Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Favorable outcome after COVID-19 infection in a multiple sclerosis patient initiated on ocrelizumab during the pandemic

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Dear Editor,

We read with great interest the recent reports of confirmed or possible COVID-19 infection in multiple sclerosis (MS) patients treated with anti-CD20 monoclonal antibodies which were recently published in Multiple Sclerosis and Related Disorders. (Giovannoni, 2020; Montero-Escribano et al., 2020; Safavi et al., 2020; Novi et al., 2020; Suwanwongse and Shabarek, 2020; Hughes et al., 2020) In general emerging data suggest that patients treated with B-cell depleting agents have a favorable outcome after COVID-19, despite previous studies suggesting increases the risk of upper respiratory infection with this class of medication. There are two single case reports of MS patients treated with B-cell depleting agents that had a favorable outcome after confirmed COVID-19 infection despite presence of comorbidities and severe obesity which are risk factors for poor outcomes. (Novi et al., 2020; Suwanwongse and Shabarek, 2020) In addition, an Italian series of 232 MS patients with COVID-19 which included 28 patients treated with B-cell depleting therapies [ocrelizumab; n = 26 (6 confirmed and 20 suspected) or rituximab; n = 2 (1 confirmed and 1 suspected)], reported that three of patients on this class of medication, who had no comorbidities, were among the total 10 patients in the entire cohort with severe and critical infection (2 Ocrelizumab and 1 rituximab) and unfortunately a patient on rituximab passed away. (Sormani, 2020) Moreover, in an Iranian experience of 34 MS patient with suspected COVID-19, 21 patients (62%) were receiving rituximab raising the possibility that patients on such therapies may be more likely to be COVID-19 suspected than those on other medications. (Safavi et al., 2020) Most patient in this cohort had a mild course of infection except 2 patients who required hospitalization (6%). (Safavi et al., 2020) A Spanish series of 60 patients treated with anti-B-cell therapies reported 9 patients with COVID-19 (7 rituximab and 2 ocrelizumab) and none needed hospitalization. (Montero-Escribano et al., 2020) However, in only 4 patients (2 in each group) the virus was detected either by polymerase chain reaction (PCR) orserology, and the remaining 5 were categorized as suspected COVID-19. (Montero-Escribano et al., 2020) A more recent pharmacovigilance study reported 100 MS patients treated with ocrelizumab with confirmed (n = 74) or suspected (n = 26) COVID-19 infection, of whom about a quarter were hospitalized (n = 26) and 5 developed critical illness with no reported mortality (missing data n = 7). (Hughes et al., 2020) Here, we report another patients with relapsing-remitting MS who was initiated on ocrelizumab during the pandemic and developed COVID-19 as confirmed by PCR and recovered without need for hospitalization.

A 39-years-old woman with relapsing-remitting MS and mild disability [expanded disability status scale (EDSS) of 2] presented with mild dyspnea. She was diagnosed with MS about 10 years prior and was treated with interferon beta-1b for 9 years and switched to ocrelizumab due to injection site reactions. She received the initial doses of ocrelizumab with the onset of the pandemic in Iran in January 2020. Her other comorbidities included epilepsy which was treated with valproic acid.

On April 6 and about 3 months after initiation of therapy, the patient developed a low-grade fever and mild dyspnea which prompted her to seek medical attention. Physical examination showed a body temperature of 37.5 °C, blood pressure of 120/90 mm Hg, heart rate of 82, respiratory rate of 16, and oxygen saturation of 98% on room air and unchanged neurological exam as compared to prior visit in January 2020. Her initial lab investigations were remarkable for only slightly elevated in C-reactive protein (11.8 mg/L). She also reported her husband being diagnosed with COVID-19 who was hospitalized for further care. A chest computed tomography (CT) was performed and showed patchy ground glass opacities on the base of the right lung suggestive of COVID-19. (Bernheim et al., 2020) A nasopharyngeal swab was collected and sent for real-time PCR for SARS-COV-2 to the reference laboratory of Isfahan University of Medical Sciences. Due to stable vital signs and mild symptomatology the patient was advised to stay at home and monitor her symptoms. On April 10 (3 days later), SARS-CoV-2 test was reported positive. Within self-quarantine, she felt well, and her respiratory symptoms resolved by the time the test results were available. She did not experience any neurological symptoms (relapse or pseudo-relapse) which are reported to occur in context of COVID-19 infection. (Barzegar et al., 2020)

This case adds to the reported patients with confirmed COVID-19 and treated with B-cell depleting therapies with favorable outcome and supporting the revised guidelines for use of disease modifying therapies during the pandemic. (Amor et al., 2020) This case also shows that initiating B-cell depleting therapies druring the pandemic could potentially be safe even if the patient develops COVID-19. The current consensus statement currently recommends initiation of ocrelizumab as probably safe and possible temporal suspension of dosing depending on timing during active infection with COVID-19. (Amor et al., 2020) Of

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interest is that the husband of the patient who was otherwise healthy required hospitalization while the patient had very mild symptoms. These observations could support the notion that some forms of immunosuppression may be beneficial in the COVID-19 infection, although more controlled and randomized trial are needed to validate this observation. (Giovannoni, 2020) In conclusion, emerging data about use of ocrelizumab during the COVID-19 pandemic is reassuring, however more studies with confirmed PCR or serology with larger samples size are required to confirm the current observations.

Declaration of Competing Interests

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