Rare presentation of acute pancreatitis in mild COVID-19

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SUMMARY

Viral-induced pancreatitis has been well-defined; however, there are limited data regarding COVID-19 and pancreatitis. Most cases are commonly in conjunction with severe COVID-19 as well as lipase elevation. We describe a unique case of mild SARS-CoV-2 infection resulting in acute pancreatitis in the absence of lipase elevation. A 39-year-old patient with no medical history, presented with epigastric pain. Vital signs were unremarkable. Patient was positive for COVID-19. Liver function panel, calcium, triglyceride and lipase levels were all unremarkable. CT of the abdomen demonstrated acute pancreatitis without gallstones. Our case may indicate that pancreatic injury in SARS-CoV-2 infection is due to a direct impact on the pancreas by the virus, given the absence of lipase elevation and mild presentation. This case highlights the importance of suspecting pancreatitis in mild COVID-19 that present with atypical symptoms such as epigastric pain, even without lipase elevation.

BACKGROUND

Acute pancreatitis (AP) secondary to viral aetiologies typically occur in 10% of cases.[1] Evidence has shown an association of AP with novel COVID-19.[2] However, this association is usually noted with severe COVID-19, often requiring intensive care unit (ICU) level care.[3–5] It is speculated that pancreatitis may be a manifestation of the exaggerated immune response seen in the progression of COVID-19 and is likely a prognosticator of poor outcomes.[3] However, this association is not well described in mild SARS-CoV-2 infections. This case illustrates the clinical presentation of mild AP with normal lipase in a patient with mild COVID-19 requiring hospital admission.

CASE PRESENTATION

A 39-year-old woman with no medical history presented to the emergency department with 5 days of sharp epigastric pain, nausea, fever, loss of taste and smell, and dry cough. She denied shortness of breath. She was not taking any medications, and denied personal history of gallstones or previous episodes of pancreatitis. She denied tobacco use, daily alcohol use and denied recent alcohol intake. Her vitals on presentation were stable, with patient saturating well on room air. Physical examination was significant for epigastric tenderness without guarding or rigidity. Lungs were clear and examination was otherwise unremarkable.

INVESTIGATIONS

Lab work was significant for WBC 12.7×109 L, total bilirubin 0.7 mg/dL, aspartate aminotransferase 30 units/L, alanine aminotransferase 33 U/L, alkaline phosphatase 66 U/L, creatinine 0.52 mg/dL, corrected calcium 8.0 mg/dL and triglycerides 245 mg/dL. Importantly, lipase was normal at 43 U/L. The patient was positive for COVID-19 via Abbott ID Now SARS-CoV-2 molecular assay. Inflammatory markers were significant for high-sensitivity CRP 45 mg/L, lactate dehydrogenase 285 U/L, ferritin 217 ng/mL, D-dimer 181 ng/mL. Chest X-ray did not show any opacities or consolidation. CT of the abdomen (figure 1) demonstrated mild peripancreatic inflammation at the level of the tail, with no clear pancreatic lesion and no loculated fluid collection. There was no calcified gallstone and no pancreatic ductal, intrahepatic or extrahepatic biliary dilatation. Patient's clinical presentation and imaging findings were consistent with AP of unclear aetiology.

TREATMENT

The patient was admitted to the COVID-19 unit and conservative measures were initiated including bowel rest, intravenous fluids and pain control.

OUTCOME AND FOLLOW-UP

Her diet was slowly advanced over the course of 3 days and she recovered without complication. She was then discharged home in stable condition.

DISCUSSION

There are very few cases of AP described in association with mild SARS-CoV-2 infection without multiorgan dysfunction or ICU admission.[2 6 7] Even fewer cases are described that presented without hypoxia or lung imaging findings.[8] A study by Liu *et al* found that approximately 1%–2% of non-severe and 17% of patients with severe COVID-19 had pancreatic injury. This study also demonstrated that only 7.5% of patients with COVID-19 with elevated lipase levels had concurrent pancreatic injury confirmed by imaging studies.[9] The diagnosis of AP requires two out of the three following criteria: characteristic abdominal pain; threefold elevation in lipase or amylase; radiographic evidence of AP.[10] Our patient presented with characteristic epigastric abdominal pain and imaging findings consistent with AP but with normal lipase levels. Normal lipase levels are extremely rare in routine clinical practice,[11] with several studies reporting a negative predictive value of serum lipase in diagnosing AP to be between 94% and 100%.[12]

