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SARS-CoV-2 infection in a highly-experienced person living with HIV.

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Dear Editor,

since the first cases reported in December 2019 in Wuhan (Hubei, China),[1] COVID-19 has spread all over the world, until reaching the state of pandemic, as recognized by the World Health Organization (WHO).[2] Patients infected by the SARS-CoV-2, the etiological agent of COVID-19, showed symptoms of fever, cough and dyspnoea, lymphopenia, and interstitial pneumonia in radiological examinations.[3,4] About 20% of cases develop severe diseases, with life-threatening complications such as respiratory failure, shock, and multiple organs dysfunction.[5] Given the correlation with lymphopenia, it was thought that people living with HIV could have an increased risk of contracting COVID-19 and, moreover, of manifesting a severe form of the disease. A joint statement from EACS and BHIVA[6] clarified that, with current data, there is no clear evidence of a higher COVID-19 infection rate or different disease course in people with HIV than in HIV-negative people. To the best of our knowledge, only one case was reported of HIV and COVID-19 co-infection in a newly-diagnosed 61-years old man in China.[7]

We hereby report the case of a 75 years old male patient, with a history of 23 years since HIV diagnosis. The patient did not have an AIDS-defining event in his clinical history, his nadir CD4+ cell count was 159 cell/mm3 while his last determination prior to hospital admission was 709 cell/mm3 with an undetectable HIV-RNA. He had a resolved hepatitis B virus (HBV) infection and suffered from high blood pressure and was in treatment with perindopril.

On March 21st 2020 he was hospitalized following a 7-days history of high fever, diarrhea and cough. At the emergency department, molecular (RT-PCR) assay of nasopharyngeal swab for SARS-CoV-2 was performed, resulting positive. Blood exams showed a C-Reactive Protein value of 45 mg/L (Reference Value <5), a lactate dehydrogenase (LDH) determination of 221 U/L (RV

<250), a d-dimer of 2232 ng/mL (RV <500) and a leukocyte count of 6340/mm3, with a lymphocites' count of 1380/mm3. Chest X-rays showed bilateral signs of interstitial pneumonia with ground-glass opacity in the anterior segment of the upper right lobe. Antiretroviral therapy was hence modified, discontinuing the single tablet regimen (STR) of rilpivirine/emtricitabine/tenofovir alafenamide and starting a STR with darunavir/cobicistat/emtricitabine/tenofovir alafenamide. Hydroxycloroquine was also started for the treatment of COVID-19 along with antibiotic therapy with azithromycin. In the days immediately following, clinical conditions worsened, with persistent fever and worsening dyspnea, requiring a progressive increase in oxygen supplementation up to a FiO2 of 0.6. On March 28th, sarilumab was administered, at the dosage of 200mg intravenously; a second dose of 200mg of sarilumab was administered on March 31st. Following the lenghtening of the QT interval and the finding of marked bradycardia with atrio-ventricular block, on April 1st both hydroxycloroquine and azithromycin were discontinued. Following two distinct episodes of hemoptysis, a CT scan of the lungs was performed on April 3rd, showing bilateral consolidations and "ground-glass" opacities, in the absence of signs of bleeding or signs of pulmonary embolism.

Starting on April 4th, we observed a progressive improvement in clinical conditions, with the resolution of fever and improvement of respiratory parameters and gas exchange. Oxygen supplementation was rapidly discontinued. Two consecutive molecular essays of naso-pharyngeal swabs on April 6th and 7th tested negative, and the patient was discharged on April 9th in good clinical conditions.

Our work describes one of the first reported cases of COVID-19 in a person living with HIV. In our patient, antiretroviral therapy was switched to a PI-based strategy, based on the evidence that some PIs have "in-vitro" activity against SARS-CoV-2,[8] although clinical trials failed to show significant advantages of PIs in severe forms of COVID-19.[9] The patient failed to improve after initial therapy with hydroxycloroquine and azithromycin was started; as a matter of fact, the association of these two drugs, both of whom are potentially cardiotoxic, caused the observed

conduction disorder. The improvement, meanwhile, was observed following administration of sarilumab, a humanized anti-human IL-6 receptor antibody of the IgG1 subclass, currently investigated as a potential therapeutic agent against COVID-19. In our case, sarilumbab was administered at a reduced dosage given the history of HBV infection; no hepatitis flares were observed during hospitalization. It is also worth mentioning that, during hospitalization, the patient was administered low molecular weight heparin (LMWH) at prophylactic dose, following initial reports on the potential benefit of anticoagulant therapy in SARS-CoV-2 infections.[10] The described patient was able to achieve complete clinical recovery, despite having presented a very severe clinical course. Although people living with HIV do not show an increased risk of contracting COVID-19, the clinical course of the disease could be more insidious in this group of patients.

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