Liver Cirrhosis Linked to Lower COVID Vaccine Response

Study findings suggest people with chronic liver disease should be prioritized for booster shots.

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While people with chronic liver disease generally responded to COVID-19 vaccines, being older and having liver cirrhosis were linked to weaker responses, according to study results published in JHEP Reports. The good news is that people with viral hepatitis and those on antiviral treatment had better vaccine responses.

People with underlying health conditions, including chronic liver disease, are more prone to severe COVID illness. The risk increases for those who have progressed to liver cirrhosis, which can result from hepatitis B, hepatitis C, fatty liver disease, alcohol-related liver disease and other causes. This means vaccination is especially important for people with chronic liver disease, but the effect of liver disease severity on vaccine response is unclear.

Rui Castro, PhD, of the University of Lisbon, and colleagues assessed immune responses following two-dose COVID vaccines among people with chronic liver disease. The study population included 357 adults in Europe with chronic liver disease and 132 healthy individuals for comparison.

In the chronic liver disease group, more than half were men, 94% were white and the median age was 57 years. The most common causes of liver disease were metabolic-related fatty liver disease (46%) and viral hepatitis (45%). Two thirds had advanced liver fibrosis, including 62% with cirrhosis, and 7% had liver cancer. Most had multiple comorbidities. About 12% were on antiviral medications (mostly for hepatitis B), and 9% were receiving immunosuppressive treatments. About 70% received the original Pfizer-BioNTech mRNA vaccine, with smaller numbers receiving the original Moderna mRNA vaccine (19%) or the AstraZeneca-Oxford adenovirus vector vaccine (11%). People without liver disease in the control group were younger (median 46 years), more likely to be women and more likely to have received the Pfizer-BioNTech vaccine.

The researchers measured antibodies against the spike protein of the original Wuhan SARS-CoV-2 coronavirus strain and the newer delta and omicron strains at three different timepoints: before vaccination, 14 days after the second dose and six months after the first dose.

Most participants with chronic liver disease (96%) experienced an immune response—similar to the rate in the control group—with antibody levels rising two weeks after the second shot and

falling six months after vaccination. Levels of immunoglobulin G (IgG) antibodies targeting the Wuhan coronavirus strain were most abundant, with lower levels for the delta and omicron strains. People who received the Moderna vaccine had the strongest responses, followed by Pfizer-BioNTech and AstraZeneca-Oxford recipients.

IgG levels were significantly higher in people younger than 50, those with viral hepatitis and those receiving antiviral therapy. Conversely, antibody levels were lower in people with advanced liver fibrosis, cirrhosis, fatty liver disease or cancer and those receiving metabolic treatments. After adjusting for other factors, cirrhosis remained a strong predictor of low vaccine response. However, measured immune responses were not associated with SARS-CoV-2 infection rates or vaccine efficacy.

“Patients with chronic liver disease and cirrhosis exhibit lower immune responses to COVID-19 vaccination, irrespective of disease etiology,” wrote the researchers. Based on these findings, they advised, “patients with chronic liver disease, particularly those older and with cirrhosis, should be prioritized for receiving booster doses and/or recently approved adapted vaccines.”

Click here to read the study in JHEP Reports.

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