

COVID vaccines: Lower serologic response in IBD

BY BRANDON MAY
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Patients with immune-mediated inflammatory diseases (IMIDs), such as inflammatory bowel disease and rheumatic conditions, have a reduced serologic response to a two-dose vaccination regimen with mRNA COVID-19 vaccines, according to the findings of a meta-analysis.

"These results suggest that IMID patients receiving mRNA vaccines should complete the vaccine series without delay and support the strategy of providing a third dose of the vaccine," wrote study authors Atsushi Sakuraba, MD, of the University of Chicago Medicine, and colleagues in *Gastroenterology* (2021. doi: 10.1053/j.gastro.2021.09.055).

During the COVID-19 pandemic, concerns were raised about the susceptibility of patients with pre-existing conditions to infection with the novel coronavirus, the authors noted. Likewise, ongoing concerns have centered on the risk of worse COVID-19-related outcomes among

patients with IMIDs who are treated with immunosuppressive agents.

Since the onset of the pandemic, several registries have been established to gauge the incidence and prognosis of COVID-19 in patients with IMID, including the Surveillance Epidemiology of Coronavirus Under Research Exclusion (SECURE)-Inflammatory Bowel Disease (IBD) registry and the COVID-19 Global Rheumatology Alliance 75 (C19-GRA), which includes patients with rheumatic diseases.

Authorization of COVID-19 mRNA vaccines provided hope that the COVID-19 pandemic could soon come to an end given the overwhelming safety and efficacy data supporting the use of these vaccines for preventing hospitalization and death. Despite these data, little is known regarding the efficacy of mRNA COVID-19 vaccines in patients with IMIDs and/or patients treated with immunosuppressive therapies, as these patients were excluded from the regulatory vaccine studies (*N Engl J Med*. 2020 Nov;383:1920-31).

The study by Dr. Sakuraba and colleagues was a meta-analysis of 25 observational studies that reported serologic response rates to COVID-19 vaccination in a pooled cohort of 5,360 patients with IMIDs. Data regarding the reference population, medications, vaccination, and proportion of patients who achieved a serologic response were extracted from the observational studies and included in the meta-analysis.

In the analyzed studies, serologic response was evaluated separately after one or two vaccine doses. The researchers also examined the post-vaccine serologic response rate in patients with IMIDs versus controls without IMIDs.

A total of 23 studies used the BNT162b2 or mRNA-1273 vaccines, while 3 studies reported that 50%-75.9% of patients received the AZD1222 vaccine. Some studies also included patients who received other COVID-19 vaccines, including CoronaVac, BBV152, and Ad26.COV2.S.

While 6 studies assessed serologic response to COVID-19 after just 1 dose, 20 studies assessed the post-vaccination serologic response following 2 doses. In

most cases, researchers evaluated serologic response at 2-3 weeks after the first dose. After the second vaccine dose, most studies examined serologic response at 1-3 weeks.

The serologic response after 1 dose of the mRNA vaccines was 73.2% (95% confidence interval, 65.7-79.5). In a multivariate meta-regression analysis, the researchers found that a significantly greater proportion of patients with IMIDs who took anti-tumor necrosis factor (anti-TNF) therapies had a lower serologic response rate (coefficient, -2.60; 95% CI, -4.49 to -0.72; $P = .0069$). The investigators indicated this "likely contributed to the difference in serologic response rates and overall heterogeneity."

Studies with patients with IBD reported a lower serologic response rate compared with studies that included patients with rheumatoid arthritis (49.2% vs. 65.0%, respectively), which the investigators explained was likely reflective of the increased use of anti-TNF agents in patients with IBD.

After 2 doses of the mRNA vaccines, the pooled serologic

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Messenger RNA vaccines against COVID-19 play a certain role in controlling the pandemic. There has been no clear evidence about the efficacy of vaccination against various vaccine-preventable diseases in patients with IMIDs including IBD, but this global pandemic has led to huge progress in this field. This study by Sakuraba et al. helps us to interpret such information by putting 25 recent studies together. Unfortunately but not unexpectedly, patients with IMIDs were shown to have a lower serologic response to the vaccine, especially if they were treated with anti-TNF therapy. However, this study was incapable of showing the influence of other immunosuppressive therapies such as steroids, antimetabolites, and biologics. It is also still unclear whether their antibody titer would decrease sooner than that in the general population.



Dr. Kobayashi

Large-scale registries of IBD patients suggest that their disease itself is not a risk for severe COVID-19; however, lower effectiveness of vaccination may result in a serious disadvantage in this patient population, compared with others. Therefore, results from this study strongly suggest that it is critical for patients with IBD not only to complete the regular 2-dose vaccination but also to consider the booster shot to maintain immunity for the upcoming months. Further studies are needed to optimize the vaccination strategy specifically in this patient population.

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