## Ocrelizumab

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### Prolonged severe acute respiratory syndrome Coronavirus-2 infection: case report

A 46-year-old woman developed prolonged severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2) infection during immunosuppression therapy with ocrelizumab for relapsing-remitting multiple sclerosis.

The woman, who had been receiving ocrelizumab infusions [*dosage not stated*] for relapsing-remitting multiple sclerosis (RRMS), presented with fever and dyspnoea for nine weeks. Her symptoms began 65 days prior with upper respiratory symptoms. On day 2 of illness, a positive SARS-COV-2 nasopharyngeal swab antigen immunoassay was obtained. She was diagnosed with COVID-19. She was isolated and had persistent fevers and dyspnoea with minimal exertion daily after her initial 10-day period. On day 28 of her illness, she received a routine infusion of ocrelizumab, scheduled every six months for RRMS; she was symptomatic. The symptoms did not improve over several weeks, and she presented to the outpatient clinic on four occasions. She received three empiric courses of azithromycin, amoxicillin/clavulanic acid [amoxicillin-clavulanate] and prednisone for presumed bacterial pneumonia following SARS-CoV-2 infection. However, her clinical condition did not improve. On day 66 of her illness, she presented to the emergency department with prolonged fevers and dyspnoea. Her oxygen saturation and BP were low, while body temperature was high. She was also found to have dyspnoea, tachycardia and dry cough; her abdomen was tender to palpations. A chest radiograph revealed bilateral patchy opacities; inpatient laboratory evaluation revealed decreased haemoglobin and thrombocytosis. A CT pulmonary angiogram revealed multifocal patchy ground glass opacities. Serum immunoglobulin A, G and M levels were low. A COVID-19 serology by ELISA and nasopharyngeal swab for SARS-CoV-2 by nucleic acid amplification were negative. However, her fever persisted. An induced sputum sample by PCR assay detected SARS-CoV-2 RNA with cycle threshold value of 35.2. On day 70, she underwent bronchoscopy; SARS-CoV-2 testing using the same assay was positive in bronchoalveolar lavage fluid.

The woman received off-label treatment with 1 unit of 250ml convalescent anti-SARS-CoV-2 plasma [COVID-19 convalescent plasma] on day 73 of her illness. She received remdesivir on day 74. On day 74, her clinical condition significantly improved. Serum COVID-19 IgG by ELISA remained negative on day 77. On day 78, a repeat sputum testing was negative. Her clinical condition improved further. Amplification and genetic sequencing SARS-CoV-2 from RNA in the original positive sputum revealed 19 missense mutations, the isolate belonged to the PANGO lineage B.1.2 and had D614G mutation. It was concluded that the immunosuppression induced by ocrelizumab contributed to her prolonged febrile illness from COVID-19 [*duration of treatment to reaction onset not stated*].

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