virus is thought to complicate underlying conditions, including acalculous cholecystitis. Two COVID-19 patients with gangrenous gallbladder are reported who were not involved with severe pneumonia.

Case presentation: We present two non-critically ill patients with COVID-19 presenting with acalculous cholecystitis. Both patients had gangrenous gallbladder and had to undergo cholecystectomy. Upon surgery, one of the patients showed patchy gangrene on gallbladder and the other, a fully gangrenous gallbladder.

Conclusion: There may be a possibility for COVID-19 patients with cholecystitis to develop ischemic gallbladder.

1. Introduction

Acalculous Cholecystitis (AC) is an inflammatory disease of the gallbladder without stones or identified cystic duct obstruction. Gangrenous cholecystitis is the most common complication in acute AC [1]. It occurs in 2–30% of patients in whom acute cholecystitis has evolved [2]. The vascular structure of fundus is mainly involved where the gangrene mostly develops [3]. Also perforation is common in fundus [4]. Patients presented with this disease are mostly critically-ill and hospitalized in intensive care units (ICUs). Acalculous cholecystitis is a life-threatening condition and should be intervened immediately, either by laparoscopy or laparotomy [5].

In 2019, a new strain of the Coronaviridae family emerged as COVID-19 and turned to a pandemic. Studies have shown that only 5% of patients diagnosed with COVID-19 require intensive care [6]. Although previous strains of this virus family were cause of common cold with little morbidity but COVID-19 is associated with high morbidity rate and increased risk of complications such as microangiopathy and thrombotic events. Herein, we report two cases of perforated gangrenous AC following COVID-19 infection. This case report has been reported in line with the SCARE Criteria [7].

2. Presentation of case

2.1. Case 1

A 86-year-old female was admitted to the emergency department with generalized abdominal pain from the previous day radiating to the back. Her pain was reported to be constant and got worse after meals accompanied by vomiting, loss of appetite, and weight loss. She reported hypertension and history of appendectomy in 20 years prior to the admission. Her vital signs were BP = 130/70, T = 36.2C, PR = 80, RR = 22, and SPO2 = 91%. The patient appeared to be ill though not toxic on physical examination. Fine crackles were auscultated in pulmonary examination. Abdominal wall was soft with no apparent guarding. However, severe tenderness was observed in right upper and lower quadrants, epigastrium, and hypogastrium.

Hepatobiliary ultrasonography showed a gallbladder's diameter of 45 mm, suggestive of slight distention with fluid around the gallbladder. Computed tomography (CT) scan reported ground glass involvement of the lungs, suggestive of COVID-19 pneumonia. Two defects were present with the diameter of 6mm in the right lateral wall of the gallbladder's wall and fluid around the gallbladder, liver, and right paracolic gutter, suggestive for acute cholecystitis (Fig. 1A).

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Open cholecystectomy was performed on this patient by SAMY. Upon laparotomy, free fluid was observed around the liver with the gallbladder being partially gangrened (Fig. 1B). No stone was found in the gallbladder. No complications were encountered after the surgery. The histopathology report was acute acalculous gangrenous cholecystitis. The patient was satisfied with the procedure and did not have any complaint. The patient was discharged with instructions to clean the surgical site and look out for any post-operative complications.

2.2. Case 2

A 82-year-old male was admitted to the emergency department with abdominal pain in right upper quadrant (RUQ). His pain was reported constant, with an increment after each meal. He had several episodes of vomiting. No significant past medical, familial, and surgical history was reported for this patient. His vital signs were BP: 147/67, PR: 86, SPO2: 90, RR: 23, T: 37.2C. On physical examination, the patient demonstrated signs of RUQ tenderness.

CT scan exhibited a slight pleural effusion accompanied by atelectasis on the right side. Ground glass involvement of both sides were observed, suggestive of COVID-19 pneumonia. Gallbladder was distended with the AP diameter of 58mm containing air fluid level. Pneumobilia was seen inside left and central hepatic lobe ducts. Also, slight fluid was observed in the hepatic subcapsular area and right paracolic gutter. These findings suggested emphysematous cholecystitis (Fig. 1C).

