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Abstract Discussion Forum **(0)**

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DETERMINANTS OF SEROLOGICAL RESPONSE TO COVID-19 VACCINATION IN 2268 PATIENTS WITH INFLAMMATORY BOWEL DISEASE ACROSS NINE COUNTRIES

Society: AGA

Track: Inflammatory Bowel Diseases

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Background: Little is known about the relative efficacy of available COVID-19 vaccine types around the world in immune-compromised patients with inflammatory bowel disease (IBD). We aimed to compare antibody responses to SARS-CoV-2 in patients with IBD who had received mRNA, vector, and inactivated virus vaccines and the impact of medications thereof among multinational sites.

Methods: Serum samples taken after 1st, 2nd, and 3rd doses of COVID-19 vaccines from patients with IBD seen at 13 sites across Europe, Asia, and North America were prospectively collected between January 2021 and November 2022. We measured anti-Spike (S) and anti-nucleocapsid (N) antibody levels. To identify determinants of serological responses to vaccination, both univariate and multivariate analyses were conducted.

Results: There were a total of 2,268 patients, including 1,279 Crohnâ€™s disease (CD) and 868 ulcerative colitis (UC) (Table 1). 1552 patients had an mRNA vaccine, 590 an adenovirus vaccine, and 98 an inactivated virus vaccine. At 14-84 days, 85-168 days, and 169+ days after completing a full vaccination series, the proportion of patients who were positive for anti-S antibodies were 98% (n=922/939), 96% (n=700/731), and 98% (n=677/692) for mRNA, 95% (n=378/396), 89% (n=55/62), and 97% (n=33/34) for adenovirus, and 72% (n=21/29), 84% (n=31/37), and 95% (n=55/58) for inactivated virus vaccine, respectively.

On univariate analysis, rates of serological response were highest in those who received mRNA vaccines at all six time periods (Figure 1a). Adenovirus vaccine response rates closely resembled the rate of seropositivity in mRNA vaccinated patients. In contrast, inactivated vaccines had a significantly lower percent of patients reaching seropositivity until 169 days or more after the second vaccine dose ($p<0.001$). Anti-TNF monotherapy and immunomodulator monotherapy were associated with the ability to obtain max antibody titres. However, this difference is ablated after the 3rd dose (Figure 1c).

Univariate analysis also implicated geographical site, male sex, and a diagnosis of ulcerative colitis as determinants of serological responses.

On multi-variable analysis, vaccine type ($p < 0.001$ at every time point analysed) and the use of immunomodulators ($p <0.001$ at time points 1 and 3) were confirmed as independent determinants of vaccine responsiveness across the study populations.

Conclusions: Our data suggests that while there is variability between geographical centers, the response rates are high worldwide, and the key determinants of serological response to vaccines are the use of immunosuppressive agents and vaccine class. These data are important considerations for better pandemic preparedness in the IBD community worldwide.

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Dr. Serre-Yu Wong

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