

Acute Hepatitis as a Rare Presentation of COVID-19

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ABSTRACT

Coronavirus disease 2019 (COVID-19) initially emerged in Wuhan, China, in December 2019, and now it has been declared a pandemic by the World Health Organization. COVID-19 commonly presents with respiratory manifestations like fever, cough, body aches, and shortness of breath. Neurological, myocardial, renal and gastrointestinal complications secondary to SARS-CoV-2 infection have been reported in the literature. Gastrointestinal symptoms reported with COVID-19 are mostly nausea, vomiting, and diarrhea. COVID-19 can rarely present with acute hepatitis. Here, we report a case of a 45-year male who presented with signs and symptoms of acute hepatitis secondary to SARS-CoV-2 infection.

Key Words: SARS-CoV-2, COVID-19, Acute hepatitis.

How to cite this article: Khan A, Qayum I, Khan AW, Hanif M, Naeem A. Acute Hepatitis as a Rare Presentation of COVID-19. *J Coll Physicians Surg Pak* 2021; **31(Supp1)**:S125-S126.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) initially began as clusters of atypical pneumonia in Wuhan, China, in December 2019, and now it has caused approximately one million deaths around the globe. SARS-CoV-2 infection is mostly asymptomatic and commonly presents with respiratory symptoms like fever, shortness of breath, and cough.¹ In the literature, COVID-19 has been reported with various renal, myocardial, neurological, and gastrointestinal complications.^{2,3} Similarly, hepatobiliary complications, *i.e.* abnormal liver function tests and rarely acute hepatitis, have been reported with SARS-CoV-2 infection.⁴ Wander *et al.* reported the first case of acute non-icteric hepatitis caused by SARS-CoV-2, who presented to the emergency department with dark urine and was later diagnosed as a case of acute hepatitis secondary to SARS-CoV-2.⁵ Here, we report a case of a 45-year male patient who initially presented with signs and symptoms of acute hepatitis and was later on diagnosed with acute hepatitis secondary to SARS-CoV-2 infection.

CASE REPORT

A 45-year male with an insignificant past medical history presented to the Emergency Department with five days' history of nausea, vomiting, and fever.

On examination, his blood pressure was 115/75 mmHg, pulse 110/min, oxygen saturation 96%, and temperature was 101°F. Abdominal examination was unremarkable except for tender right hypochondrium. Baseline investigations showed a high level of alanine aminotransaminase (ALT) 1750 U/L, aspartate aminotransaminase (AST) 1801 U/L, total bilirubin of 2 mg/dl, and an alkaline phosphatase of 204 U/L. He was admitted as a case of acute hepatitis in the isolation unit and started on intravenous dextrose saline 1000 ml twice a day, injectable dimenhydrinate as needed, and omeprazole 40 mg once a day. As per the hospital's protocol, inflammatory markers and a nasopharyngeal swab test for COVID-19 on quantitative reverse-transcriptase-polymerase-chain reaction (qRT-PCR) assay were sent. The inflammatory markers were raised (Table I), and he developed a dry cough on the second day of admission.

Chest X-ray showed mild bilateral infiltrates. He was started on injectable azithromycin 10 mg/kg/day, ceftriaxone 50 mg/kg/day, and enoxaparin 40 mg subcutaneous once a day. Serological tests for hepatitis A, B, C, and E viruses, Epstein-Barr virus, cytomegalovirus virus, blood cultures, and autoimmune markers were negative (Table II).

The qRT-PCR result was positive for SARS-CoV-2 infection. The patient had no history of alcohol intake and hepatotoxic drug use. He was diagnosed with acute hepatitis secondary to SARS-CoV-2, because no other causative factor was found despite thorough work-up. On fifth day of admission, his condition improved, and he was discharged and was advised to follow-up as an outpatient.

