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REVIEW ARTICLE

COVID-19 UPDATE: OMICRON VARIANT – A NEW EMERGING THREAT

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ABSTRACT

A new health threat in the form of a new variant of Covid-19 called Omicron has emerged globally in this holiday season. This new variant has been declared a variant of concern (VOC) by the World Health Organization and experts are expecting another wave of the pandemic. A lot still unknown about this variant and researchers worldwide are conducting studies to find the nature and characteristics of this mutated strain. Cases have begun to rise dramatically around the world and many countries have already imposed travel restrictions again to prevent disease transmission. It is being speculated that this particular variant has got tendency of immune escape and therefore can even infect fully vaccinated individuals. Vaccination and adhering to Covid-19 guidelines and protocols can curtail the spread of the virus. The present paper focuses on what is currently known about this variant, antigen diagnostic tests, importance of getting fully vaccinated and having booster dose etc. If we want to emerge from this pandemic, countries should practice vaccine equality and solidarity for the good of mankind.

Key words: *Covid-19, SARS-CoV-2, Omicron variant, vaccine, coronavirus pandemic*

INTRODUCTION

The COVID-19 pandemic caused by the SARS-CoV-2 virus has led to more than 270 million infections and 5.3 million of deaths worldwide [12]. Ever since the start of pandemic in December 2019, mankind has been trying to find out a cure that can put an end to this devastating disease. Things started to normalize slowly after the development and use of COVID-19 vaccines which have been given emergency use authorization by the US Food and Drug Administration (FDA) and the European Medicines Agency during this public health emergency [8]. However, emergence of different variants (alpha, delta, kappa etc.) of COVID-19 in the recent past has again threatened our existence. These are classified as Variants of Interest (VOI) and Variants of Concern (VOC) on the basis of transmissibility and mutability. These variants are thought to counter the immune response mediated by the vaccines and have the potential to cause COVID-19 even in fully vaccinated individuals [7]. New variants, genome sequencing, new travel advisories, partial lockdowns, and economic disruption, all sound familiar and seem to have become cyclic events.

The recent variant of COVID-19 known as 'Omicron' (B.1.1.529) first detected in samples from South Africa and Botswana on November 9, 2021, has been designated as VOC by World Health Organization (WHO) [15]. It is the fifth VOC and first since the emergence of the dominant 'Delta variant' (B.1.617) which resulted in millions of cases in several countries as it became the dominant variant globally. It has now spread into more than 100 countries worldwide and spreading rapidly into other nations as well. Till now more than 1700 cases of Omicron have been detected in India and a fresh wave of the epidemic is being anticipated [3]. An onrushing wave of the new variant can spell another onslaught on the health systems of various countries which have not yet fully recovered from the two previous waves of COVID-19 as it also needs time to recuperate.

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Omicron - current knowledge

Our knowledge regarding the new VOC-Omicron is still very limited. Researchers around the globe are conducting regular studies to better understand many aspects of Omicron and they continue to share their findings as they are becoming available. According to some researchers, this new variant Omicron has a 'very unusual constellation of mutations'. The available data suggests that Omicron has got 50 mutations, maximum for any COVID-19 variant so far, including 32 in spike proteins [4]. This spike protein is used by most of the viruses to enter body cells, and most vaccines are manufactured to target these spike proteins. The mutations on the Omicron variant are widely distributed on multiple proteins of SARS-CoV-2 such as NSP3, NSP4, NSP5, NSP6, NSP12, NSP14, S protein, envelope protein, membrane protein, and nucleocapsid protein.

Transmissibility: It is still unclear whether the new variant is more transmissible as compared to other variants like Delta. Currently, new infections are being reported from various countries and with each passing day new information is becoming available. Experts are of the opinion that high number of mutations alone is not enough to predict the behaviour of the virus [5].

*Disease severity***:** Recent reports suggest that there have been increase in the rates of hospitalization due to COVID-19 in South Africa, US and Europe and it is attributed primarily due to the new variant Omicron which is fuelling new infections. Lot of information will become available in the coming days and weeks that will show how serious the threat of Omicron is [5].

