

Autoimmune Hepatitis After COVID-19 Vaccine: An Unusual Complication

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INTRODUCTION

- Vaccination against SARS-Cov2 has represented a major milestone in our ability to ameliorate the COVID-19 pandemic.
- The vaccines are generally safe and effective, but some adverse events have been reported, including very recent reports of autoimmune-like hepatitis.
- This case report presents a rare diagnosis of autoimmune hepatitis after administration of an mRNA COVID-19 vaccine.

CASE PRESENTATION

- 18-year-old man with no medical history presented after receiving the Pfizer mRNA COVID-19 vaccine in April 2021, and second dose in May 2021.
- In June of 2021, about two weeks after the second dose, the patient was found with AST 120 u/L, ALT 181 u/L, Platelets 90. See table for further lab values.
- Per family, prior liver chemistries were normal. Initial serological workup was completed, including viral hepatitis (Hepatitis A, B, C, E), CMV IgG and IgM, EBV IgG and IgM, ceruloplasmin, alpha-1-antitrypsin, iron studies, all of which were unremarkable.
- Patient was also found to have ANA titer >1:640, positive anti-smooth-muscle antibody of 1:640, IgG level of 1,845, and positive anti to body soluble liver antigen of 2.321.
- Abdominal MRI was completed with findings including splenomegaly 20 cm, radiographic evidence of advanced hepatic fibrosis (see images)
- Patient then underwent liver biopsy consistent with chronic hepatitis with bridging necrosis and transition to cirrhosis.
- Given these findings and it's timing close to administration of COVID-19 vaccine, the patient was diagnosed with autoimmune hepatitis associated with the vaccine. Patient was started on steroids in November 2021, and later, azathioprine, with improvement of liver enzymes.

LAB RESULTS

	11/15/2021	12/2/2021	12/9/2021	1/12/2022	2/11/2022	4/18/2022	5/23/2022
AST U/L	323	31	38	35	48	37	50
ALT U/L	519	130	87	58	74	44	48
ALK P U/L	292	175	165	101	109	116	124
TOTAL BILIRUBIN MG/DL	1.1	0.9	1	1.2	1.0	1.2	1.2
PLATELET COUNT	86	89	93	82	96	111	98

↑ Started on steroids

DISCUSSION

- Autoimmune hepatitis is a rare complication of COVID-19 vaccines, reported in few case reports in the literature.
- The pathophysiology remains unclear but is hypothesized to be related to molecular mimicry. The mRNA vaccines developed against COVID-19 leads to the production of the spike protein, and its antibodies. Antibodies to the spike protein have high affinity toward other human tissue proteins, which can lead to autoimmune tissue injury.
- In most case reports, patient did improve after treatment with steroids, though two have been reported to have passed away of liver failure. No liver transplants have yet been reported related to this complication
- Given the serious implications of this disease and the number of vaccines against COVID-19 given world-wide, further research is needed to better understand this entity and its pathophysiology.

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IMAGING

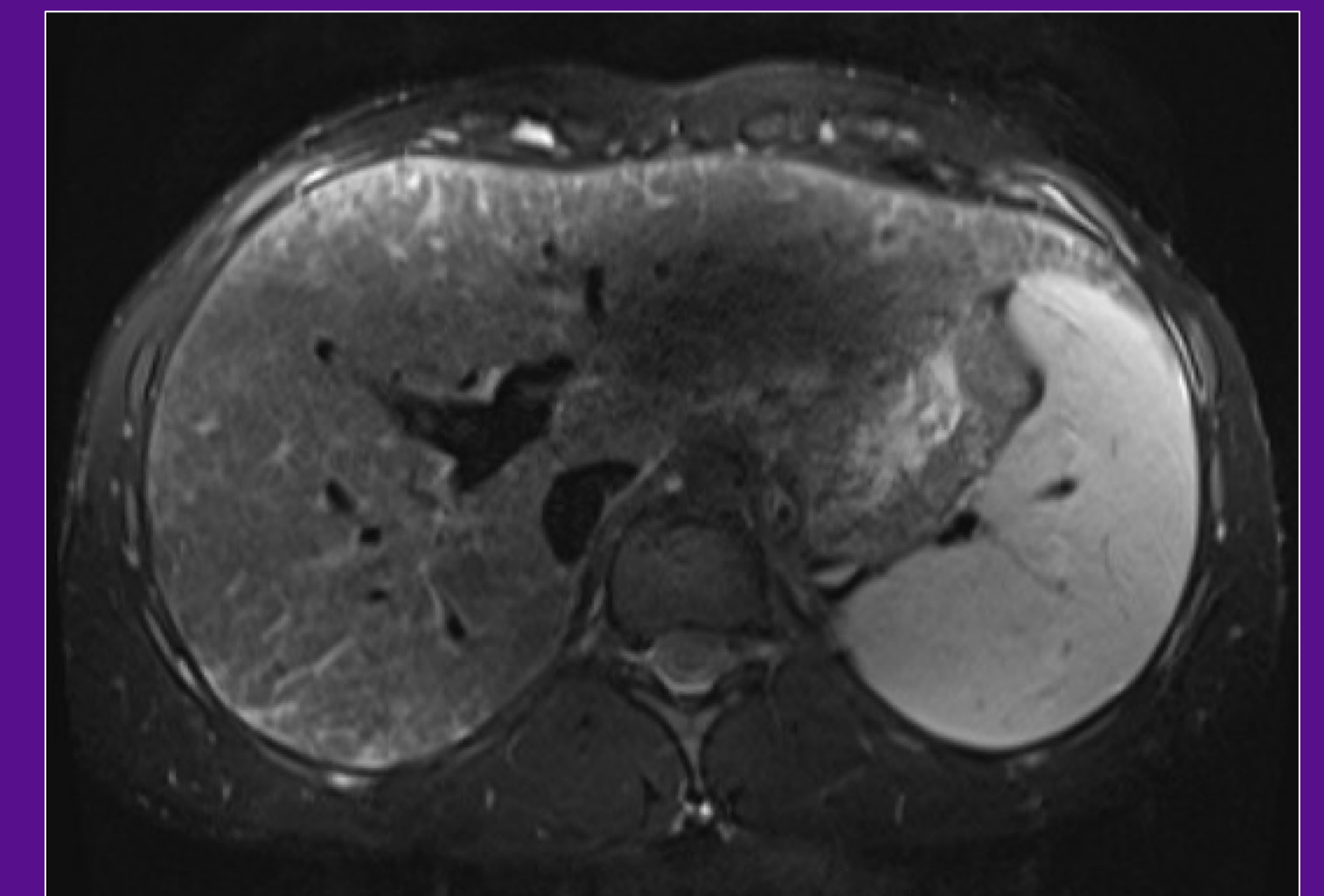


Figure 1: Axial T2 Fat Saturation Figure 2: Coronal Vibe Post-Contrast portal venous phase

Imaging consistent with moderately severe chronic liver disease with generally peripheral nonuniform linear enhancing bands within the hepatic parenchyma extending perpendicular to the liver capsule as well as suggestion of some areas of micro nodularity to the liver margin. Findings consistent with portal hypertension. Significant splenomegaly.