DISCUSSION

SARS-CoV-2 causing COVID-19 mostly presents as fever, cough, shortness of breath, fatigue, and headache. Acute hepatitis associated with SARS-CoV-2 has been rarely reported. For instance, the first biopsy-proven acute hepatitis secondary to SARS-CoV-2

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Received: September 29, 2020; Revised: February 22, 2021;

Accepted: April 18, 2021

DOI: <https://doi.org/10.29271/jcpsp.2021.Supp1.S125>

in a female infant who was a liver allograft recipient and whose donor subsequently tested positive for COVID-19 was reported by Lagana *et al.*⁶

Table I: Laboratory findings.

Test	Result
Hemoglobin	11.4 g/dl
Total lymphocyte count	13.8×10 ⁹ /l
Red blood cells	4.3 ×10 ¹² /l
Platelets	390×10 ⁹ /l
Prothrombin time	13 seconds (12 seconds control)
Activated partial thromboplastin time	33 seconds (28 seconds control)
D-dimers	874 ng/FEUml (reference value: upto 500 ng/FEUml)
C-Reactive protein	17.2 mg/dl
Lactate dehydrogenase (LDH)	725 U/l
Serum Ferritin	1178.6 µg/l
Alanine aminotransaminase (ALT)	1750 U/l
Aspartate aminotransaminase (AST)	1801 U/l
Alkaline phosphatase	204 U/l
Total bilirubin	2 mg/dl
Blood urea	51 mg/dL
Creatinine	0.6 mg/dl
Sodium	137.2 mEq/l
Potassium	3.92 mEq/l

Table II: Additional laboratory findings.

Investigations	Results
Anti-hepatitis A antibody (IgM/IgG)	Negative/Negative
HBs antigen	Negative
Anti-HBs antibody	Negative
Anti-HBc antibody	Negative
Anti-HCV antibody	Negative
Anti-Hepatitis E antibody (IgM/IgG)	Negative/Negative
Anti-CMV antibody (IgM/IgG)	Negative/ Negative
Anti-EBV antibody (IgM/IgG)	Negative/ Negative
Blood Culture	Negative for any pathogens
ANA Screening	Negative

Chen *et al.* conducted a study to evaluate clinical manifestations in 99 COVID-19 patients and found that 35 % of patients had a mild elevation of AST (mean 34 U/L) and 28% a mild elevation of ALT (mean 39 U/L), but only one (0.9%) out of 99 patients had a high level of ALT and AST (ALT, 7590 U/L, AST, 1445 U/L).⁷ Several mechanisms have been proposed to explain how SARS-CoV-2 causes liver injury. The possible mechanisms include: Immune-mediated injuries: Inflammatory biomarkers could be the cause of liver injuries in COVID-19 patients as they are significantly elevated in COVID-19 patients.⁸ Hypoxic and Anoxic injuries: Respiratory failure is the hallmark of COVID-19, and hypoxia and anoxia could be the possible cause of hepatic injuries.⁸ Direct cytotoxicity: Angiotensin-converting enzyme 2 (ACE2) receptors the potential targets of SARS-CoV-2 viral entry. ACE2 receptors are abundant in the liver and could be the cause of liver injuries.⁹ Mild hepatic damage is common in SARS-CoV-2 due to the above possible mechanisms, but severe acute hepatitis is a rare occurrence. In our case, the patient presented with signs and symptoms of acute hepatitis and was later diagnosed as COVID-19.

Acute hepatitis is an atypical and rare presentation of COVID-19, which occurred before developing typical respiratory symptoms of cough, shortness of breath in this case. During this pandemic, physicians should keep in mind such rare manifestations and presentations of SARS-CoV-2 infections to decrease the spread and mortality of COVID-19.

PATIENT'S CONSENT:

Written informed consent was taken from the patient.

CONFLICT OF INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

AK: Collected the data.
AK, IQ, AWK, MH and AN: Wrote the initial manuscript.
MH and AWK: Critically revised the manuscript.
All authors have read the final manuscript.

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