Predominance of SARS-CoV-2 Gamma lineage inducing the highest COVID-19 wave in southern Brazil

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In early 2021, the Rio Grande do Sul (RS) State, Southern Brazil, went through its worse health crisis caused by SARS-CoV-2, which was the highest registered epidemic wave, considering the number of cases, deaths and hospitalization per day caused by COVID-19. In the same period, in other Brazilian states, Gamma lineage started to replace the current variants and a significant increase in hospitalizations was observed. So, to better understand this health crisis caused by SARS-CoV-2, we described in this study which lineages were circulating at the beginning of 2021. A total of 70 positive SARS-CoV-2 samples, collected between January 28th and April 23rd, 2021, were selected for high throughput sequencing. The samples were from 16 cities distributed in RS. The library preparation was performed according to QIAseq® SARS-CoV-2 Primer Panel Handbook kit, and phylogenetic analysis was realized. The Gamma lineage represented 67.14% of the samples, followed by P.2 lineage 27.14%, and B.1.1.28. A progressive increase of Gamma lineage was observed over time. In addition, two Gamma sequences presented the S:D614A mutation. This way, the highest wave SARS-CoV-2 epidemic probably is related to the arrival of this variant in the State. New mutations could be emerging due to the quick SARS-CoV-2 spreading. Thus, a greater understanding of immune protection and variants vigilance is essential to the better management of the health SARS-CoV-2 crisis.

Keywords: health crisis; COVID-19, B.1.1.25, P.2 lineage

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