Open cholecystectomy was performed on this patient by RH. Free fluid around the liver was observed upon laparotomy. The gallbladder was fully gangrenous and no stones were found inside. No complications occurred after the surgery (Fig. 1D). The histopathologic report demonstrated necrotic and atrophic mucosa with a wall thickness of 3 mm, noted as acute gangrenous and hemorrhagic cholecystitis. The patient was satisfied with the procedure and did not have any complaint. The patient was discharged with instructions to clean the surgical site and look out for any post-operative complications.

Pre-operative laboratory findings demonstrated leukocytosis, elevated liver enzymes and positive COVID-19 polymerase chain reaction tests in both patients.

3. Discussion

AC is a rare disease characterized by inflammation, ischemia, and necrosis of gallbladder as a result of its hypomotility and the corresponding intraluminal pressure increase [8]. Although uncommon it serves great clinical importance due to its high mortality rate. AC has been known to be associated with pathologic states and its more commonly seen in morbid patients. These conditions, such as cardiopulmonary resuscitation, sepsis, major surgery, burn, mechanical ventilation, trauma, and prolonged total parenteral nutrition, are known risk factors for AC development. In this study, we reported two cases of AC without any apparent risk factors except for their age. Both patients tested positive for COVID-19 and were otherwise healthy.

Previous studies have proven COVID-19 to be associated with ischemic complications. Renal, splenic, and mesenteric ischemia have been reported in this setting [9,10]. These ischemic events were thought to be the result of the hypercoagulable state seen in COVID-19 patients. In this regard, anticoagulation therapy was added to COVID-19 patients' therapeutic regimen. As this conventional anticoagulation was proved to be ineffective in a sizeable portion of these patients, other mechanisms such as microangiopathy were suggested [11]. In both of our cases patients did not show any common symptoms of COVID-19 infection and only presented as gangrenous AC.

As previously shown, no serious complications and no death were reported after surgery of several patients diagnosed with acalculous cholecystitis [12]. In our study, also, patients were stable and had no indication to be transferred to ICU which pinpoint the timely diagnosis of such condition in COVID-19 patients. Hence, one might find it useful to consider certain pathologies such as acalculous cholecystitis in patients with COVID-19 and RUQ abdominal tenderness.

4. Conclusion

Acalculous cholecystitis and the corresponding complications may complicate the disease process of admitted patients with COVID-19.

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NA.

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Author contribution

KN handled the patient and helped with the manuscript, SFM and LM wrote the manuscript and reviewed the literature, AMY edited the manuscript, HZM helped with handling the patient and supervised the project and edited the manuscript.

Consent

Done.

Registration of research studies

NA.

1. Name of the registry:
2. Unique identifying number or registration ID:
3. Hyperlink to your specific registration (must be publicly accessible and will be checked):

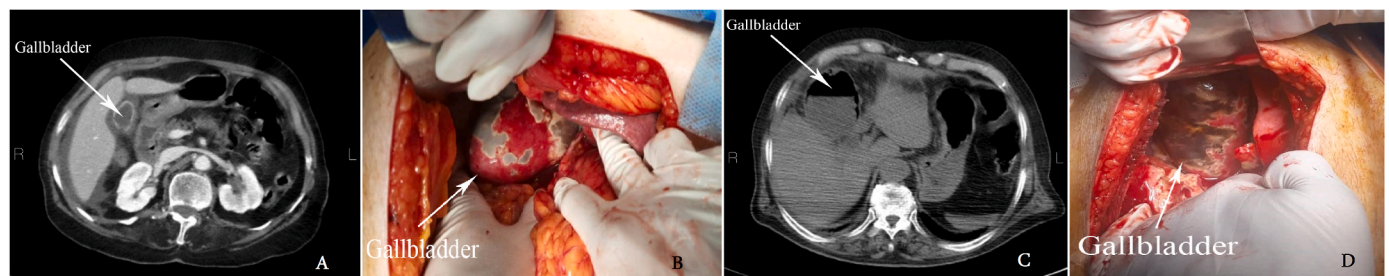


Fig. 1. A: Axial abdominopelvic computed tomography of the first patient showed an acalculous perforated cholecystitis with pericholecystic, perihepatic, and right paracolic gutter fluid. B: The gangrenous perforated gallbladder of case 1. C: Axial abdominopelvic computed tomography of the second patient exhibited an acute emphysematous cholecystitis. D: The gangrenous gallbladder of case 2.

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Declaration of competing interest

NA.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.103534>.

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