

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/radcr](http://www.elsevier.com/locate/radcr)

## Case Report

# COVID-19-associated acute pancreatitis: a rare cause of acute abdomen

Safaa Saeed Al Mazrouei<sup>a,\*</sup>, Ghufraan Aref Saeed, MBBS<sup>b</sup>, Abeer Ahmed Al Helali, MBBS<sup>c</sup>

<sup>a</sup>Department of Radiology, Sheikh Khalifa Medical City, Abu Dhabi, UAE

<sup>b</sup>General radiology, Sheikh Department of Radiology, Khalifa Medical City, Abu Dhabi, UAE

<sup>c</sup>Department of General radiology, Sheikh Department of Radiology, Khalifa Medical City, Abu Dhabi, UAE

## ARTICLE INFO

## Article history:

Received 30 May 2020

Revised 6 June 2020

Accepted 7 June 2020

Available online 11 June 2020

## Keywords:

COVID-19, coronavirus disease 2019

RT-PCR, reverse transcription

polymerase chain reaction

CT, computed tomography

CECT, contrast enhanced computed

tomography

ED, emergency department

## ABSTRACT

Covid-19 is a viral disease that has spread throughout the world causing unprecedented impact on millions of people. It's a pandemic disease called officially by the World Health Organization in March 11, 2020. The disease mainly involves the upper respiratory tract system. Extrapulmonary manifestations are still not well understood. In this report, we describe a case of acute pancreatitis in a patient with Covid-19 infection who presented to our hospital.

© 2020 The Authors. Published by Elsevier Inc. on behalf of University of Washington.

This is an open access article under the CC BY-NC-ND license.

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

## Case report

A 24-year-old man presented to our emergency department (ED) with a nonradiating sharp, epigastric pain for the last 2 days. It was associated with nausea and vomiting. He denied fever, chills and diarrhea. Review of systems was otherwise unremarkable. There was no history of alcohol consumption. The patient was diagnosed with COVID-19 by nasopharyngeal reverse transcription-polymerase chain reac-

tion 1 day prior to presentation to the ED. He had mild upper respiratory tract symptom. His oxygen saturation was 100% in room air and his chest X-ray was negative. He didn't require any treatment for his COVID-19 infection. He was otherwise healthy without any prior medical or surgical history.

The physical examination of the patient was performed in the ED and showed nondistended, soft abdomen with epigastric discomfort on palpation. No palpable mass. No signs of jaundice or dehydration.

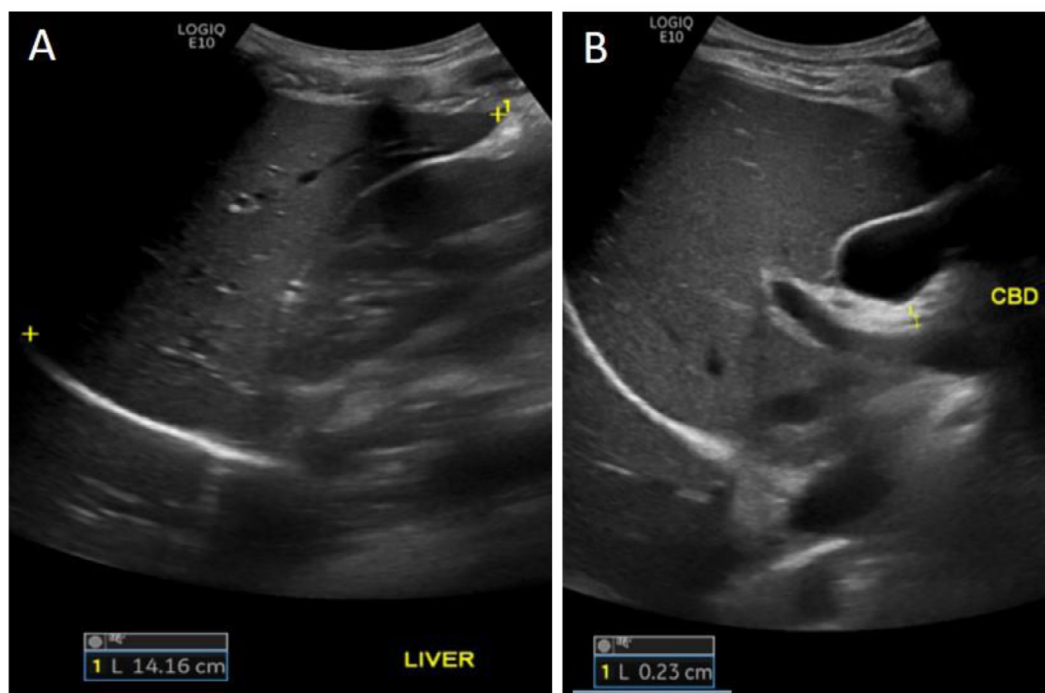
**Abbreviations:** CT, computed tomography; CECT, contrast enhanced computed tomography; COVID-19, coronavirus disease 2019; RT-PCR, Reverse transcription polymerase chain reaction; ED, emergency department; H1N1, Hemagglutinin Type 1 and Neuraminidase Type 1.

