

Third Wave of COVID-19 in Brazil: A Major Concern about Public Health

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OVERVIEW

On January 30th, 2020, the World Health Organization (WHO) declared the outbreak of Coronavirus disease 2019 (COVID-19) to be a Public Health Emergency of International Importance. A little more than a month later, with the spread of Severe Acute Respiratory Syndrome-Related Coronavirus 2 (SARS-CoV-2) virus, the WHO characterized COVID-19 as a pandemic. In Brazil, the first case of COVID-19 was confirmed on February 25th, 2020, relating to a 61-year-old Brazilian man who had traveled in the same month to Lombardy, Northern Italy. According to WHO, there have now been in Brazil more than 13 million confirmed cases of COVID-19, with deaths mounting to over 350,000 (data from April 14th, 2021). It is important to highlight that these numbers are dramatic increases over how the year 2020 finished with around 7 million confirmed cases and about 200,000 deaths. Only in these first few months of 2021, Brazil reached numbers showing the emergence of a “third wave” even more drastic than the previous ones. Despite strong evidence supporting social distancing measures to prevent SARS-CoV-2 spread, adopted in many countries, most cities in Brazil have had no lockdowns or measures to strictly control the circulation of people, which can be highly related to the increase in virus contagion. This environment of greater infections and minimal control on population circulation is creating a situation favorable for the emergence of new virus Variants of Concern (VOC).

There is major concern about Brazil as the new epicenter of COVID-19 due to the large number of new positive cases per day, showing that the pandemic is out of control in the country. The longer the virus circulates and infects new people, the greater the chance of mutation and generation of new variants with high capacity of dissemination and infectivity. In Brazil

there are at least three circulating variants of interest (VOI): the P.1 first reported in Manaus, Amazonia; P.2 in Rio de Janeiro; and N9, a variant reported in the Northeast, North, Southeast and South regions of Brazil. Variants of a virus occur naturally from mutation over time, but to maintain themselves, they need to be able to proliferate. Mutations in the SARS-CoV-2 genome may lead to an altered conformation or sequence of antigenic epitopes, such as alterations of the receptor binding domain of the spike protein, the main protein related to the infectivity of SARS-CoV-2 which can ultimately affect transmission, disease and immune responses against the infection. The main public health remedy would be mass vaccinations in a short period of time, but Brazil has had a very slow rollout due to bureaucratic issues and poor coordination between state and federal governments. According to WHO, a total of 24,699,093 vaccine doses have been administered in Brazil (data from 9th April 2021) after 3 months of vaccination; this is relative to the more than 210 million inhabitants of the country. While people are being slowly immunized the pandemic virus has time to spread and mutate. The new variants may not be recognized by the immune system of the host previously immunized and may compromise the efficiency of the vaccines currently developed. Actions known to be more effective in controlling the circulation of virus and consequently the emergence of new variants, such as lockdowns, social distancing, and the use of masks, must be applied more firmly until a larger number of the Brazilian population be vaccinated.

ACKNOWLEDGMENT

We want to express our gratitude to Dimensions Sciences for providing scholarships to the authors.

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Received: April 19, 2021; **Accepted:** May 03, 2021; **Published:** May 10, 2021

Citation: Gularte JS, Caruso GR, Neris R (2021) Third Wave of COVID-19 in Brazil: A Major Concern about Public Health. J Immunogenet Open Access. 6:144.

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