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# Recurrent Acute Pancreatitis in a Patient with COVID-19 Infection

## Authors' Contribution:

Study Design A  
Data Collection B  
Statistical Analysis C  
Data Interpretation D  
Manuscript Preparation E  
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**Conflict of interest:** None declared

**Patient:** Male, 38-year-old  
**Final Diagnosis:** Recurrent idiopathic acute pancreatitis with COVID-19  
**Symptoms:** Nausea • severe abdominal pain • fever • vomiting  
**Medication:** —  
**Clinical Procedure:** —  
**Specialty:** Gastroenterology and Hepatology • Infectious Diseases • General and Internal Medicine

**Objective:** Unusual clinical course

**Background:** The novel COVID-19 disease has infected more than 2 million people worldwide, causing more than 120 000 deaths. While the disease is known to primarily affect the respiratory system, gastrointestinal manifestations can also occur. However, little is known about the development of acute pancreatitis in COVID-19. The present report highlights a patient with no precipitating risk factors for pancreatitis who presented with recurring acute pancreatitis following the diagnosis of SARS-CoV-2 infection.

**Case Report:** An otherwise healthy 38-year-old man presented to the Emergency Department (ED) with fever and epigastric pain. Laboratory testing revealed a lipase level of 10 255 ukat/L. An abdominal ultrasound showed no gallstones. After ruling out the possible causes of acute pancreatitis, a diagnosis of idiopathic acute pancreatitis was made. He received conservative management and was discharged home after being medically stabilized. Of note, the patient tested positive for SARS-CoV-2 infection at a local testing center 1 week prior to presenting to the ED.

One week following the discharge, the patient returned with recurrent severe epigastric pain. Laboratory testing showed a lipase level of 20 320 ukat/L. An abdominal CT revealed acute pancreatitis. Further workups, including abdominal ultrasound, hepatitis serology, and immunoglobulin G for autoimmune pancreatitis, were unrevealing. Repeated SARS-CoV-2 testing produced positive results.

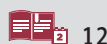
**Conclusions:** The temporal relationship between clinical presentation of acute pancreatitis and SARS-CoV-2 infection in this patient with no precipitating risk factors for pancreatitis suggests COVID-19-associated acute pancreatitis. Our review of the literature found a handful of reported cases of acute pancreatitis in patients with coexisting SARS-CoV-2 infection, and this report presents the first presumptive case of COVID-19-associated recurring acute pancreatitis.

**MeSH Keywords:** Coronavirus Infections • COVID-19 • Pancreatic Diseases

**Full-text PDF:** <https://www.amjcaserep.com/abstract/index/idArt/927076>



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## Background

The novel coronavirus disease-19 (COVID-19) is a highly infectious disease that was first discovered in Wuhan, China, in December 2019, and has since spread throughout the world, causing a global threat and resulting in more than 120 000 deaths [1]. The disease is caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), a single-stranded RNA virus that is known to cause respiratory symptoms such as cough and shortness of breath. Gastrointestinal symptoms are relatively uncommon but occur in a subset of patients with COVID-19 infection [2]. However, little is known about the prevalence and the development of acute pancreatitis as a complication of COVID-19. In this report, we describe a case of recurring acute pancreatitis in a patient with recent SARS-CoV-2 infection.

## Case Report

A previously healthy 38-year-old man with positive SARS-CoV-2 testing at a local testing center 1 week prior to presentation presented to the Emergency Department (ED) with fever, severe epigastric pain, nausea, and vomiting. He denied similar symptoms in the past. He denied respiratory symptoms, hematemesis, or diarrhea. He had no medical history, and his surgical and social history was noncontributory. Initial laboratory testing was significant for a white blood cell count of  $12.53 \times 10^9/L$  and lipase level of 10 255 ukat/L. The rest of the laboratory study, including calcium, triglyceride, bilirubin, and liver function test, was within normal limits. An abdominal ultrasound showed no cholelithiasis or acute cholecystitis and no biliary dilatation. The patient was admitted for acute pancreatitis of unclear etiology and was placed on airborne and droplet isolation due to his recent outpatient diagnosis of SARS-CoV-2 infection. The patient received conservative management with aggressive intravenous (IV) fluid and pain control. He was discharged after clinical improvement and was instructed to self-isolate at home.