\* Corresponding author.

E-mail address: [myageflower@hotmail.com](mailto:myageflower@hotmail.com) (S.S.A. Mazrouei).

<https://doi.org/10.1016/j.radcr.2020.06.019>

1930-0433/© 2020 The Authors. Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license. (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)



**Fig. 1 – Ultrasound of the abdomen showing normal liver appearance (A), gallbladder and CBD with no stones (B).**

The laboratory tests were ordered which showed elevated lipase (578 IU/L) as well as amylase (391 units/L).

Diagnostic radiology imaging including ultrasound and enhanced CT scan were ordered and revealed no biliary stones and mild pancreatitis (discussed below in details).

The patient was admitted under general surgery and was treated conservatively. He was also monitored by COVID-19 team for any deterioration in symptoms.

The patient remained vitally stable with improving symptoms during hospital stay. He was accordingly discharged after 3 days and advised to return to ED if the symptoms reappear.

### Imaging findings

An abdomen ultrasound showed normal liver echogenicity with no focal lesion (Fig. 1).

Normal gallbladder wall, no stones, normal CBD diameter (Fig. 2).

An abdominopelvic computed tomography (CT) with IV contrast (potovenous phase) was performed, axial (Fig. 1) and coronal reformation (Fig. 2), which revealed a mild edema of the distal pancreas with a non-encapsulated peripancreatic low density fluid around pancreatic tail extending to the splenorenal recess (arrow). The pancreas showed normal enhancement with no necrosis or abscess formation. No portal or splenic vein thrombosis.

### Discussion

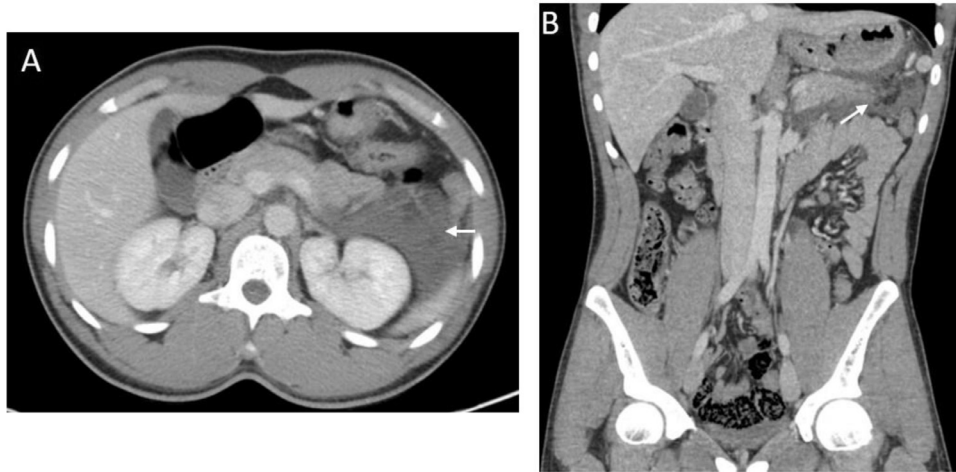
There are many causes of acute pancreatitis in adults. Passage or impaction of gallstones remain the main cause. Other causes may include alcohol abuse, metabolic disorders, autoimmune diseases, drugs and toxins. Viruses such as mumps, Coxsackie B, measles, Epstein–Barr and hepatitis A, B, and E can also cause acute pancreatitis. Few cases that suggest association between H1N1 influenza and acute pancreatitis have been reported [1,4]. One study has also suggested a direct impact of COVID19 infection on the pancreas [7].

