

The effect of SARS-CoV-2 on HIV-positive individuals

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Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which was first identified in December 2019 has been announced as a pandemic by the World Health Organization (WHO) in March 2020 after infecting millions of people all over the world [1]. According to the centers for disease control and prevention (CDC), some people are at higher risk for severe illness from COVID-19 including people over 65 years old, people who live in nursing home or long term care facility, people with chronic lung disease, people who have serious heart conditions, people with severe obesity, diabetes, chronic kidney disease undergoing dialysis, liver disease, sickle cell anemia and immunocompromised like HIV positive individuals [2].

Previously it was believed that low count of CD4 might protect HIV infected individuals from progress to the cytokine storm observed in COVID-19 patients [3], but later studies suggested low count of CD4 (lower than 200 cells per microliter) may be associated with disease severity [4, 5]. According to a prospective cohort which investigates COVID-19 in HIV-infected individuals, it was demonstrated that HIV-infected individuals should be considered to have equal (HIV positive patients who are on regular antiretroviral treatment with normal CD4 count and low viral load) or even more risk of severe disease (especially

individuals with comorbidities, lower CD4 cell counts, or high HIV viral load) [5]. The genome of SARS-CoV-2 was detected after approximately 40 days from the onset of symptoms in six (32%) individuals, it was remarkable that four of them had the severe disease or AIDS [5]. Moreover, they suggest that the SARS-CoV-2 presentation in HIV positive patients may have similar or even worse outcomes to general population. It was also mentioned that these patients should be treated same as HIV negative individuals [5].

Although there are numerous mysterious about SARS-CoV-2 and its effects on HIV positive individuals, the prevalence of COVID-19 in HIV positive patients and severity of the symptoms and illness in these people depend on different factors such as age, gender, CD4 count, viral load, body mass index (BMI), comorbidity, current antiretroviral therapy, smoking and even socioeconomic factors [3-6]. According to existing studies, symptoms of disease in HIV positive patients may be similar to HIV negative ones and the severity of symptoms in HIV positive individuals with COVID-19 were almost similar to HIV negative COVID-19 patients [4-7]. However, it should be noted that because of the small sample size of available studies the results may subject to bias and other studies in future may get it more sense.

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Author Contributions

All authors contributed equally to this manuscript, and approved the final version of manuscripts.

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References

1. Valencia DN. Brief Review on COVID-19: The 2020 Pandemic Caused by SARS-CoV-2. *Cureus*. 2020; 12(3):e7386.
2. People at increased risk and other people who need to take extra precautions. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/index.html>.
3. Guo W, Ming F, Dong Y, Zhang Q, Zhang X, Mo P, et al. A Survey for COVID-19 Among HIV/AIDS Patients in Two Districts of Wuhan, China (3/4/2020). Available at SSRN: <https://ssrn.com/abstract=3550029> or <http://dx.doi.org/10.2139/ssrn.3550029>.
4. Härter G, Spinner CD, Roeder J, Bickel M, Krznaric I, Grunwald S, et al. COVID-19 in people living with human immunodeficiency virus: a case series of 33 patients. *Infection*. 2020;1-6. [In press]. doi: 10.1007/s15010-020-01438-z.
5. Vizcarra P, Perez-Elias MJ, Quereda C, Moreno A, Vivancos MJ, Dronda F, et al. Description of COVID-19 in HIV-infected individuals: a single-centre, prospective cohort. *Lancet HIV*. 2020. doi: [https://doi.org/10.1016/S2352-3018\(20\)30164-8](https://doi.org/10.1016/S2352-3018(20)30164-8).
6. Shalev N, Scherer M, LaSota ED, Antoniou P, Yin MT, Zucker J, et al. Clinical characteristics and outcomes in people living with HIV hospitalized for COVID-19. *Clin Infect Dis*. 2020 [In press]. doi: 10.1093/cid/ciaa635.
7. Xu Z, Zhang C, Wang F-S. COVID-19 in people with HIV. *Lancet HIV*. 2020;7(8): E524-6. doi: [https://doi.org/10.1016/S2352-3018\(20\)30163-6](https://doi.org/10.1016/S2352-3018(20)30163-6)