



COVID 19 ASSOCIATED ACUTE PANCREATITIS : A RARE CAUSE OF ACUTE ABDOMEN

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ABSTRACT **BACKGROUND:** COVID 19 is a viral disease that has spread throughout the world causing unprecedented impact on millions of people. Although COVID 19 has been highlighted principally to affect the respiratory system , gastrointestinal system involvement has also been underlined in the published literature. pancreatic involvement in patients with COVID 19 is rarely reported. Pancreatic symptomatology usually corresponds to asymptomatic abnormal pancreatic enzyme elevation and acute pancreatitis. Here , we present a rare case of acute pancreatitis in a patient of COVID 19. **OBJECTIVE:** To present a rare case of acute pancreatitis in a patient of COVID 19. **CASE STUDY:** A 45 year old male with no past medical history presented to the emergency department with complaints of fever , shortness of breath , lethargy , epigastric pain radiating to back since 2 days. Physical examination revealed abdominal tenderness. The patient had persistent epigastric pain radiating to the back followed by nausea. Laboratory analysis revealed marked elevation of lipase and amylase. His low density lipoprotein 51.2mg/dl , high density lipoprotein 22mg/dl , serum triglycerides 149mg/dl and serum cholesterol 103mg% . He was diagnosed with acute pancreatitis due to COVID19 as he had no other risk factors for acute pancreatitis. He was admitted to the intensive care unit and was managed symptomatically with intravenous fluids and analgesia. His CT Abdomen revealed bulky pancreas with adjacent excessive fat stranding likely suggestive of acute pancreatitis. **CONCLUSION:** COVID 19 infection is a pressing concern due to the involvement of gastrointestinal system , especially the pancreas. COVID 19 induced acute pancreatitis is a rare cause , and other common causes of acute pancreatitis must be ruled out thoroughly. Severe acute respiratory syndrome corona virus 2 (SARS-COV2) as complexed presentations because of multisystem involvement and can be lethal if not identified and addressed appropriately. Therefore clinician should have sound knowledge and pay close attention to SARS-COV2 infections and related pancreatic complications.

KEYWORDS : Covid-19, Coronavirus, Pancreatitis, Pancreatic Enzymes.

INTRODUCTION

COVID 19 is a viral disease that has spread throughout the world causing unprecedented impact on millions of people. It was first identified in Wuhan, China in December 2019. It initially started as an epidemic in China and eventually, the WHO declared this medical emergency as a global pandemic. It's a pandemic disease caused officially by World Health Organisation in March 11 2020 .COVID 19 is caused by severe acute respiratory syndrome Corona virus 2(SARS COV2).

Fever, cough, dyspnoea, sore throat, headache, and myalgia are characteristic symptoms of COVID 19.¹ Although COVID 19 has been highlighted principally to affect the respiratory system , gastrointestinal system involvement has also been underlined in the published literature. The gastrointestinal manifestations of COVID 19 infection include anorexia , nausea , vomiting , abdominal pain and diarrhoea. However , pancreatic involvement in patients with COVID 19 is rarely reported. Pancreatic symptomatology usually corresponds to asymptomatic abnormal pancreatic enzyme elevation and acute pancreatitis.²

Viral pancreatitis has been extensively described in literature to be most commonly caused by mumps, Coxsackie B virus and hepatitis A virus.¹⁰ There were neither reasons for clinical suspicion, nor direct evidence of the above-mentioned viruses in our case. This increases the suspicion of COVID-19-induced pancreatitis. Here , we present a rare case of acute pancreatitis in a patient of COVID 19.³

OBJECTIVE: To present a rare case of acute pancreatitis in a patient of COVID 19.

CASE STUDY

A 45 year old male with no past medical history presented to the emergency department with complaints of fever , shortness of breath , lethargy , epigastric pain radiating to back since 2 days. The initial evaluation revealed a temperature of 100°F , a Blood pressure of

120/80 mmHg , a Pulse rate of 100 beats per minute , a Respiratory rate of 22 per minute and an oxygen saturation of 86% on room air.

Physical examination revealed abdominal tenderness. On auscultation bilateral air entry was normal and there were no added sounds. Rest of physical examination was insignificant. The patient was tested for COVID 19. He was admitted and was isolated for suspected COVID 19. HRCT chest was performed which revealed multiple predominantly peripheral subpleural ground glass opacities involving bilateral lung parenchyma predominantly involving bilateral lower lobes with minimal left sided pleural effusion with basal atelectasis.

On initial laboratory analysis , the patient's white blood cell count , platelet count and haematocrit were within normal range. Markers for COVID 19 raised such as C reactive protein > 90mg/dl , erythrocyte sedimentation rate=24mm/hr , D-dimer=2.19mcg/ml , LDH =306 unit/litre.

He was started on intravenous Ceftriaxone 1 gm twice a day , intravenous Methyl prednisolone 40 mg twice a day and injection Enoxaparin 0.6 units subcutaneous twice a day along with adequate intravenous fluids upto 1 litre normal saline per day. On the next day his COVID 19 RTPCR was positive. The patient had persistent epigastric pain radiating to the back followed by nausea. Laboratory analysis revealed marked elevation of lipase and amylase. His low density lipoprotein 51.2mg/dl , high density lipoprotein 22mg/dl , serum triglycerides 149mg/dl and serum cholesterol 103mg% .

Supportive treatment continued along with antibiotic coverage of intravenous Imipenem 500 mg thrice a day for five day with high flow oxygen supplementation due to hypoxic respiratory failure.

