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Letter to the Editor

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Impact of SARS-CoV-2 Vaccination on Inflammatory Bowel Disease Activity and Development of Vaccine-Related Adverse Events: A Survey From China

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To the Editors:
We read with interest the article by Weaver et al[1] evaluating coronavirus disease 2019 (COVID-19) vaccine–related AEs and the effect of vaccination on IBD disease course among participants in the Partnership to Report Effectiveness of Vaccination in populations Excluded from iNitial Trials of COVID study. However, we drew different conclusions when we surveyed patients who had been vaccinated (SinoVac CoronaVac Vero Cell; SinoVac, Beijing, China) at our inflammatory bowel disease (IBD) center.

There were 202 IBD patients in total participating in the questionnaire (Table 1). A total of 176 (87.1%) patients received 2vaccine doses, 20 (9.9%) patients received 1 vaccine dose, and 6 (3.0%) patients received 3 vaccine doses. According to the research, 34 (16.8%) patients had adverse events (AEs) after COVID-19 vaccination and 23 (11.4%) patients had AEs after vaccine dose 1.

The majority of symptoms were relieved within 7 days. The most frequently reported AEs were fatigue (52.9%), local pain of injection (35.3%), fever (23.5%), somnolence (20.6%), limb pain (14.7%), dizzy (11.8%), headache (5.9%), chill (5.9%), vomit (5.9%), and dyspnea (2.9%). Patients who received vedolizumab and corticosteroid therapy were more likely to report AEs than others who did not receive these therapies. On top of that, patients in the clinically active stage had more possibilities to report AEs than those in the clinically remission stage. We also identified that 30 (14.9%) patients had the exacerbation of IBD-related clinical symptoms such as fever, abdominal pain, diarrhea, hematochezia, and vomiting. Eight (26.7%) patients required hospitalization after vaccination. Patients receiving 5-aminosalicylic acid, adalimumab, and corticosteroid therapy were more likely to report the exacerbation of IBD-related clinical symptoms than those who were not. Patients in the clinically active stage had more possibilities to report that deteriorated condition.

Subsequently, we analyzed the related factors of AEs as well as the exacerbation of IBD-related clinical symptoms after COVID-19 vaccination. Based on the bivariate logistic regression analysis, related factors of AEs were vedolizumab, corticosteroid, clinically active stage, and times of vaccination. In multivariable analysis, we found that corticosteroid influenced AEs. We realized that the related factors of the exacerbation of IBD-related clinical symptoms were mesalazine, adalimumab, corticosteroid, and clinically active stage by bivariate logistic regression analysis. In multivariable analysis, the related factors of the exacerbation of IBD-related clinical symptoms were mesalazine and corticosteroid.

In conclusion, we found that after COVID-19 vaccination, AEs and associated clinical symptoms would increase in patients with IBD. But it is uncommon that severe AEs would last more than 7 days. Our study also found that the related factors were corticosteroid, vedolizumab, mesalazine, adalimumab, and clinically active stage.

Author Contributions

W.-n.T. wrote the article. C.D. and Y.-h.H. had the original idea for the article. All authors reviewed and approved the final draft of the article.

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Conflicts of Interest

The authors disclose no conflicts.

References

1. Weaver KN, Zhang X, Dai X, et al. Impact of SARS-CoV-2 vaccination on inflammatory bowel disease activity and development of vaccine-related adverse events: results from PREVENT-COVID. *Inflamm Bowel Dis*. 2022;xx:xx–xx. doi:10.1093/ibd/izab302.

