COVID-19 Masquerading as Autoimmune Hepatitis (AIH) Flare—The First Report

To the editor:

Liver involvement is well known in coronavirus disease-2019 (COVID-19).[1,2] However, there are no reports of COVID-19 leading to autoimmune hepatitis (AIH) flare from India. Here, we present a case of AIH who developed a flare after COVID-19 in the initial days of the pandemic. The idea of COVID-19 induced AIH flare was not accepted, leading to natural death.

A 50-year-old man was treated with prednisolone and azathioprine for biopsy-proven AIH (simplified score—7/8) for ten months. He achieved biochemical remission and was on azathioprine (100 mg/day). He now presented with complaints of jaundice, ascites, and altered behavior for seven days. On examination, the patient had icterus, pedal edema, ascites, and flaps. Cross-sectional imaging of the abdomen revealed ascites with altered liver morphology but no evidence of portal vein thrombosis. His SpO2 was 97% at room air. His initial laboratory investigations are as follows: total bilirubin (TB) was 7.8 mg/dl, aspartate transaminase (AST) was 203U/L, alanine transaminase (ALT) was 113 U/L, serum albumin was 2.0 g/dl (N: 3.5–5.1 g/dl), and the international normalized ratio (INR) was 3.17. His total serum immunoglobulin G (IgG) was 5,052 mg/dl. Sepsis screen was negative (Table 1).

Table 1 Laboratory Investigation of the Patient.

Variables	Day of admission	Day 3 (post-steroid)	Normal values
Total bilirubin (mg/dl)	7.8	3.2	0.3–1.3
Direct bilirubin (mg/dl)	4.1	1.5	0–0.2
Alanine transaminase (U/L)	113	79	Upto 40
Aspartate transaminase (U/L)	203	133	Upto 40
Alkaline phosphatase (U/L)	161	106	30–120
Total protein (g/dl)	7.7	7.5	
Serum albumin (g/dl)	2.0	2.3	3.5–5.1
Serum creatinine (mg/dl)	1.0		0.7–1.3
INR	3.17	2.89	<1.3
AFP	31.9		<7
Hemoglobin (g/dl)	10.6		13.0–17.0
White cell counts (cells/mm^3)	5300		4000–10000
Platelets (lakh/mm^3)	1.3		1.5–4.1
Lactate dehydrogenase (U/L)		683	225–450
C-reactive protein (mg/l)		5.03	<6
Procalcitonin (ng/ml)	0.37		<0.5
Hepatitis A (IgM), B (surface antigen), C (antibody), E (IgM)	Negative		
Blood and urine culture	Sterile		
Ascitic fluid evaluation	High SAAG (1.3), low protein (1.9 g/dl), no SBP (100 cells/mm^3)		
Total IgG (mg/dl)	5052		791–1643
SARS-CoV-2 RT-PCR		Positive	

INR, international normalized ratio; AFP, alfa-fetoprotein; SAAG, serum ascites albumin gradient; SBP, spontaneous bacterial peritonitis; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; RT-PCR, reverse transcriptase–polymerase chain reaction.

Abbreviations: ACLF, acute-on-chronic liver failure, AIH: autoimmune hepatitis, ALT, alanine transaminase, COVID-19, coronavirus disease-2019, IgG, immunoglobulin G, INR, international normalized ratio, TB, total bilirubin

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The patient was started on antibiotic therapy (cefoperazone), human albumin infusions (20 g/day), and anti-encephalopathy measures. Chest radiography and cardiac echocardiography were normal. Given the high suspicion of AIH flare (with high total IgG) presenting as acute-on-chronic liver failure (ACLF), steroid therapy (intravenous methylprednisolone 40 mg) was initiated. He was planned for a living donor liver transplantation in case of no response. On the third day, laboratory investigations revealed a TB of 3.2 mg/dl, AST of 133 U/L, ALT of 79 U/L, and INR of 2.89. His sensorium improved. Severe acute respiratory syndrome coronavirus-2 reverse transcriptase–polymerase chain reaction was reported as positive on day 4 of admission (performed on the day of admission given the history of travel). C-reactive protein was 5.03 mg/dl. Antibiotic and supportive care was continued. The patient was asymptomatic for six days and was discharged on day 12. At discharge, TB was 2.1 mg/dl with AST, ALT, and IgG of 102 U/L, 42 U/L, and 2,231 mg/dl, respectively.

This is the first unique report of COVID-19 masquerading as an AIH flare from India. COVID-19 can lead to ACLF and is associated with poor outcomes.[3,4] The abnormalities in liver function tests in COVID-19 could be due to virus-related cytopathic effects or nonviral causes such as cytokine storm, hypoxia, and hepatotoxic medications.[1,5] Steroid therapy probably contained the initial cytokine storm and aided in rapid recovery. Early administration of dexamethasone can reduce the severity of COVID-19.[6] It may be argued that the liver chemistry abnormalities can be due to COVID-19 itself; however, the acute development of decompensation with elevated liver enzymes and exponentially high serum IgG suggests COVID-19 induced AIH flare. A transjugular liver biopsy would have added more knowledge about the disease. However, given the sick presentation, a liver biopsy could not be performed at the time of flare.

Recently, there are reports of AIH developing after COVID-19 vaccination.[7] The vaccines are derivatives of the virus itself.[8] The COVID-19 virus can induce AIH flare in predisposed individuals, as demonstrated in our case report. Similarly, COVID-19 vaccines can lead to AIH because of molecular mimicry in predisposed individuals.[9] Although patients with AIH and infected with COVID-19 may not have poor outcomes, they need to be identified early for timely intervention.[10] COVID-19 should be suspected in patients presenting as AIH flare even in the absence of predominant respiratory symptoms.

INFORMED CONSENT

Yes.

ARTICLE GUARANTOR

Dr. Anand V. Kulkarni is the article guarantor.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

AVK and PNR made the study concept and design; Data collection by SV and AVK; compilation and critical revision by AVK, MS, DNR and PNR. All members approved the final draft.

CONFLICTS OF INTEREST

The authors have none to declare.

FINANCIAL DISCLOSURES

The authors have none to declare.

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