Cyclophosphamide/doxorubicin/prednisone

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Prolonged COVID-19 viral shedding, neutropenia and thrombocytopenia: case report

A 60-year-old man developed prolonged COVID-19 viral shedding, neutropenia and thrombocytopenia during treatment with cyclophosphamide, doxorubicin and prednisone for mantle cell lymphoma.

The man, who had mantle cell lymphoma, presented to the emergency department (ED) with 1 week of epistaxis and a cough productive of blood-streaked sputum. His chemotherapy included cyclophosphamide, doxorubicin and prednisone [*dosages and routes not stated*]. He was also receiving unspecified CD20 bispecific antibody and unspecified B-cell directed antibody. On presentation, he was afebrile and supplemental oxygen was not required. Chest radiograph was normal. A nasopharyngeal swab by reverse-transcription polymerase chain reaction (RT-PCR) was positive for SARS-CoV-2. He was admitted on day 7 of illness due to neutropenia and thrombocytopenia secondary to cyclophosphamide, doxorubicin and prednisone.

The man was treated with platelet transfusion. His chemotherapy was discontinued. Thereafter, his COVID-19 symptoms improved and cytopenia resolved. He was discharged after 6 days. Over the next week, he continued to experience fatigue and a mild cough. He developed mild shortness of breath and returned to the ED on day 22 of illness. He was afebrile and supplemental oxygen was not required. Chest CT demonstrated multiple bilateral lung nodules with bibasilar atelectasis and a ground glass opacity at the right lung base. A nasopharyngeal swab was again positive for SARS-CoV-2. He was admitted and treated with IV fluid hydration. However, he soon became persistently febrile and required supplemental oxygen. On day 29, a repeat nasopharyngeal and sputum samples were both found to be positive for SARS-CoV-2 by RT-PCR. On day 30, serological testing did not detect antibodies to SARS-CoV-2. He received remdesivir. On day 31, he received off label treatment with convalescent-anti-SARS-CoV-2-plasma [convalescent plasma] and defervesced soon thereafter. His sputum culture remained positive for SARS-CoV-2 by RT-PCR on days 33 and 38. His condition continued to improve and he was discharged on day 39. At a follow-up visit, he reported no significant complaints. Repeat serologic testing 66 days following his initial symptoms detected IgG antibodies to SARS-CoV-2. His three outpatient nasopharyngeal swabs at another institution on day 46, 57, and 66, were all positive. On day 81, he remained positive for SARS-CoV-2 RNA and it was decided to reinitiate chemotherapy considering progression of his underlying lymphoma.

Chemotherapy with cyclophosphamide, doxorubicin and prednisone was re-started on day 85 and completed on day 106. On day 106, the man had mild upper respiratory symptoms. A nasopharyngeal swab was found positive for SARS-CoV-2 by RT-PCR. On day 119, he presented to the ED with fever, cough, and shortness of breath. A chest radiograph revealed new bilateral air space opacities. Two days following admission, increase in oxygen requirement was noted. On day 122, he received a second course of remdesivir and convalescent-anti-SARS-CoV-2-plasma. Within 24 hours, he defervesced and was slowly weaned off the oxygen. On day 131 of illness, he was discharged. On day 156, he was again admitted due to progression of his lymphoma. On admission, he was again positive for SARS-CoV-2. He remained afebrile and chest radiograph showed improvement. It was decided to pursue home hospice care. Residual respiratory tract specimens from days 7, 12, 22, 29, 33, 38, 81, 93, 106, and 119 were recovered from the hospital and cultured on Vero E6 cells. Based on the investigational findings, he was diagnosed with prolonged COVID-19 viral shedding suspected to be secondary to chemotherapy with cyclophosphamide, doxorubicin and prednisone [*duration of treatments to reactions onsets not stated*].

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