



EFFECT OF SARS-COV-2 GENETIC VARIATIONS IN PERUVIAN COVID-19 TRANSMISSION

EFEECTO DE LAS VARIANTES DE SARS-CoV-2 EN LA TRANSMISION DE COVID-19 EN EL PERÚ

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SARS-CoV-2 is the coronavirus which causes the COVID-19 pandemic and is constitute by a rapidly evolving RNA. This virus presents continuous genomic mutations as it is transmitted. The main focus of the research about genetics of SARS-CoV-2 is whether any of these mutations have the potential to significantly modify important viral properties, such as the mode or rate of transmission, or the ability to cause increased lethality. Important mutations have already been reported in the United Kingdom, where out of 25,000 genome sequencing, the D614G mutation in SARS-CoV-2 was identified, a mutation that results in a displacement of aspartic acid with glycine at position 614 of the spike protein (S) of the virus that, although it is true, are not associated with greater mortality or clinical severity due to COVID-19, but 614G is associated with a higher viral load and a younger age of the patients.

The spike (S) protein of SARS-CoV-2 plays an important role in transmission. This is a large glycoprotein containing the S1 and S2 subunits that mediates the cellular entry of the virus, binding to the receptor for angiotensin converting enzyme 2 (ACE2) to enter the cell, therefore, mutations in this gene have the potential to alter receptor binding affinity and infectivity, as well as viral immune evasion and immunogenicity.

In December 2020, United Kingdom and South Africa reported two genetic variants of the SARS-CoV-2 virus have mutations in the Spike gene, the English variant has 7 mutations and two deletions (N501Y, A570D, D614G, P681H, T716I, S982A, D1118H, deletion 69-70 and deletion 144-145) and the South African variant showing 3 mutations in the RBD region (K417N, E484K, N501Y).

On January 8, 2021, in Peru, the presence of the British variant in a 37-year-old Peruvian woman was notified. This variant has been designated as Variant of Concern 202012/01 (VOC), which has advantages in the transmission of the disease. It is estimated that the VOC could have differences in the reproduction number of 0.4 and 0.7 and the rate of the reproduction number between 1.4 and 1.8 that make it more transmittable. Although it is true despite the variants that occur in the Spike protein, several vaccines are directed to produce antibodies against many regions of this spike protein, so it is unlikely that these changes will affect the efficacy of the vaccine. Likewise, the SARS-CoV-2 virus does not appear to mutate as fast as the seasonal influenza virus which mutates every year where the vaccines that have so far proven effective in trials are types that can be easily modified.

Faced with this situation, the domain of this variant of SARS-CoV-2 in the United Kingdom rapidly shifts

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from 30% in August to 70% in December. There is a possibility that this British variant is already circulating in Lima city and begins to appear in other regions of the country.

It remains, then, to continue the genotyping of SARS-CoV-2 of COVID-19 positive patients by the National Institute of Health, wait for the entry of

vaccines to the country to start immunological protection, but above all, to resume and extend non-pharmacological protection measures such as the correct use of a mask, social distancing, avoiding being in conglomerates, or any other situation that is perceived as a risk for the transmission of this disease.

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