After four days an improvement in clinical condition of patient was observed. His temperature subsided gradually. Oxygen requirement declined over next 3 days with gradual improvement in his pulmonary and gastrointestinal symptoms and was discharged with outpatient followup. Abdominal CT revealed normal sized biliary ducts with no

evidence of gall stones. He had no history alcoholism , smoking , drug abuse.

Parameters	Lab value	Normal range
Haemoglobin	14.10 gm%	13-17 gm%
Total leucocyte count(TLC)	10540/cumm	4000-10000/cumm
PCV	41.10%	40-50%
MCV	77.40 fl	83-101 fl
MCH	26.60 pg	27-32 pg
Platelet count	177000/cumm	150000-400000/cumm
Neutrophils	88%	40-80 %
Lymphocytes	7%	20-40 %
Monocytes	4%	2-10 %
Eosinophils	1%	1-6 %
Total bilirubin	1.2 mg%	0.2-1.3 mg %
Direct bilirubin	0.5 mg%	0-0.2 mg %
Indirect bilirubin	0.7 mg %	0-0.8 mg %
SGOT	44 IU/litre	17-59 IU/litre
SGPT	114 IU/litre	21-72IU/litre
Alkaline phosphatase	75 IU/litre	38-125IU/litre
Blood urea	23mg/dl	19-43mg/dl
Serum creatinine	0.7mg/dl	0.8-1.5mg/dl
Serum amylase	376 IU/L	30-100IU/L
Serum lipase	2679IU/L	23-300IU/L
Serum sodium	139mEq/L	135-148mEq/L
Serum potassium	3.80mEq/L	3.5-5.5mEq/L

He was diagnosed with acute pancreatitis due to COVID19 as he had no other risk factors for acute pancreatitis. He was admitted to the intensive care unit and was managed symptomatically with intravenous fluids and analgesia. His CT Abdomen revealed bulky pancreas with adjacent excessive fat stranding likely suggestive of acute pancreatitis.

DISCUSSION

COVID-19 has been widely studied as a lung pathogen. However, GI association with COVID-19 has also been reported in recent studies. Studies have shown that up to 50% of COVID-19 patients develop GI symptoms of nausea, vomiting, diarrhea, and abdominal pain [2]. In a recent study, 11.4% of the patients exhibited at least one of the GI symptoms, involving nausea, vomiting, or diarrhea.⁵ However, pancreatic involvement is rare. Pancreatic symptomatology usually corresponds to asymptomatic abnormal pancreatic enzyme elevation or acute pancreatitis in COVID-19. A recent study by Wang et al. reported that out of 52 patients with COVID-19, eight patients experienced pancreatic injury (abnormal elevation in lipase or amylase).⁶ However, these patients did not experience the clinical symptoms of acute pancreatitis. Acute pancreatitis as a presenting sign has been reported in very few case reports in the literature.⁷

The mechanism of pancreatic injury in COVID-19 is due to the expression of angiotensin-converting enzyme 2 (ACE2) receptors in pancreatic cells. Glycosylated-spike (S) protein is one of the structural proteins encoded by the coronavirus genome, and it is a prime inducer of the host immune response. This protein binds to ACE2 receptor protein located on the host cell surface membrane and mediates the host cell invasion.^{8,9} ACE2 does not only express in the lung alveolar type-2 (AT-2) cells but also manifests in the esophagus, small intestine, large intestine, and pancreatic islets cells. High expression of ACE2 receptors in the pancreatic islet cells can cause cell damage due to COVID-19, resulting in acute pancreatitis. Direct cytopathic effects of COVID-19 or immune-mediated and indirect systemic inflammatory response could be the mechanism of pancreatic injury. Excessive systemic inflammatory response syndrome in acute pancreatitis leads to distant organ damage and multiple organ dysfunction. Inflammatory mediators such as tumour necrosis factor-alpha, interleukin (IL)-6 and IL-10 play a critical role in the inflammatory response of both acute pancreatitis and COVID-19.¹⁰ Antipyretics, which most of the patients take before admission, could also cause drug-induced pancreatitis. However, our patient did not use any medication before presenting to the hospital.

Diagnosis of acute pancreatitis lies in the clinical presentation of the patient, lab values, and the use of imaging modalities. Two of the following three criteria must be met to diagnose acute pancreatitis: (1) upper abdominal pain consistent with the disease activity (acute onset, epigastric, and usually radiating to back); (2) serum Lipase or amylase

level > 3x the upper limit of normal; (3) distinctive acute pancreatitis findings on imaging modalities (such as ultrasonography, abdominal CT, or MRI).^{11,12} Acute pancreatitis is managed symptomatically, supportive care with fluids and analgesia, and nutritional support with enteral nutrition, if the patient cannot tolerate an oral diet. The use of prophylactic antibiotics is usually prohibited in acute pancreatitis.¹³

Our patient was previously healthy, with no history of alcohol or drug abuse. Similarly, abdominal ultrasonography revealed no evidence of gallstone. His improvement with conservative management confirmed acute pancreatitis attributable to COVID-19.

CONCLUSION

COVID 19 infection is a pressing concern due to the involvement of gastrointestinal system, especially the pancreas. COVID 19 induced acute pancreatitis is a rare cause, and other common causes of acute pancreatitis must be ruled out thoroughly. Severe acute respiratory syndrome corona virus 2 (SARS-COV2) as complexed presentations because of multisystem involvement and can be lethal if not identified and addressed appropriately. This report highlights the importance of the consideration of COVID-19 as a potential cause in patients presenting with idiopathic pancreatitis, especially during the pandemic. Therefore clinician should have sound knowledge and pay close attention to SARS-COV2 infections and related pancreatic complications.

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