Laboratory and imaging findings were not able to identify an aetiology to our patient's AP. Interestingly, our patient was found to be COVID-19

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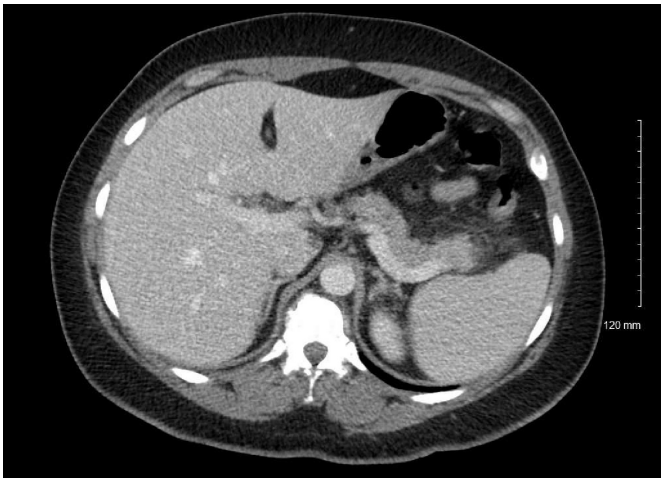

Figure 1 CTof the abdomen, demonstrating mild peripancreatic inflammation at the level of the tail, with no clear pancreatic lesion and no loculated fluid collection. There was no calcified gallstone and no pancreatic ductal, intrahepatic or extrahepatic biliary dilatation. Acute pancreatitis without clear aetiology.

positive, manifesting as mild disease without lower respiratory tract infectious (LRTI) symptoms or imaging findings on chest X-ray, which offered a possible aetiology of this patient's AP. However, the exact pathophysiology behind this association is not completely understood.

Pancreatic exocrine tissue and endocrine islets both express ACE2 receptors, which can be found in higher concentrations in the pancreas when compared with the lung tissue.[3] ACE2 receptors can function as an entry point for SARS-CoV-2 into the pancreatic cell, which may result in direct injury.[3] Therefore, it would be logical to suspect that COVID-19 can also be a viral aetiology to AP. It is also postulated that infection can also increase the expression and distribution of ACE2 receptors on the pancreatic islet cells, which results in an increased risk of pancreatic injury.[9 13] Other suggested mechanisms of pancreatic injury are thought to be secondary to cytokine burst and immune dysregulation, which are seen in severe SARS-CoV-2 infections specifically.[3] Our case demonstrates pancreatic injury as evidenced by CT imaging even without lipase elevation, which argues for the theory that there is likely direct pancreatic injury by the virus itself, via ACE2 receptors.

Patients with AP and coexistent COVID-19 are at an increased risk of severe AP, worse clinical outcomes, prolonged hospital length of stay and a higher 30-day mortality.[14] Therefore, prompt identification of AP in patients with COVID-19 is paramount in order to ensure timely management and prevention of worse clinical outcomes. With early identification of an atypical presentation, we may also be able to avoid unnecessary spread of COVID-19 in the hospital and in the outpatient setting. Early detection of pancreatic injury in severe COVID-19 is more likely given the high index of suspicion. However, diagnosis could be more challenging in milder cases with no LRTI symptoms, lack of pulmonary involvement and hypoxia with normal lipase levels as seen in our patient.

This case adds to the growing body of evidence concerning the association of SARS-CoV-2 infection and AP. To our knowledge, this is the first described case of mild AP with normal serum lipase in setting of mild COVID-19. Early detection and subsequent management of pancreatitis in this subset of patients can reduce the risk of severe pancreatitis, organ failure, progression in acute respiratory distress syndrome, or other manifestation of systemic inflammation. Further studies are needed to establish causality between SARS-CoV-2 and AP.

Learning points

- This patient demonstrates a unique example of a mild COVID-19 causing pancreatitis in the setting of normal lipase levels.
- Our case argues that COVID-19 induced pancreatitis is likely secondary to viral-induced direct injury to pancreatic cells rather than a consequence of an overwhelming inflammatory response.
- This case highlights the importance of suspecting pancreatitis in patients with mild COVID-19 infections that present with epigastric pain, even in the absence of lipase elevation.

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