One week following the discharge, the patient returned to the ED complaining of recurrent sharp epigastric pain radiating to the back, associated with nausea and vomiting. He denied fever, cough, or relation of pain to food intake, and he denied alcohol or medication use, recent trauma, or surgery. The patient was placed on airborne isolation after a review of medical records indicated that he had recently tested positive for SARS-CoV-2 infection. Initial vital signs were normal. A physical examination revealed moderate tenderness to light palpation in the epigastric region, and Murphy's sign was negative. Laboratory testing showed a white blood cell count of  $14.82 \times 10^9/L$  and a lipase level of 20 320 ukat/L. The rest of the laboratory study, including calcium, triglyceride, bilirubin levels,

and liver function test, was unremarkable. An abdominal ultrasound showed a normal gallbladder, no gallstones, and no biliary ductal dilation. A CT of the abdomen revealed acute pancreatitis and no evidence of chronic pancreatitis. The patient was admitted for recurrent idiopathic acute pancreatitis and had received conservative management with IV fluid, complete bowel rest, and pain control. Repeated testing for SARS-CoV-2 viral nucleic acid with a nasopharyngeal specimen using the Roche fully automated COBAS® 6800/8800 System authorized by the Food and Drug Administration (FDA) produced positive results. Further workups with magnetic resonance cholangiopancreatography (MRCP) and magnetic resonance imaging (MRI) of the abdomen showed evidence of acute pancreatitis, normal gallbladder, and no evidence of intra- or extrahepatic biliary pathology. Hepatitis serology and serum immunoglobulin testing for autoimmune pancreatitis was unremarkable. The patient was discharged home after being clinically stabilized and was instructed to return if his symptoms reoccurred.

## Discussion

Complications from SARS-CoV-2 infection are becoming increasingly recognized. The virus can cause pneumonia, and can also cause damage to other organ systems, including the gastrointestinal tract; therefore, patients with SARS-CoV-2 infection should not be overlooked, even in the absence of respiratory symptoms. An increase in pancreatic enzymes has been increasingly reported in patients with SARS-CoV-2 infection [3,4]. Our review of the literature showed a few case studies that described the presentation of idiopathic acute pancreatitis in patients with concurrent SARS-CoV-2 infection [5–10]. For example, the presence of severe idiopathic acute pancreatitis was reported in 2 first-degree relatives admitted to the Intensive Care Unit with SARS-CoV-2 infection, and findings suggest that there is a casual association between idiopathic acute pancreatitis and COVID-19 [5,10]. It is also important to note that while respiratory symptoms improve in patients with COVID-19 infection, these patients can still test positive for SARS-CoV-2 and are at risk for developing acute pancreatitis.

Acute pancreatitis is an acute inflammatory process of the pancreas, with a potential for significant morbidity. The diagnosis of acute pancreatitis requires 2 of the following 3 criteria: 1) characteristic acute epigastric pain; 2) elevation of serum amylase or lipase more than 3 times the upper limit of normal; and 3) evidence of acute pancreatitis on diagnostic imaging [5]. Gallstones and alcohol use are the 2 most common etiologies and account for more than 80% of all cases of acute pancreatitis. Other causes of acute pancreatitis include hypertriglyceridemia, hypercalcemia, medications, and trauma [11]. Viral pancreatitis was also been reported in the literature, with the most common viral agents being mumps,

measles, hepatitis A/B, Epstein-Barr virus, and Coxsackie virus. Clues to the infectious nature of pancreatitis lay in the characteristic signs and symptoms associated with the particular infectious agent [12].

The finding of an association between idiopathic pancreatitis and COVID-19 is interesting, but little is known about the prevalence and the pathogenesis of acute pancreatitis in SARS-CoV-2 infection [3,4]. It is thought that angiotensin-converting enzyme 2 receptors (ACE-2) can play a role in the pathogenesis of COVID-19, and these transmembrane proteins are highly expressed in pancreatic cells. However, it is also unclear whether COVID-19-related acute pancreatitis is due to the direct cytopathic effect of local viral replications or indirectly by a harmful immune response generated by the virus [4,5,9]. The recent diagnosis of COVID-19 and the presentation of recurring acute pancreatitis in this patient with no known precipitating factors of pancreatitis raise the suspicion that there is a causal relationship between this novel virus and acute pancreatitis.

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## Conclusions

It is important to consider SARS-CoV-2 as a new etiology of acute pancreatitis, and cases of idiopathic pancreatitis warrant further testing for SARS-CoV-2 infection given association of idiopathic pancreatic with COVID-19. Pancreatic enzymes can also be evaluated in COVID-19 patients who present with gastrointestinal symptoms to rule out probable unrecognized pancreatic involvement in this population.

## Conflict of interest.

None.