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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Commentary

Normal antibody response after COVID-19 during treatment with cladribine

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ABSTRACT

Cladribine is a highly effective, recently available treatment in multiple sclerosis. This case report describes a patient with COVID-19 infection during second year treatment with cladribine. The infection was mild and she was able to mount an adequate immune response with detectable antibodies three months later.

Immune treatment of multiple sclerosis (MS) may imply an increased risk of infections (Luna et al., 2019). Registry data indicates that patients with MS do not seem to acquire coronavirus disease (COVID-19) more often or have a more severe disease compared to healthy persons, with a possible exception for ocrelizumab and rituximab (Louapre et al., 2020; Sormani, 2020). Treatment guidelines during the COVID-19-pandemic have already changed several times (Brownlee et al., 2020), and recently the question of antibody response to the infection and the ability to mount an immune response to a future vaccine has gained increasing interest (Baker et al., 2020).

Cladribine is a highly effective, immune reconstitution treatment with long-term efficacy (Cook et al., 2019; Patti et al., 2020). As cladribine only recently became available, the number of treated patients in the COVID-19 registries is so far limited (Louapre et al., 2020; Sormani, 2020).

A 35-year-old female was diagnosed with MS in spring 2018 and treatment with fingolimod was initiated. Due to disease activity, she was switched to cladribine and received two oral five-day courses of treatment in February and March 2019. She experienced no new symptoms and her cerebral MRI was stable throughout the year. Pre-planned re-treatment was initiated on the 17th of February 2020. The lymphocyte count was 1.1 $\times$ 10^9/l before retreatment. She returned from a vacation with symptoms of a common cold, anosmia and slight fever on the 8th of March and tested positive for SARS-CoV-2 (PCR, nasopharyngeal swab) on the 10th of March. The symptoms were mild, with no fever after the 11th of March (maximum 39.2 during the course) and no more symptoms after the 16th of March. She was isolated at home, but worked full-time remotely. The lymphocyte count was 1.1 $\times$ 10^9/l on the 27th of March. The second week treatment was due on the 17th of March, but was postponed until the 6th of April. The treatment was well tolerated and she had no side-effects. On the 22nd of June, she was tested positive for SARS-CoV-2 antibodies (https://diagnostics.roche.com/global/en/products/params/elecsys-anti-sars-cov-2.html, Department of Microbiology).

For treatment of highly active MS the available treatment options are limited due to restricted use of alemtuzumab due to risk of side-effects, natalizumab due to risk of progressive multifocal leucoencephalopathy and anti-CD20 depleting therapies due to increased rate and severity of infections and reduced vaccine responses (Luna et al., 2019; Conte, 2020). Cladribine is a treatment option allowing immune reconstitution and thereafter one can assume a normal ability to fight infections and to mount an immune response to both infections and vaccinations. Concern was raised as to an increased risk of severe infection during treatment with cladribine and even more so during the second year treatment due to lower lymphocyte counts, but even during this period, the lymphocytes is still usually within the normal range (Brownlee et al., 2020; Comi et al., 2019).

This case illustrates that even during active, second year treatment with cladribine the patient experienced a mild COVID-19 infection and was able to mount an adequate immune response to the infection. In the absence of vaccination trials, this is reassuring and indicates that cladribine is a treatment option for MS patients with high disease activity also enabling later vaccinations. Vaccination trials in patients treated with cladribine is warranted to confirm this.

The patient has consented to publication.

Declaration of Competing Interest

Dr. Celius reports personal fees from Almirall, personal fees from Biogen, personal fees from Merck, personal fees from Roche, grants and personal fees from Novartis, grants and personal fees from Sanofi, personal fees from Teva, outside the submitted work.

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