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Journal of Quality in Health care & Economics
ISSN: 2642-6250

Uncertainty in the New Appearance of a New Strain of Covid-19 in the World. Lethal or Non-Lethal?

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Mini Review

Volume 4 Issue 1

Received Date: January 04, 2021

Published Date: January 09, 2021

DOI: 10.23880/jqhe-16000201

Abstract

In the UK, a new variant called SARS-CoV-2 VUI was discovered. This variant is defined by the spread of a mutation of the SARS-CoV-2 peak protein (S). The S gene encodes the spike glycoprotein, which binds to host ACE2 receptors and is required for the initiation of infection.

Keywords: COVID 19; Infection; Glycoprotein

Mini Review

Since the first confirmed cases of SARS-CoV-2 (Covid 19) in the world were known, where the origin was in the city of Wuhan on December 31, 2019, the virus has spread rapidly throughout all neighboring countries and even in other continents in the following months, decreeing at the beginning of 2020 a global pandemic by SARS-CoV-2, scientists and researchers throughout this time have not rested in looking for a cure (vaccine), which large pharmaceutical companies such as Pfizer, Moderna (United States) and BioNTech (Germany) have worked for these long months to obtain the vaccine, but at this time there was not only scientific work in search of the vaccine, there was also a SARS-CoV-2 mutation. Messenger RNA (mRNA) vaccines, which are the newest approach, are now available and will certainly meet the many expectations that the population is waiting for. The mRNA vaccines, coated with protected soft fat lipids, use genetic mRNA (plus various inactive excipients) to produce a fragment of the coronavirus spike protein, which will instruct the immune system to produce specific antibodies. Soft fatty lipids allow mRNA to enter cells, where it is absorbed into the cytoplasm and initiates spike protein synthesis. Additionally, vaccination also activates T cells that help the immune system respond to increased exposure to the coronavirus. The mRNA induces the synthesis of antigens of the SARS-CoV-2 virus that stimulate the antibody response of the vaccinated person with the production of neutralizing antibodies [1]. All viruses, including SARS-CoV-2, accumulate mutations as they multiply. Most have no detectable effect, but some have the potential to modify the virus making it more difficult to control. An example of this is the new variant of SARS-CoV-2 found in the United Kingdom, called SARS-CoV-2 VUI. This variant is defined by the spread of a mutation of the SARS-CoV-2 peak protein (S). The S gene encodes the spike glycoprotein, which binds to host ACE2 receptors and is necessary for the initiation of infection [2]. In this variant we have D614G (that is, a substitution of aspartic acid for glycine amino acid at position 614 in the viral S gene) in several European countries, which scientists indicate that it is a more "transmissible" form of the virus. This was based on higher viral loads found during in vitro replication studies, as well as clinical samples containing this mutation and animal studies. In recent weeks it has been reported in the UK that the new variant is spreading rapidly in the same country ("VUI-202012/01", ie "investigational variant"). This variant is derived from the SARS-CoV-2 20B / GR clade (B.1.1.7 lineage) that contains multiple mutations, including a combination of N501Y (i.e., an amino acid substitution of asparagine to tyrosine at position 501 in the viral S gene)

and the 69-70 del (i.e., a 6-base deletion encoding histidine and valine at positions 69 and 70, respectively, in the viral S gene) mutations, which have been circulating, separately and independently for many months before. It should be taken into account that some of the first viruses that contain N501Y originated in Brazil (April 2020) and Australia (June-July 2020), and already in March 2020 in Slovenia for the 69–70 mutation. Early UK research indicates an increase in transmissibility of up to 71% over previous circulating strains of SARS-CoV-2, which can contribute 0.39 to 0.93 to estimates of the virus's R0 value, and the situation is being continuously monitored [3]. The N501Y mutation has been associated with a 70% increase in infectivity. This mutation is found in the receptor binding domain, increasing the binding affinity to the ACE2 receptor of cells in our body. The 69-70 deletion causes false negatives in PCR tests. There is no evidence so far to suggest that the vaccine will be ineffective against this new variant. Nor does it generate a more serious illness. A rapidly spreading virus will also accelerate the need to vaccinate vulnerable populations to COVID-19 (the elderly and people with multiple comorbidities), with the new COVID-19 vaccines humanity wants to stay "ahead" of the virus. This variant is more transmissible, more people can be infected quickly, causing a greater demand for hospitals. As we now understand, SARS and COVID-19 are a consequence of virus-encoded functions and delayed responses of interferon and, in severe cases, are associated with dysregulated immune responses and immunotratologies. In fact, the rapid and uncontrolled viral replication of SARS-CoV has been shown to evade the host's innate immune activation during its initial steps. As a consequence, increased aberrant pro-inflammatory responses and infiltration of immune cells into the lungs lead to tissue damage and contribute to the clinical manifestation of SARS [4].

Conclusion

If we do not follow the health instructions and more people become infected, the probability of a SARS-CoV-2 mutation increases. This could lead to even more infectious, more lethal, and vaccine-resistant strains of the virus. However, this new strain is found in Europe in first world countries, as we are experiencing a Pandemic, we do not know if in third world countries this new variant of SARS-CoV-2 may already be living and we are experiencing another new Pandemic, I do a call to conscience, we are reasonable and adaptable beings, if we adapt to the health indications, we can be victorious in this.

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