Omicron variant: impact on antigen diagnostic tests (As of 28/12/2021)

Ever since the start of the COVID-19, the FDA has been continuously monitoring and evaluating the potential impact of genetic variants on antigen tests. The FDA has collaborated with the National Institutes of Health's (NIH) RADx program to study the performance of various antigen tests with samples of patients containing live virus having Omicron variant [14]. Early data indicates that antigen tests are able to detect the omicron variant but may have reduced sensitivity. It should be noted that these laboratory data are not a replacement for ongoing clinical study evaluations which are done using patient samples with live virus.

The performance of these antigen tests using patient samples with live virus are being continuously evaluated by FDA and RADx. The FDA has authorized the use of these tests as directed in the authorized labelling and people should continue to use them in accordance with the instructions included in the test kit. Antigen tests are generally less sensitive and less likely to pick up very early infections as compared to molecular tests. The FDA's analysis to date has identified certain EUA-authorized molecular tests that have the ability to detect the Omicron variant with a specific gene drop out detection pattern.

Role of monoclonal antibodies against Omicron

Corticosteroids and IL6 Receptor Blockers will still be effective for managing patients with severe COVID-19. The U.S. FDA has issued emergency use authorizations (EUAs) for monoclonal antibodies (Bamlanivimab plus etesevimab & Casirivimab plus imdevimab) for non-hospitalized patients with mild or moderate COVID-19 disease and for individuals exposed to COVID-19 as post-exposure prophylaxis. Unfortunately, it is now evident that these are much less effective against Omicron variant [11]. These two drugs played an important role in early treatment of COVID-19 in people who were unvaccinated or vaccinated but high risk. Sotrovimab is the only monoclonal antibody which is effective against this new variant but it is not widely available right now because of limited purchase and distribution by the governments.

Effectiveness of vaccines against Omicron

Omicron variant has raised serious concerns about reducing the efficacy of vaccines and neutralization antibodies due to its vast mutations [6]. Despite it short comings, vaccination still remains the most potent weapon against this new and emerging threat. While we have made tremendous strides in this respect in the recent past, vaccination coverage in poor and developing countries is still abysmal. Governments in several countries have started rolling out precautionary or 'booster' doses for those people who are fully vaccinated especially frontline health care workers and elderly people [9].

Recent research indicates that Omicron has the potential to infect even those who are fully vaccinated; vaccination is supposed to protect against severe disease and it will continue to be the mainstay of our fight against new variants of COVID-19. It has been observed by experts that even a small number of unvaccinated people in counties having high vaccination coverage, can start a new wave of the pandemic. This is being called as 'pandemic of the unvaccinated.' Therefore, it is crucial to extend the vaccination coverage in unvaccinated population groups.

Following COVID-19 appropriate behaviour

Another important way to prevent Omicron is to follow covid-appropriate behaviour by not lowering our guards [1, 16]. Individuals should continue to wear a well-fitting mask; open windows to improve

ventilation; avoid poorly ventilated or crowded spaces; keep hands clean; cough or sneeze into a bent elbow or tissue; and get vaccinated when it's their turn (Figure 1). One of the reasons for occurrence of second wave (due to the Delta variant) was due to non-adherence to Covid protocols and guidelines which lead to loss of millions of lives across the world. Positive heath behaviours inculcated during the first and second wave have diminished in intensity with time owing to pandemic fatigue. For example, a disproportionate chunk of Omicron cases is among the people who are fully vaccinated. This indicates that the fully vaccinated for obvious reasons, have lowered their guards and are indulging more freely in risky behaviour like not wearing face masks and flouting social distancing norms. While they may be less prove to severe disease, they can perpetuate and spread infection. Similarly, health communication is also vital in our prevention efforts. Severity of Omicron should be backed by hard evidence as it could have adverse impact on collective health behaviour. Only a robust and thoughtful communication strategy can prove effective `in developing appropriate health behaviour.

