



(REVIEW ARTICLE)



A mini review on omicron variant of SARS-COV: A new variant of concern (VOC)

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Abstract

The Corona Virus Disease (COVID-19) is a pandemic which outbreak from Wuhan China in late 2019. It has produced serious disturbances and unprecedented problems around the whole world including in worldwide healthcare systems. Severe corona viral acute syndrome 2 (SARS-CoV-2) causing a severe viral pneumonia which began in December 2019 in Wuhan. The Omicron virus is a newly emerging variant of previously existing SARS-CoV-2. This variant is firstly reported in South Africa on November 24, 2021. The World Health Organization (WHO) identified it as a variation of concern on November 26, 2021. A large number of mutations (60 mutations) with several novel mutations, are discovered in this variant and these mutations disrupt the spike protein targeted by most COVID-19 vaccines. Higher degree of mutations in the virus makes it virus of concern in its transmission, effects on immune system and level of vaccine resistance. As a result, the variant was quickly identified as "of concern," and several countries instituted travel restrictions in an attempt to prevent the spread of the mutation throughout the world. Omicron also reported as zoonotic disease.

Keywords: Omicron; Corona Virus; COVID-19; Virus recombination; Mutation; SARS-CoV-2

1. Introduction

The Corona virus Disease (COVID-19) is a pandemic which outbreak from Wuhan China in late 2019 [1-4]. It has produced serious disturbances and unprecedented problems around the whole world including in worldwide healthcare systems [5-7]. Severe corona viral acute syndrome 2 (SARS-CoV-2) causing a severe viral pneumonia [8] which began in December 2019 in Wuhan, China [9] infected more than 271 million individuals and caused more than 5 million deaths worldwide till December 14, 2021. The Omicron virus is a newly emerging variant of previously existing SARS-CoV-2. This variant is firstly reported in South Africa on November 24, 2021. The World Health Organization (WHO) identified it as a variation of concern on November 26, 2021, and It is given the name omicron, which is a Greek letter. A large number of mutations (60 mutations) with several novel mutations, are discovered in this variant and these mutations disrupt the spike protein targeted by most COVID-19 vaccines. Higher degree of mutations in the virus makes it virus of concern in its transmission, effects on immune system and level of vaccine resistance. As a result, the variant was quickly identified as "of concern," and several countries instituted travel restrictions in an attempt to prevent the spread of the mutation throughout the world. However, by December 7, 2021, the variation had spread to over 50 countries [10].

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2. Origin of Omicron

Existing literature showed that Cells in the lungs and gastrointestinal tract have been found to be capable of harboring both SARS-CoV-2 and common-cold coronaviruses at the same time. Virus recombination occurs when two different viruses in the same host cell interact with one another while reproducing themselves. This results in the development of new copies of the virus that contain genetic material from both "parents." Laut Soundararajan and colleagues' findings, this novel mutation may have initially evolved in a person who was infected with both infections when a variant of SARS-CoV-2 picked up the genetic sequence from the other virus. The study has not yet been subjected to peer review [11].

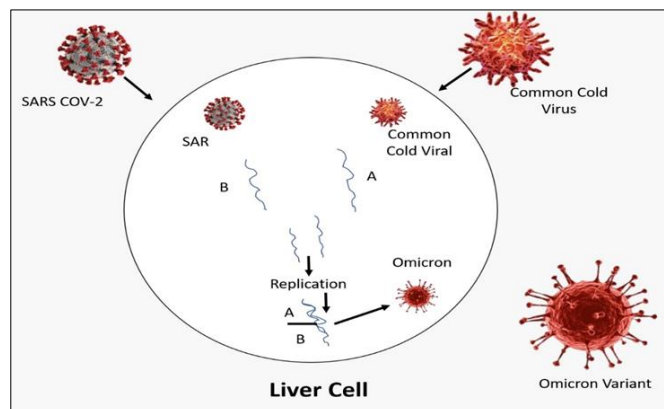


Figure 1 Origination of Omicron variant from common cold virus and previously existing SARS-CoV2

Neither unusual symptoms nor asymptomatic individuals have been reported in association with the variant, as has been the case with other variants in the previous literature. In the early stages of the variant's diagnosis, patients complained of fatigue and aches and pains. according to Angelique Coetzee, chair of the South African Medical Association patients with this variant had no loss of taste, change in smell and cough [12]. The presence of two Omicron variants (Standard BA1 and Stealth Omicron BA2) has been proved by researchers. BA.2 has been called "Stealth Omicron" because it doesn't have the deletion that PCR tests can use to find it. This makes it different from the "standard" variety. According to computational modelling, the variant may also evade cell-mediated immunity. A relationship to HIV infection could possibly explain the high frequency of mutations in the Omicron variant's sequence. Indeed, in order to be affected by such a large number of changes, the virus must have evolved for a long time without killing or eliminating its host. One example is when a person has a weaker immune system but is receiving adequate medical care to survive. This is true for HIV patients in South Africa, where they account for more than 20% of the population [13].

