

What should we do about vaccination of patients on anti-CD20 antibody therapy?

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The SARS-CoV-2 antibody response was decreased in patients with multiple sclerosis (MS) who were infected with COVID-19 and received anti-CD20 therapy

Vaccination efforts for COVID-19 are currently underway worldwide. At present, there is insufficient evidence of the vaccine's efficacy and safety in patients with neurological diseases, such as stroke, dementia and intractable neurological diseases. Despite the fact that many patients with neurological diseases are elderly and often have systemic complications, I believe that neurologists should nonetheless actively recommend vaccination to their patients. However, there are at least three problems that I encounter in my daily clinical practice when I vaccinate patients with neurological diseases.

The first problem is that many patients with dementia have no family members or other relatives, and self-determination for vaccination is difficult. The second problem is that patients with amyotrophic lateral sclerosis or muscular dystrophy have significant muscle atrophy; thus, it is difficult for them to receive intramuscular injections. In such patients, it may be necessary to examine whether the antibody titre actually does increase after receiving the vaccine. Third, it is also necessary to examine whether antibody titres are increased after vaccination in patients with immune-mediated neurological diseases such as MS, neuromyelitis optica spectrum disorder (NMO-SD), autoimmune encephalitis/encephalopathy,

etc, who are receiving immunotherapy, especially anti-CD20 antibody therapy.

In a study by Céline *et al*¹ 115 patients with MS and 4 patients with NMO-SD infected with COVID-19 who received anti-CD20 therapy had a decreased SARS-CoV-2 antibody response. These results suggest that these patients are at risk of reinfection and require long-term surveillance. Therefore, physicians and patients need to be extremely vigilant about infection control measures. This study also showed that when these patients are vaccinated, depending on the timing of anti-CD20 therapy, the antibody response may be lower and the expected preventive effect of infection may not be achieved. In fact, one preliminary research paper addressed this concern. That study reported that four patients with MS treated with ocrelizumab showed a decrease in the antibody response.² In addition, a retrospective study of 32 patients with MS treated with fingolimod or ocrelizumab reported that in the fingolimod group, 10/16 (62.5%) patients had positive serological reactions after vaccination, and in the ocrelizumab group, 6/16 (37.5%) patients had positive reactions.³ No relationship between serological response and clinical characteristics (ie, treatment duration, time between vaccination and last treatment dose and white cell count) was confirmed. Therefore, it is advisable to vaccinate within sufficient intervals before and after anti-CD20 therapy, because the risk of MS relapse increases if the period between anti-CD20 antibody therapies is too long. Future studies are needed to examine the

relationship between anti-CD20 therapy and antibody titres and the risk of infection. Until additional evidence is established, physicians should provide patients with clear information and shared decision making.

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