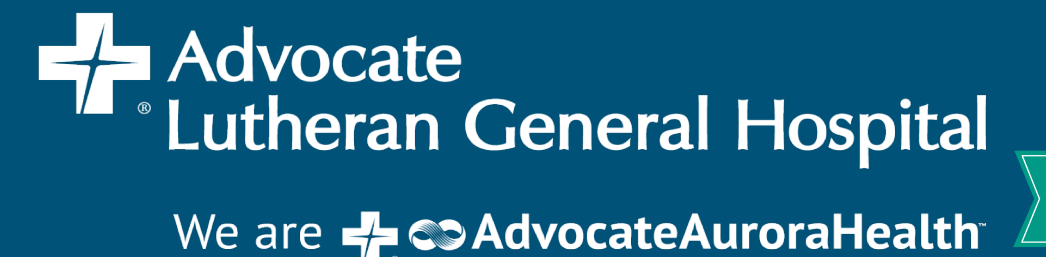




Liver Histology Findings in COVID-19 Vaccine-Induced Hepatitis: A Case Series

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Background

- There have been reported cases of hepatitis after COVID-19 vaccination
- Heterogenous clinical presentations and histology findings
- Series of three patients with elevated liver enzymes after Pfizer COVID-19 vaccination who underwent liver biopsy

Case Presentation

Patient 1

- 32-year-old male in good health, presented with elevated liver enzymes on routine outpatient labs, asymptomatic
- Physical exam was unremarkable
- Second dose of the COVID vaccine 27 days prior
- Serologic liver workup and biopsy findings – Table 1
- He was treated with ursodiol 500 mg twice daily, with significant improvement in liver enzymes after 30 days

Patient 2

- 56-year-old male with history of diabetes presented with nausea, pruritis and painless jaundice
- Jaundice and diffuse excoriations were seen on exam
- Third COVID-19 vaccination was 5 days prior
- Liver enzymes were elevated, and serologic liver workup and biopsy findings – Table 1
- The patient was treated with IV steroids for 5 days, with short term improvement in liver enzymes

Patient 3

- 85-year-old male with history of dyslipidemia and NSTEMI, presented with dark urine and poor oral intake
- Scleral icterus was noted on physical exam
- Third COVID-19 vaccine 4 days prior
- Liver enzymes were elevated, workup and biopsy findings – Table 1
- He was treated with prednisone taper with complete resolution of liver enzymes after 3 months

Case	Age, Sex, BMI	Pertinent Medical History	Vaccine Type, Dose, Timing*	Associated Symptoms	Peak Lab Values					Pertinent Work Up (negative unless listed)	Liver Biopsy	Clinical Course
					AST (U/L)	ALT (U/L)	ALP (U/L)	T bili (mg/dl)	INR (ratio)			
1	32 Male 25.1	None No prior liver disease	Pfizer-BioNTech Dose #2 27 days	None	222	372	666	1.4	1.1	IgG 1,670 mg/dL Cross-sectional imaging within normal limits	Chronic hepatitis Steatosis with mild centrilobular change Mild-moderate fibrosis (Grade 1-2, Stage 2)	Treatment with ursodiol 500 mg twice daily for 30 days Improving
2	56 Male 30.5	Recent acute cholecystitis, type 2 diabetes mellitus No prior liver disease	Pfizer-BioNTech Dose #3 (booster) 5 days	Nausea, vomiting, jaundice, scleral icterus, pruritis, dark urine, weight loss	474	395	860	23.6	1.4	IgA 640 mg/dL IgG 2,230 mg/dL, IgG subclass 4,153 mg/dL +ANA 1:640, +ASMA 1:320 Ferritin 3,775 ng/mL MRCP: cholelithiasis with possible acute cholecystitis, no biliary duct dilatation, no choledocholithiasis; mild nonspecific periportal edema with mildly prominent periportal lymph nodes	Cholestatic hepatitis Steatosis, lobular inflammation Stage 3 fibrosis	Treatment with IV methylprednisolone 100 mg x5 days, followed by 60 mg prednisone daily for 30 days with short term improvement
3	85 Male 27.8	Hypothyroidism Dyslipidemia No prior liver disease	Pfizer-BioNTech Dose #3 (booster) 4 days	Dark urine	2354	2221	313	15.9	1.2	IgG 1,770 mg/dL, IgG4 212 mg/dL ANA+, ASMA+ 1:20 CT scan abdomen pelvis with IV contrast: acute interstitial pancreatitis, gallbladder wall thickening MRI: normal liver contour & size, without evidence of hepatic steatosis	Acute hepatitis Steatohepatitis, moderate inflammation, marked ballooning degeneration and no significant sinusoidal fibrosis	Treatment with prednisone 40 mg daily, then tapered over 3 months Normalized

Table 1. This table depicts demographic information, pertinent work up, and treatment of each case. AST, aspartate aminotransferase; ALT, alanine aminotransferase; ALP, alkaline phosphatase; T bili, total bilirubin; IgG, immunoglobulin G; IgA, immunoglobulin A; ANA, anti-nuclear antibody; ASMA, anti-smooth muscle antibodies; MRCP, magnetic resonance cholangiopancreatography; DILI, drug-induced liver injury; NASH, non-alcoholic steatohepatitis *In association with COVID vaccine

Discussion

- This case series suggests a possible correlation between Pfizer COVID-19 vaccination and hepatitis
- All three patients had no prior history of underlying liver disease, alcohol use or identifiable risk factors for acute hepatitis
- Patient presentation was variable in terms of clinical symptoms, serologic workup and histology findings
- The common thread was elevated immunoglobulins suggesting an immune component without findings of autoimmune hepatitis
- This is consistent with a previously published case series of COVID-19 vaccine-induced hepatitis
- Findings add to collective repository of COVID-19 vaccine-induced hepatitis with the hope of increasing awareness