Table 1. Patient characteristics

	CD (n = 50)	UC (n = 140)	IBD-U (n = 12)	Total (N = 202)
Age, y	35 (25-46)	46 (37-56)	47 (43-53)	43 (34-54)
Sex				
Male	33 (66.0)	67 (47.9)	6 (50.0)	106 (52.5)
Female	17 (34.0)	73 (52.1)	6 (50.0)	96 (47.5)
Smoking status				
Never smoking	36 (72.0)	97 (69.3)	9 (75.0)	142 (70.3)
Smoking	5 (10.0)	7 (5.0)	3 (25.0)	15 (7.4)
Given up smoking	9 (18.0)	36 (25.7)	0 (0)	45 (22.3)
Disease course				
≤2 y	19 (38.0)	39 (27.9)	8 (66.7)	66 (32.7)
2~5 y (>2 y, ≤5 y)	18 (36.0)	50 (35.7)	3 (25.0)	71 (35.1)
5~10 y (>5 y, ≤10 y)	6 (12.0)	22 (15.7)	1 (8.3)	29 (14.4)
>10 y	7 (14.0)	29 (20.7)	0 (0)	36 (17.8)
Drugs				
5-ASA	17 (34.0)	128 (91.4)	10 (83.3)	155 (76.7)
Mesalazine	10 (20.0)	94 (67.1)	4 (33.3)	108 (53.5)
Azathioprine	5 (10.0)	4 (2.9)	0 (0)	9 (4.5)
Thalidomide	1 (2.0)	0 (0)	0 (0)	1 (0.5)
Infliximab	24 (48.0)	7 (5.0)	0 (0)	31 (15.3)
Adalimumab	4 (8.0)	2 (1.4)	1 (8.3)	7 (3.5)
Vedolizumab	8 (16.0)	9 (6.4)	1 (8.3)	18 (8.9)
Ustekinumab	5 (10.0)	0 (0)	0 (0)	5 (2.5)
Steroids	4 (8.0)	6 (4.3)	0 (0)	10 (5.0)
Enteral nutrition	10 (20.0)	24 (17.1)	3 (25.0)	37 (18.3)
Disease stage				
Active	5 (10.0)	18 (12.9)	0 (0)	23 (11.4)
Remission	32 (64.0)	93 (66.4)	6 (50.0)	131 (64.9)
Unknown	13 (26.0)	29 (20.7)	6 (50.0)	48 (23.8)
Times vaccinated				
1	8 (16.0)	11 (7.9)	1 (8.3)	20 (9.9)
2	41 (82.0)	124 (88.6)	11 (91.7)	176 (87.1)
3	1 (2.0)	5 (3.6)	0 (0)	6 (3.0)
AE after vaccination				
Yes	10 (20.0)	21 (15.0)	3 (25.0)	34 (16.8)
No	40 (80.0)	119 (85.0)	9 (75.0)	168 (83.2)
Which time did AE occur after vaccination?				
D1	9 (90.0)	14 (66.7)	0 (0)	23 (67.6)
D2	1 (10.0)	7 (33.3)	3 (100.0)	11 (32.4)
D3	0 (0)	0 (0)	0 (0)	0 (0)
How long after vaccination did AE occur?				
<1 d	5 (50.0)	3 (14.3)	0 (0)	8 (23.5)
2~7 d (>2 d, ≤5 d)	3 (30.0)	10 (47.6)	1 (33.3)	14 (41.2)
5~14 d (>5 d, ≤14 d)	0 (0)	3 (14.3)	0 (0)	3 (8.8)
>14 d	1 (10.0)	5 (23.8)	1 (33.3)	7 (20.6)
AE after vaccination				
Headache	0 (0)	2 (9.5)	0 (0)	2 (5.9)
Fatigue	4 (40.0)	11 (52.4)	3 (100.0)	18 (52.9)
Fever	5 (50.0)	2 (9.5)	1 (33.3)	8 (23.5)
Chill	2 (20.0)	0 (0)	0 (0)	2 (5.9)
Dizzy	2 (20.0)	2 (9.5)	0 (0)	4 (11.8)
Vomit	2 (20.0)	0 (0)	0 (0)	2 (5.9)
Local pain of injection	5 (50.0)	7 (33.3)	0 (0)	12 (35.3)

Table 1. Continued

	CD (n = 50)	UC (n = 140)	IBD-U (n = 12)	Total (N = 202)
Limb pain	0 (0)	5 (23.8)	0 (0)	5 (14.7)
Somnolence	3 (30.0)	3 (14.3)	1 (33.3)	7 (20.6)
Dyspnea	0 (0)	1 (4.8)	0 (0)	1 (2.9)
Others	3 (30.0)	10 (47.6)	0 (0)	13 (38.2)
Was there exacerbation of IBD-related symptoms after vaccination?				
Yes	7 (14.0)	21 (15.0)	2 (16.7)	30 (14.9)
No	43 (86.0)	119 (85.0)	10 (83.3)	172 (85.1)
What IBD-related symptoms were exacerbated after vaccination?				
Abdominal pain	4 (57.1)	9 (42.8)	1 (50.0)	14 (46.7)
Diarrhea	5 (71.4)	13 (61.9)	1 (50.0)	19 (63.3)
Hematochezia	0 (0)	15 (71.4)	1 (50.0)	16 (53.3)
Fever	3 (42.9)	3 (14.3)	0 (0)	6 (20.0)
Others	2 (28.8)	0 (0)	0 (0)	2 (6.7)
Did the symptoms require hospitalization?				
Yes	3 (42.9)	4 (19.0)	1 (50.0)	8 (26.7)
No	4 (57.1)	17 (81.0)	1 (50.0)	22 (73.3)
Were CRP and fecal calprotectin elevated?				
Yes	2 (28.6)	6 (28.6)	0 (0)	8 (26.7)
No	3 (42.9)	2 (9.5)	1 (50.0)	6 (20.0)
Did endoscopic outcomes worsen after vaccination?				
Yes	2 (28.6)	9 (42.9)	1 (50.0)	12 (40.0)
No	2 (28.6)	0 (0)	1 (50.0)	3 (10.0)
Did CTE or MRE worsen after vaccination?				
Yes	1 (14.3)	4 (19.0)	0 (0)	5 (16.7)
No	4 (57.1)	1 (4.8)	1 (50.0)	6 (20.0)

Values are mean (interquartile range) or n (%).
Abbreviations: 5-aminosalicylic acid; AE, adverse event; CD, Crohn's disease; CRP, C-reactive protein; CTE, computed tomography enterography; D, dose; IBD-U, inflammatory bowel disease–unclassified; MRE, magnetic resonance enterography; UC, ulcerative colitis.