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LETTER TO THE EDITORS

Comment on the paper *Negative anti-SARS-CoV-2 S antibody response following Pfizer SARS-CoV-2 vaccination in a patient on ocrelizumab*: the likely explanation for this phenomenon based on our observations

Hubert Mado[1] · **Monika Adamczyk-Sowa**[1]

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Dear Sirs,

We read with great interest the paper by Khayat Khoei et al. which presented negative anti-severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike (S) antibody response after Pfizer SARS-CoV-2 vaccination in a patient with relapsing–remitting multiple sclerosis (RRMS) on ocrelizumab [1]. In the era of the coronavirus disease 2019 (COVID-19) pandemic, treatments causing B-lymphocyte depletion are of particular interest, particularly because MS patients on ocrelizumab may potentially be at a higher risk of infection and severe COVID-19 [2]. Furthermore, it has been reported that MS patients using anti-CD20 therapy have suppressed antibody response to infection with the novel coronavirus (SARS-CoV-2) and to some vaccines (not against COVID-19) [1, 3–5]. Khayat-Khoei et el. were the first to present data on the immune response to the COVID-19 mRNA vaccine in patients on ocrelizumab (anti-CD20 therapies) [1]. Their study showed that a patient with RRMS still did not seroconvert within 27 days after administration of the Pfizer COVID-19 vaccine.

We, therefore, report the result of anti-SARS-CoV-2 S antibody assay after COVID-19 vaccination in MS patient using ocrelizumab from our center. To the best of our knowledge, we are the first to evaluate the immune response after COVID-19 vaccination in patient with primary progressive MS (PPMS) on ocrelizumab. We may seem to have found an explanation for the report by Khayat-Khoei et al. of a negative response to COVID-19 vaccination [1].

✉ Hubert Mado
hubert.mado@med.sum.edu.pl

Monika Adamczyk-Sowa
m.adamczyk.sowa@gmail.com

[1] Department of Neurology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia in Katowice, 3 Maja Street 13/15, 41-800 Zabrze, Poland

Case presentation

Detailed case report is in preparation as a separate publication. The most essential information for the purposes of this commentary is presented below.

A woman aged 23 with PPMS diagnosed according to the McDonald 2017 criteria in 2019 and treated since then with ocrelizumab according to the manufacturer's recommendations was given Pfizer COVID-19 mRNA vaccine. The vaccination was conducted within the timeframe consistent with the statement of the Section of Multiple Sclerosis and Neuroimmunology of the Polish Neurological Society [6]. The patient had never been diagnosed with COVID-19, nor had she reported signs or symptoms that might have suggested such a diagnosis since the beginning of the COVID-19 pandemic.

In this patient, the immune response to COVID-19 vaccination was obtained, as confirmed by quantitative detection of antibodies to the SARS-CoV-2 S protein receptor-binding domain performed more than 4 weeks after the second dose of the vaccine in laboratories accredited by the Polish Centre for Accreditation.

Discussion

Our patient was vaccinated in accordance with the statement issued by the Section of Multiple Sclerosis and Neuroimmunology of the Polish Neurological Society, which indicates that vaccination should be given 4–6 months after the last dose of ocrelizumab and should be completed at least 4–6 weeks before another dose of the drug [6]. The immune antibody response was observed in this patient. In view of the data presented by Khayat Khoei et al., this seems to be due to well-timed intervals between the last dose of ocrelizumab before vaccination and another infusion following the second dose of the vaccine [1]. Khayat Khoei et al.

presented the case of the patient who had negative antibody response and was given another dose of ocrelizumab 9 days after the second dose of the vaccine, which from an immunological point of view may seem too short a period [1, 6–8]. Considering the patient we presented and the effective post-vaccination response, it seems that the reason for no response after vaccination in the patient reported by Khayat Khoei et al. may be related to the fact that the time window from the second dose of the vaccine to the next ocrelizumab infusion might have been too short, which should be at least 4–6 weeks [6–8]. Therefore, it seems reasonable to strongly suggest the adequate time frame between ocrelizumab infusion and vaccination [6]. However, further reports are warranted to confirm the validity of our observations.

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Declarations

Conflict of interest The authors declare that there is no conflict of interest.

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