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The Omicron Variant of SARS CoV-2: One More Mutation in the Ongoing Pandemic

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Abstract

Newer variant of concern of SARS CoV-2, the Omicron variant is causing a lot of panic and confusion due to rapid transmissibility and infectivity. Lack of data and clinical evidence is still a pertinent problem. As with the evolving face of the pandemic, newer mutations come with new set of challenges. This review tries to summarise the variant's origin and infectivity and how vaccines can eventually help in curbing the spread. However despite low rate of hospitalisation and lower mortality rate, this is still the early phase of the current wave and it won't take much time before the pandemic is again as devastating as it was earlier.

Keywords: SARS CoV-2; Mutation; Varriants; Vaccination; Omicron

Introduction

First isolated in South Africa and Botswana, the Omicron (B1.1.529) mutation is rapidly infecting from South Africa to worldwide [1]. These mutations in different variants such as the previous Alpha and Delta are more prone to escape the host immune response and they have a higher transmission rate. Initial evidence also suggests that there may be chances of increased risk of reinfection with the Omicron variant [2]. It can be believed that perhaps this new variant is evading beta specific neutralization in the view of widespread beta immunity [3]. Furthermore, this variant evades the neutralization process by the help of the monoclonal antibodies, majority of them are potent which came into existence because of the infection with the earlier beta variant [4].

Variant of concern

A variant of concern is a type of muted strain which comprises of higher transmissibility, more severe course of the illness, decreased neutralization usually observed after previous infection or immunization, reduced effectiveness of available therapies and a reduced reliability of the in place diagnostic tests.

World Health Organisation with advice of Technical Advisory Group on Virus Evolution (TAG-VE) has classified the B1.1.529 as a Variant of Concern [5]. It has shared mutated properties from other previous variants, it is generally believed to not be a direct descendent. It is an evolution simultaneously occurring with the pandemic, thus making it extremely difficult to pin point its nearest variant [6].

Diagnosis and transmissibility

Available, RT -PCR and Rapid tests still holds the test of time in detection of all Omicron cases. Although there is evidence that the sub variant of Omicron (BA.2) which does lack the standard S- Gene Target failure, hence it escapes detection. This variant is known as "Stealth Omicron" [7].

The transmissibility of the Omicron variant is very high, considerably faster than previous mutations. Till date it has already been isolated in 77 countries. In countries like South Africa, United States and even in India Omicron has already overtaken as the dominant strain and they are almost seeing a tall spike in daily caseload. The ability of reinfecting individuals is also higher with Omicron [8].

Recent studies indicate that the Receptor Binding Membrane of the Omicron variant consist of highly mutated ACE2 binding proteins. The mutating potential of the SARS-CoV-2 virus is much more than any other comparative respiratory infectious viruses. Hence, the only tools at disposal which we have such as Lockdowns and quarantine and antibody treatment might not be enough to curb the spread [9].

Clinical features

Evidence showed that the median incubation period of Omicron is comparatively faster than the rest at just around 2-3 days. Predominant symptoms are majority of those mimicking upper respiratory tract infections. Mild fever, headache, malaise, cough and cold, sore throat are the most common presentations [10]. Fortunately till now the hospitalisations rate is also much less than before. Despite surging numbers, the risk of a serious and albeit fatal disease, along with the risk of hospitalisation is much lower with Omicron [11].

Reinfection potential

Reinfection can be a characteristic feature of Omicron variant. Although supporting evidence is less but studies from South Africa has shown that the reinfection rate was higher this time with Omicron cases than the previous ones [11]. There is only 19% protection against possible reinfection from this variant.However the hospitalisation and severity of the course the disease is comparatively less than the other variants [12].

Vaccine breakthrough and booster dose

Few studies have found a profound decrease (about 41%) in Neutralising antibody potential. But this does not denote that newer variants can totally escape vaccine derived immunity. Vaccination is still the best way for protection against COVID-19. On a positive note, fully vaccinated individuals after being infected about a year earlier showed a better immunisation response [13]. Pfizer and BioNTech were able to report a similar level of neutralising Abs as it was with initial two dose regimens with older variants with the help of a third booster dose [14].

A talk of Booster dose has been circulating since long. A study done in December 2021, showed that out of the 843,208 participants, those who received the booster dose (758,118 - 90%) the death due to COVID – 19 occurred with 65 participants and from the non booster group it was with 137 participants. So those who had received booster dose after 5 months to be the least after the second dose of Pfizer-BioNTech vaccines, the mortality ratio was 90% lower compared to participants who did not receive any booster dose [15].

The COV-BOOST study funded by UK Vaccine Taskforce and National Institute for Health Research was done to investigate immunology. It was a multicentre, randomised phase 2 trial of third dose vaccination against COVID-19 done in UK. The study showed that seropositive participants had potent cellular and humoral response compared to seronegative participants [16].

Conclusion

Even though having a milder clinical picture, Omicron variant is undeniably spreading faster than our chase. The Pandemic is still soaring high and more and more people are still getting infected daily. The numbers are crossing daily records and there is still no relief in near sight.

Omicron variant of COVID-19 has fortunately been docile compared to the previous mutations. The infectivity is high, but the rate of hospitalisations and mortality has been significantly low. Vaccines are of paramount importance here and more and more immunisation will help protect individuals from getting the severe course of illness.

Public education, social distancing, vaccination and wearing a mask have been and are still the best weapons in out arsenal against our fight with SARS-CoV-2 .

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