Viral mutations: what comes next with the contemporary Coronavirus?

Viral mutations: what comes next with the “contemporary” Coronavirus?

A SHORT ANALYSIS OF THE COVID-19 STRATEGIC ADJUSTMENTS

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Abstract

Covid-19 is mutating in areas where immunisation has not yet been completed and in the countries which have just started with the vaccination programme. In this brief work, the structures of the *coronavirus* variants attainable from the protein data bank are reviewed and analysed to attempt and understand what the virus in question is doing. It thus reveals that the primary objective of the covid-19 is to become smaller, for trophic reasons, so to access the bloodstream, but it also reflects on how the next variants in the non-vaccinated populations may continue to develop smaller virions. Lastly, the final outcome in the eradication process should be successful with a mixture of vaccines and other antibody-stimulants.

Keywords: Covid-19, Immunisation, Variants, Mutations, Antibodies

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Introduction

In the previous article (Dove, 2021), Covid-19 data for England and Wales up until the month of January 2021 were analysed, and the covid-19 wave (or pandemic wave) detecting the mutants were studied. We concluded that each wave, corresponding with each variant, as per other pandemic curves, was not sufficient to predict a new emerging wave or variant, as other factors were involved, i.e. lockdown periods and vaccinations, but could potentially lead to our understanding of where in the curve could the virus require mutating. That point was detected at the stage in which the peak would begin to descend in the Gaussian-like curve, however, things have changed since, because of vaccination programmes; particularly in the case of England and Wales, whereby at least 20 million first dose immunisations have been carried out in England in the arch of two months, leading to a gradual decline in cases.

To begin with, several vaccines were screened around the world, and in the case of England and Wales, vaccines were carried out with a consistent pace which needs to be maintained in order to “defeat” the Covid-19. Nevertheless, other countries must begin their immunisations too and try keep up with England and other immunized populations, to prevent strengthening of the virus in their own countries, which can lead to potential new variants.

The variants

Several variants had existed prior to immunisation, “quite” worldwide, and a particularly deadly one was considered to be the South African mutant, whilst the Brazilian and English variants

seemed to be more contagious; new variants have also been found in Denmark, Spain and many more countries, recently. Although it is hard to predict mutations with covid-19 waves (or pandemic waves), it is possible to make observations by noting the overall structure of the virus, and how it changed in the past year since its first *reported* appearance, and that could help us identify what the virus may wish to be doing next. Of course, a first dose vaccine may not be sufficient to earning complete immunisations, but other doses can be crucial in achieving permanent eradication once we “hit” that stage (ideally all the population has been vaccinated or immunised), therefore the immunisation pace should not change, but remain consistent in countries where most of the population have already been “artificially immunised”.

Structure of the spike protein and prediction of potential new variants.

A high percentage of recent studies have demonstrated that the spike protein of the covid-19 virus has reached a large number of mutations, some have been mentioned, but the actual “macroscopic”-in-a-way pattern illustrates something different. It is true that some point mutations may be critical in the symptoms that the affected patients end up presenting, but the “global” configuration of portions of the virus, such as the spike protein, has changed. In particular, it can be observed, that since the virus’s first structure (with this I am referring to the spike protein, thus a part of the virus), all the variations of course exhibited a propensity to hydrophilicity or hydrophobicity, depending on the variant in question, but what they all share in common is gradual deletion of amino acidic sequences. Enhancing or diminishing solubility obviously are strategies exploited by the virus to satisfy its “trophic needs”, but so could be the reduction in its own overall viral dimensions. It could be speculated and predicted that not only the spike protein has decreased in size, by accomplishing those amino acidic deletions and thus reductions, but other parts of the

virus too, for instance the viral envelope. This may seem trivial, but the *coronavirus* being a large virus compared to *aphtoviruses* or *picornaviruses* is trying to reduce its overall size.

Size reduction goals of the Coronavirus, what they mean and ways to prevent them

As we know, *aphtoviruses* are one of the smallest viruses and spread more easily than other viruses but above all they have access to the bloodstream (Zhu, 2013). Their size itself allows for the passage from the “volatile” gaseous state to the bloodstream, leading to a viremic phase. How long the viremic phase lasts is determined by how resilient the virus is and this could be linked to its size. The purpose of small viruses is trophic. Similarly, it could be guessed that the objective of the size reduction of the virus is trophic. To prevent that passage, antibodies, whether human, or engineered (Monoclonal), can help prevent viremia, by “binding them like magnets”. Antibodies are in fact “biological magnets”. Circulatory viremia is, nonetheless, risky for Coronary Heart Disease (CHD) patients, and therefore that is important to take into account. In essence any immune system stimulant, such as an antibody, or a vaccine, or a vitamin is important in preventing viremia, thus proving that the vaccine will be effective. This could also signal the final and end stage of the virus.

Conclusion

This preliminary article highlights that the vaccine should lead to the eradication of the virus, and that the novel variants of parts of the Covid-19 (spike protein etc.) will probably be a reduction in size to preserve trophic exigencies.

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