

Perspective

It's a Fact: The Pandemic is Still Going On

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Perspective

The COVID-19 pandemic is still ongoing and doesn't allow us to see the light at the end of the tunnel. With the recent appearance of the omicron variant by the end of 2021, the pathophysiology and course of the disease have markedly changed. The omicron variant, unlike the other variants of concern that have been appearing throughout the pandemic, accumulates many previous mutations, greatly limiting recognition by the humoral and cellular immune systems.

Is Omicron here to stay? Recalling 2021, the delta variant significantly increased the mortality rate and that aroused people's interest in going to vaccination centers for the booster dose. Then, at December of the same year came the new omicron variant with nothing less than 32 mutations in the spike protein. More transmissible and with the ability to infect immune people, this variant was capable of evade the humoral and cellular response generated by vaccines.

Although BA.1 caused a great impact with the fourth wave, nowadays the new sub-variants BA.4 and BA.5 have increased the ability to infect by acquiring mutations L452R (also present in the delta variant) and F486V in the protein spike [1]. An important part of these "advantageous" changes has occurred concerning the way of how the virus interacts with our cells. Thus, it is more transmissible and more likely to re-infect people who have already been sick with other strains.

In general terms, this new set of genetic "enhancements" is facilitating the spread to everyone with or without vaccines. Previously, L452R was the mutation that enhanced the infective capacity of the delta variant, increasing the transmission 30 to 60% over the earlier variants. Now with the appearance of these two new recombinant sub-variants this mutation arouses great interest due to the effect it has on the pathophysiology of the disease.

Recent studies have shown that responsiveness against new sub-variants BA.4 and BA.5 is being significantly affected [2]. In the case of unvaccinated patients, severe disease can lead to death due to the lack of symptoms, effective treatment and the low response to treatment with monoclonal antibodies [3,4]. However, in the case of vaccinated patient's severe disease is a distant possibility although the response

Abstract

In the following perspective, we highlight the effect of mutations in the Omicron BA.4 and BA.5 subvariants and how they affect epidemiological parameters. Based on the scientific evidence, we hypothesize the evolutionary path that the SARS-CoV-2 virus could follow and the expectations for the future of the pandemic.

Keywords: BA.4 subvariant, BA.5 subvariant, Omicron variant

by neutralizing antibodies is diminishing [5]. Based on the evolution of the omicron variant, is not unreasonable to hypothesize that it may continue to acquire favorable mutations in other regions of the spike protein. Thus, these results suggest that in the near future new sub-variants of omicron may once again increase hospitalizations and deaths, even in the vaccinated population.

What does the future hold for us? Although the wave of infections by BA.4/BA.5 began in South Africa, both sub-variants have already made their way by quickly replacing the previous ones and causing a new wave of infections worldwide. With 66% of the world's population vaccinated with at least one dose, the mortality and hospitalization rates have significantly decreased. However, the rate of infections has increased again causing a seventh wave.

The infective capacity of the virus is worrying the scientific community and it is even more striking because the evolutionary pattern is not clear due to the accumulation of mutations on the reigning variant. Thus, the virus continues to improve transmissibility and immune evasion. Besides, it is important to mention that there is still no highly effective vaccine capable of limiting the infection of SARS-CoV-2 and other coronaviruses. When that is possible, it may be the definitive stoppage of this pandemic. At the moment, we do not know what awaits us in the near future; maybe SARS-CoV-2 will become seasonal like the common flu or perhaps the time will come when the mutations themselves drive the virus towards extinction.

Author's Contribution

Both authors contributed equally to this manuscript.

Conflict of Interest Statements

The authors declare no conflict of interest.

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