COVID-19 vaccine protection against infection is lower and slower in people with liver disease

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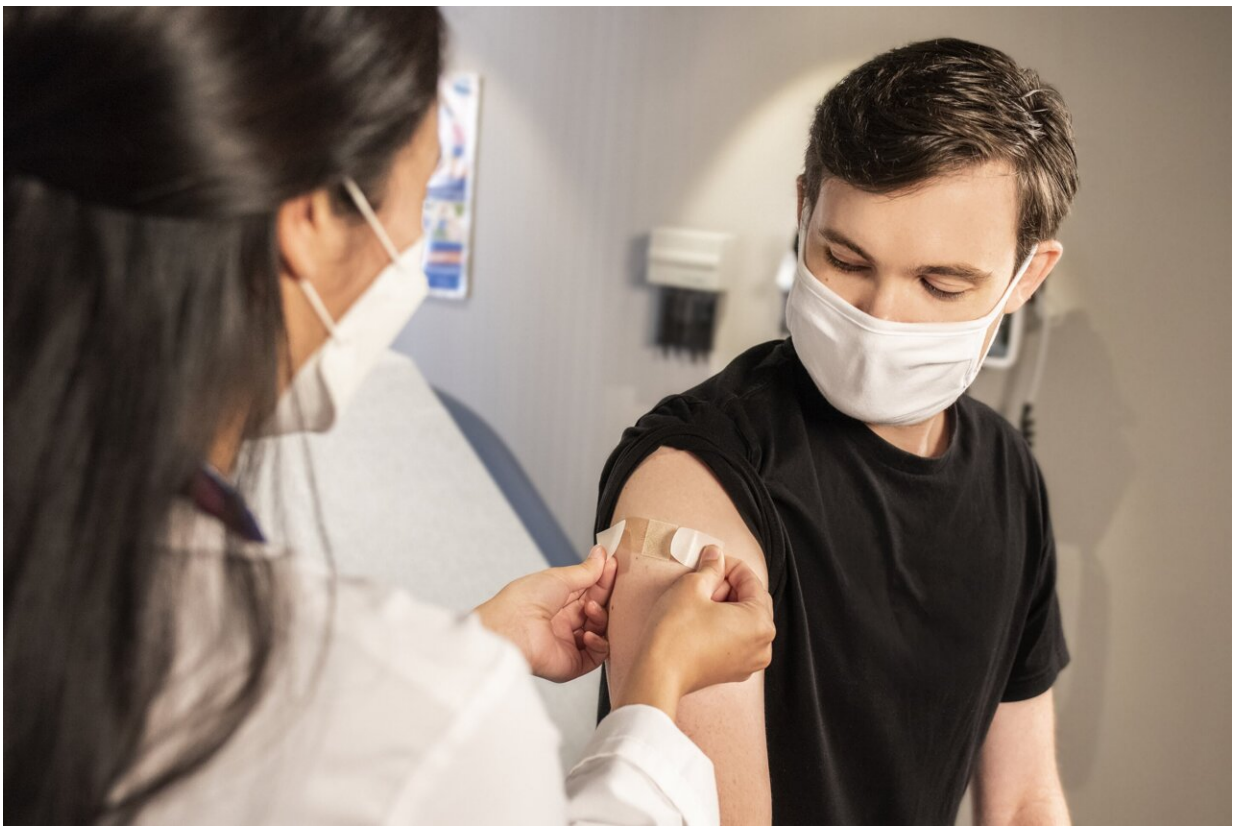

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A study shows for the first time that people with cirrhosis who receive mRNA COVID-19 vaccination gain important protection against more

serious outcomes like hospitalization and death. At the same time, however, the vaccines offer less protection against SARS-CoV-2 infection and take longer to take effect in this population.

Before this research, published July 13 in *JAMA Internal Medicine*, how much protection the vaccines offered people with cirrhosis was unknown. Clinical trials of the vaccines excluded most people with cirrhosis and other chronic conditions.

So lead author Binu V. John, M.D., M.P.H., and his colleagues sought their own answers, speculating that cirrhosis immune dysregulation could alter vaccine response.

Their study reveals that "being vaccinated is associated with a 65% efficacy after one dose and about 78% efficacy at reducing COVID infection after the second dose," said Dr. John, affiliate associate professor at the University of Miami Miller School of Medicine and chief of hepatology at the Bruce W. Carter VA Medical Center in Miami.

Therefore, protection against infection is "probably lower than in a healthy population," Dr. John said. "Patients with cirrhosis who are vaccinated might still get the infection, but they are unlikely to die or get hospitalized with COVID-19."

Vaccinated vs. unvaccinated

The researchers compared 20,037 people with cirrhosis nationwide who received at least one dose of either the Pfizer or Moderna mRNA vaccine at the Veterans Health Administration. They compared infections and outcomes in this group to another 20,037 matched patients with cirrhosis and similar COVID-19 risks who were not vaccinated.

Vaccines were administered between December 18, 2020, and March 17, 2021. Interestingly, more than 99% of participants who were eligible to get a second dose within the CDC recommended six weeks of the first dose did so.

"That was very impressive," Dr. John said.

Another interesting finding was the timeline. There was no difference between the vaccinated and unvaccinated groups in the first 28 days after the first dose.

"The difference starts to kick in after 28 days. That's when you start to see fewer cases in the vaccine group and more in the unvaccinated group," Dr. John said. Clinicians who counsel people with cirrhosis might want to caution them about this delay in immune protection, he added.

Longer follow-up is needed

Vaccination was associated with 100% reduction in COVID-19 hospitalization and death after 28 days. No one died from COVID-19 in the vaccinated group compared to two deaths in the unvaccinated group, but a longer follow-up is needed to better study outcomes of death in this population.

There was a trend toward lower vaccine protection in people with decompensated cirrhosis—defined as people who experience symptoms from their liver not functioning properly—compared to those with compensated cirrhosis with good liver function. However, the number of decompensated patients was low, and the finding needs to be studied further. Dr. John credits collaboration and input from his co-authors, including Andrew Scheinberg, M.D., a fellow and one of his trainees, for publication in the prestigious journal.

"The synergy we have fostered between UM and the Miami VA is tremendous" he added. "It really helps to work closely together with collaborators at UM when you submit these papers."

The study is entitled "Association of BNT162b2 mRNA and mRNA-1273 Vaccines With COVID-19 Infection and Hospitalization Among Patients With Cirrhosis." In addition to UM and the Miami VA, co-author affiliations include Yale University, the West Haven VA, Virginia Commonwealth University, University of Pennsylvania, and the Philadelphia VA.

More information: Binu V. John et al, Association of BNT162b2 mRNA and mRNA-1273 Vaccines With COVID-19 Infection and Hospitalization Among Patients With Cirrhosis, *JAMA Internal Medicine* (2021). DOI: 10.1001/jamainternmed.2021.4325

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