

## Multiple drugs

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**COVID-19 and lack of efficacy during off-label treatment: 2 case reports**

A retrospective study of 2513 patients with haematologic diseases followed between 8 March 2020 and 14 May 2020 at a referral haematologic centre in Italy described a 38-year-old man and a 65-year-old woman, who developed COVID-19 during treatment with rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone or bendamustine for non-Hodgkin lymphoma. Additionally, the 65-year-old woman exhibited lack of efficacy during off-label treatment with lopinavir/ritonavir, hydroxychloroquine, azithromycin and tocilizumab for COVID-19 [*routes, dosages and durations of treatments to reactions onset not stated*].

Case 3: The 38-year-old man, who had been diagnosed with non-Hodgkin lymphoma in February 2020, was a resident of the neighbourhood of local COVID-19 outbreak. His medical history revealed he had received first cycle of R-CHOP regimen comprising rituximab, cyclophosphamide, doxorubicin, vincristine and prednisone on 25 February 2020. He presented to a hospital in Italy with symptoms including fever and dry cough. He was diagnosed with COVID-19 based on positive RT-PCR on 9 March 2020. During admission, fatigue, dyspnoea and pneumonia were noted with bilateral interstitial pneumonia confirmed on chest CT scan. He received off label treatment with lopinavir/ritonavir, hydroxychloroquine, azithromycin and tocilizumab along with additional oxygen therapy with a mask. He tested negative on RT-PCT 14 days following the diagnosis, and he had completely resolution of COVID-19.

Case 4: The 65-year-old woman, who had relapse of non-Hodgkin lymphoma in October 2018 and recent pulmonary infection by atypical mycobacteria, had received rituximab and bendamustine followed by R-CHOP regimen comprising rituximab, cyclophosphamide, doxorubicin, vincristine and prednisone. The last cycle was administered on 20 April 2020. She presented to a hospital in Italy with symptoms including fever and dry cough. She was diagnosed with COVID-19 based on positive RT-PCR on 23 April 2020. During admission, dyspnoea and respiratory failure were noted with bilateral interstitial pneumonia confirmed on CT. The woman received off label treatment with lopinavir/ritonavir, hydroxychloroquine, azithromycin and tocilizumab along with continuous positive airway pressure therapy. However, she died due to progression of COVID-19. Therefore, off label treatment with lopinavir/ritonavir, hydroxychloroquine, azithromycin and tocilizumab was considered ineffective (lack of efficacy).