2.1. Variants of Omicron:

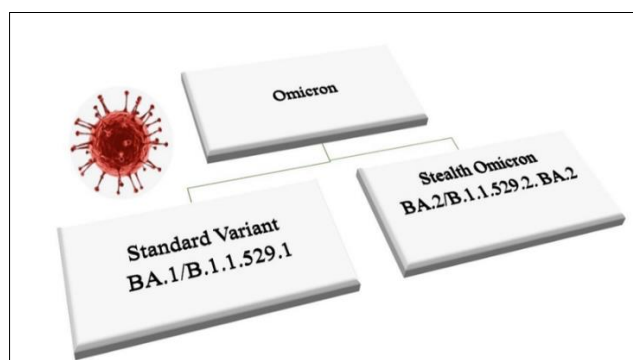


Figure 2 Omicron Variants

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immunity. A relationship to HIV infection could possibly explain the high frequency of mutations in the Omicron variant's sequence. Indeed, in order to be affected by such a large number of changes, the virus must have evolved for a long time without killing or eliminating its host. One example is when a person has a weaker immune system but is receiving adequate medical care to survive. This is true for HIV patients in South Africa, where they account for more than 20% of the population [13].

2.2. Symptoms of Omicron

Neither unusual symptoms nor asymptomatic individuals have been reported in association with the variant, as has been the case with other variants in the previous literature. In the early stages of the variant's diagnosis, patients complained of fatigue and aches and pains. according to Angelique Coetzee, chair of the South African Medical Association patients with this variant had no loss of taste, change in smell and cough [12].

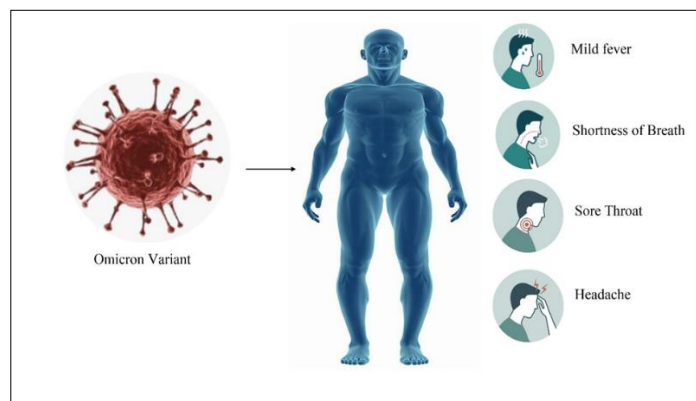


Figure 1 Symptoms of Omicron Variant

As a result of ongoing research, it appears that Omicron may be the most contagious variant found in South Africa to date. By the end of November, the most recent date for which data is available, Omicron was responsible for 70% of all cases in South Africa; it is expected to have increased to more than 90% by now. The Omicron outbreak is centered in the South African province of Gauteng, where daily COVID-19 cases are doubling every three to four days, according to the World Health Organization. The number of active COVID-19 cases in Tshwane increased from 6,697 to 20,425 in less than a week's time. In Gauteng, South Africa's most populous province, one out of every three tests' results in a positive result for HIV. With such a high positivity rate, it is likely that COVID-19 is being transmitted widely throughout the population, and the actual number of cases is therefore likely to be higher than the official count. The Omicron variant of the CORONA VIRUS is the fastest spreading variant of the virus solely because of the way it transmits and its mode of transmission is air [14]. There is various vaccine available for COVID-19 [15, 16]. These vaccines may or may not prevent the emerging variant omicron.

3. Omicron a zoonotic disease

In February 2022, Omicron was reported in a wild White tailed deer by researchers at Pennsylvania State University in Staten Island [17].

4. Conclusion

Higher degree of mutations in the virus makes it virus of concern in its transmission, effects on immune system and level of vaccine resistance. As a result, the variant was quickly identified as "of concern" and several countries instituted travel restrictions in an attempt to prevent the spread of the mutation throughout the world. Omicron also reported as zoonotic disease.

Compliance with ethical standards

Disclosure of conflict of interest

Authors have no conflict of interest.

Statement of ethical approval

The present review article work does not contain any studies performed on animal's/ humans' subjects by any of the authors.

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