

Letter to the Editor

Inflammatory Bowel Disease Triggered by BNT162b2 mRNA Vaccination for SARS-CoV-2

Yosuke Shimodaira, MD, PhD,^{ID} Kenta Watanabe, MD, So Takahashi, MD, Shigeto Koizumi, MD, PhD, and Katsunori Iijima, MD, PhD

From the Department of Gastroenterology and Neurology, Akita University Graduate School of Medicine, 1-1-1 Hondo, Akita City, 0108543, Japan

Address correspondence to: Yosuke Shimodaira, MD, PhD, Department of Gastroenterology and Neurology, Akita University Graduate School of Medicine, 1-1-1 Hondo, Akita City, 0108543, Japan (yosuke.shimodaira@med.akita-u.ac.jp).

To the Editors,

BNT162b2 is used worldwide to prevent the onset and exacerbation of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection¹; little is known about its association with enteritis. Here, we report a case of severe colitis after a BNT162b2 shot.

A 64-year-old woman (height, 143 cm; weight, 82 kg) with a medical history of hypertension and no history of smoking and drinking received her first shot of BNT162b2 for SARS-CoV-2 vaccination in July 2021. She presented with a high-grade fever of up to 38.5°C the next day, with abdominal pain, diarrhea, and oral aphtha 2 days later. The symptoms continued; she was administered fosfomycin 8 days later at a clinic but showed no improvement. Subsequently, she was referred to a general hospital. Laboratory data showed an increased C-reactive protein (CRP) level of 116.6 mg/L, and computed tomography revealed right-sided colitis. Stool test and biopsied specimen did not detect any specific pathogen for colitis, including pathogenic *Escherichia coli*, *Yersinia*, *Cytomegalovirus*, *Entamoeba histolytica*, and *Mycobacterium tuberculosis*. Histologically, no signs of crypt abscess, granuloma, and vasculitis were observed; only mixed cell infiltration was observed. Treatment with total parenteral nutrition for 1 month did not improve her symptoms, and she lost 16 kg of weight. Finally, she was referred to our hospital. Colonoscopy revealed right-sided ulcerative colitis-like inflammation with deep ulcers (Figure 1). After rheumatic and autoimmune diseases were ruled out by the experts, right-sided ulcerative colitis or intestinal Behcet disease triggered by vaccination was suspected. Intravenous prednisolone of 1 mg/kg was started, and her symptoms improved in a few days. Two months later steroid was discontinued and, oral 5-ASA was started, after which there were no signs of relapse.

The BNT162b2 is an mRNA vaccine translated into the spike protein of SARS-CoV-2, which has been used urgently in 2020 due to the new coronavirus 2019 (COVID-19) pandemic. Allergic and anaphylactic reactions are important side

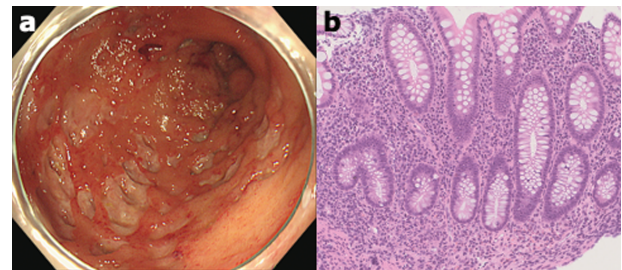


Figure 1. A, Total colonoscopy examination revealed ulcerative colitis-like mucosal inflammation in cecum and ascending colon with multiple ulcers. B, Hematoxylin and eosin staining of the mucosa on ascending colon showed infiltration of inflammatory cells.

reactions with the vaccine, and real-world reports also show rare but serious side reactions such as myocarditis.^{2,3} The current inflammatory bowel disease case was rare but suggested that the immunological reaction with the mRNA vaccine may cause intestinal inflammation.

Funding

The authors received no financial support for this research.

Conflicts of Interest

Authors have no conflicts of interest to disclose

References

1. Polack FP, Thomas SJ, Kitchin N, et al.; C4591001 Clinical Trial Group. Safety and efficacy of the BNT162b2 mRNA Covid-19 vaccine. *N Engl J Med.* 2020;383:2603–2615.
2. Montgomery J, Ryan M, Engler R, et al. Myocarditis following immunization with mRNA COVID-19 vaccines in members of the US Military. *JAMA Cardiol.* 2021;6:1202–1206.
3. Barda N, Dagan N, Ben-Shlomo Y, et al. Safety of the BNT162b2 mRNA Covid-19 vaccine in a nationwide setting. *N Engl J Med.* 2021;385:1078–1090.