

Bendamustine/obinutuzumab

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COVID-19 disease, pancytopenia and hypogammaglobulinaemia: case report

A 59-year-old man developed COVID-19 disease during treatment with obinutuzumab and bendamustine for follicular lymphoma and classical hodgkin's lymphoma. He additionally developed pancytopenia and hypogammaglobulinaemia during treatment with bendamustine [*not all outcome stated*].

The man, who had obesity, hypertension and hypothyroidism, was admitted to the hospital with COVID-19 disease. The hypertension was mild, and he was not being treated with any medications for hypertension. His medical history was significant for grade IV classical hodgkin's lymphoma for 3 years and grade III follicular lymphoma (FL) for 18 months. Thirteen months previously, he received 2 cycles of bendamustine [G-benda] in combination with obinutuzumab [*dosages and routes not stated*]. Within weeks of the completion of the second cycle of bendamustine, he was admitted to the hospital for approximately one week of cough, fever and shortness of breath. The nasal swab reverse transcriptase-polymerase chain reaction (RT-PCR), oxygen desaturation confirmed symptomatic COVID-19 infection.

The man required high-flow oxygen throughout the month after his admission. He then received an off-label treatment with hydroxychloroquine 400mg once daily on admission day 1 followed by 200mg twice daily on admission day 2, 3, 7 and 8, azithromycin 500mg once daily for the first five days of admission, lopinavir/ritonavir 200/50mg two tablets twice daily, IV methylprednisolone [Solumedrol] 80mg twice daily followed by IV 60mg twice daily on admission day 11 and 12 and two infusions of convalescent-anti-SARS-CoV-2-plasma [COVID-19 convalescent plasma] 30 and 50 days after the diagnosis. Despite treatment, his COVID-19 symptoms persisted. He then received an off-label treatment with IV immune globulin [IVIG]. After 6 weeks, he was transferred for remdesivir treatment. After remdesivir treatment, he exhibited slow clinical improvement. Three and a half months after the COVID-19 diagnosis, he was discharged home to quarantine for an indefinite period. After 10 weeks at home, he was readmitted to the hospital for severe consolidated pneumonia. During the week after readmission, he was tested negative for SARS-CoV-2 on nasal swabs, which were collected over 2 consecutive days. He was treated with piperacillin/tazobactam, vancomycin and prednisone for pneumonia. Additionally, he was treated with voriconazole for antifungal prophylaxis. However, 3 weeks after readmission, his cough and dyspnoea persisted. As a result, consolidated COVID-19-related pneumonia was considered. Subsequent nasal swab test re-confirmed COVID-19. During his subsequent prolonged hospital stay for 6 months, he had an unchanged clinical status; however, there was no severe worsening. As a result, mild oxygen dependence was required. Thereafter, persistent accumulation of new mutations was noted. On day 270, he received an off-label treatment with the first infusion of casirivimab/imdevimab 2.4g for COVID-19 disease. After two detectable swabs, the virus became undetectable four times. Subsequently, a consolidation infusion was administered 35 days after first infusion of casirivimab/imdevimab at a higher dose of 8g. After a second infusion, the results of all swab tests were found to be negative. After 360 days, he was noted to have persistent pancytopenia and hypogammaglobulinaemia, which was attributed to bendamustine therapy. However, it was normal prior to the initiation of bendamustine therapy. After 390 days from the initial diagnosis, he received first dose of COVID-19-Vaccine-Pfizer-BioNTech [Pfizer-BioNTech COVID-19 vaccine]. He was then discharged to home with scheduled clinical follow-up and regular check-ins.

Drouin AC, et al. Successful clearance of 300 day sars-cov-2 infection in a subject with b-cell depletion associated prolonged (B-deap) covid by regen-cov anti-spike monoclonal antibody cocktail. *Viruses* 13: No. 7, 23 Jun 2021. Available from: URL: <http://doi.org/10.3390/v13071202>

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