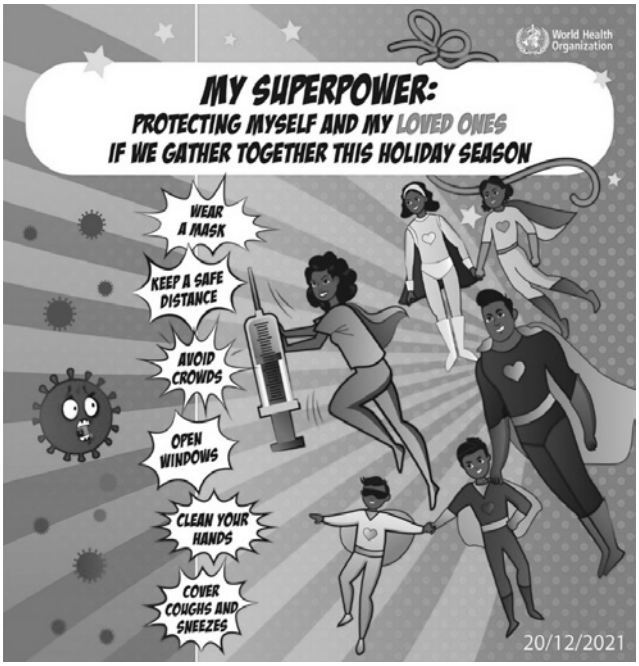

Figure 1. Practising Covid appropriate behaviour by the WHO

Omicron and Delta driving tsunami of cases – WHO

According to latest reports by WHO, the combination of Delta and Omicron is driving a dangerous tsunami of COVID-19 cases [2]. Record breaking figures are being reported from US, France, Italy, Denmark, Portugal, UK and Australia till now. This will continue to put pressure on exhausted health workers and health systems on the brink of collapse. According to estimates given by America's top infectious expert, Omicron infections are likely to peak at the end of January in the US, given its population size and vaccination rate. According to recent studies conducted in the UK (31st December 2021), a third dose of the vaccine can boost vaccine effectiveness against Omicron to 88% [13]. Therefore, several wealthy nations have launched booster drives to give third doses of Covid vaccines especially to health workers and elderly population.

Omicron in India

India is looking at an imminent Omicron wave as a good chunk of Indian population is yet to be fully vaccinated with a likely under prepared vaccine supply chain [10]. More than 1700 cases of Omicron have been detected in India as per recent reports. The government has made a recent announcement to this effect, allowing booster or precautionary doses for frontline health workers and elderly co-morbid. Moreover, elections to five states- Uttar Pradesh, Punjab, Uttarakhand, Goa and Manipur are on the cards. Political parties are gearing up for elections and drawing large crowds in public rallies. Complacent behaviour has been noticed in fully vaccinated individuals during recent festivals. Health experts and epidemiologists are being consulted by the Election Commission to give advice on pandemic situation in order to take call on the poll schedule. Indian policy makers need to learn from the past and trusted information should be shared and communicated timely by the Union Health Ministry.

CONCLUSION

The new variant Omicron has created panic worldwide as epidemiologists are expecting another wave of the pandemic in the days to come. As a result, many countries have already implemented travel restrictions to prevent virus transmission. Still lot of things about this variant are unclear but many studies are underway that will help us to understand this variant in a better way soon. However, as the number of cases has risen sharply within few days around the world, countries should continue to implement the effective public health measures to combat the spread of the new variant. Moreover, individuals who are not fully vaccinated yet should get themselves vaccinated. It has been reported that many countries are hoarding their vaccines allowing them to expire, offering booster shots while a large proportion of population in low and middle income countries have not received their first dose of the vaccine. There should be vaccine equity and solidarity among all countries in order to end this pandemic. Lastly, in the race to protect the global population against novel SARS-CoV-2 VOCs

and VOIs, there is an urgent need to create much more effective one-dose vaccines that can protect people over their entire lifetime.

Conflict of interest

*The authors declare no conflict of interest***.**

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