Pancreatic injury in COVID-19 might be caused directly by viral involvement or secondary from enzyme abnormalities in the context of severe illness without substantial pancreatic injury [5].

The diagnosis depends usually on the clinical parameters; however, imaging plays an important role in aiding the diagnosis whenever the clinical picture is unclear. It also helps in detecting possible causes, complications, and to assess disease severity based on imaging scoring systems.

Contrast enhanced computed tomography provides over 90% sensitivity and specificity for the diagnosis of acute pancreatitis [2].

Based on Atlanta classification of acute pancreatitis, which is an international multidisciplinary classification of the severity of acute pancreatitis, the severity of acute pancreatitis can be divided into interstitial edematous pancreatitis or necrotizing pancreatitis [6].



**Fig. 2 – Postcontrast CT scan axial (A) and coronal images (B), showing edema of the distal pancreas with surrounding fluid (arrow).**

Early aggressive intravenous fluid resuscitation provides micro- and microcirculatory support to prevent serious complications such as pancreatic necrosis [3].

## Conclusion

Although acute pancreatitis is not an uncommon condition, this case report suggest possibility of a rare and direct causal relation between COVID-19 infection and acute pancreatitis. This can aid physicians in decision making, predicting COVID-19 as a possible cause.

## REFERENCES

- [1] Agzarian, A. and Agzarian, A. (n.d.). Influenza A as a cause of acute pancreatitis: a case report. [online] Available at: <https://proceedings.med.ucla.edu/wp-content/uploads/2016/11/A160816AA-WH-edited.pdf> [Accessed 18 May 2020].
- [2] Banks PA, Freeman ML. Practice guidelines in acute pancreatitis. *Am J Gastroenterol* 2006;101(10):2379–400.
- [3] Gardner TB, Vege SS, Pearson RK, Chari ST. Fluid resuscitation in acute pancreatitis. *Clin Gastroenterol Hepatol* 2008;6(10):1070–6.
- [4] Habib A, Jain A, Singh B, Jamshed N. H1N1 influenza presenting as severe acute pancreatitis and multiorgan dysfunction. *Am J Emerg Med* 2016;34(9):1911. [online]e1–1911.e2. Available at [https://www.ajemjournal.com/article/S0735-6757\(16\)00029-2/pdf](https://www.ajemjournal.com/article/S0735-6757(16)00029-2/pdf) [Accessed 18 May 2020].
- [5] Liu, F, Long, X., Zou, W., Fang, M., Wu, W., Li, W., et al (2020). Highly ACE2 expression in pancreas may cause pancreas damage after SARS-CoV-2 infection.
- [6] Thoeni RF. The revised atlanta classification of acute pancreatitis: its importance for the radiologist and its effect on treatment. *Radiology* 2012;262(3):751–64.
- [7] Wang F, Wang H, Fan J, Zhang Y, Wang H, Zhao Q. Pancreatic injury patterns in patients with COVID-19 pneumonia. *Gastroenterology* 2020;5:434–5.