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Omicron Is a Recent Widespread Disease: A Review



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ABSTRACT

There's been a lot of discussion in the news recently about the Omicron variant of SARS-CoV-2, In recent years the omicron is a dangerous and widespread disease. The world health organization (WHO) has declared a new SARs-CoV-2 variant to be of concern and named it omicron. The fifteenth letter in the Greek alphabet. Omicron has symptoms as same as COVID-19 like fatigue, sour throat breathlessness, fever, cough, loss of smell emerging and is spread widely in a different country. treatment is yet not known but COVID-19 drugs can be effective on omicron disease. Researchers have studied this pandemic, but yet not be clear about omicron, it spread easily from person to person, it is different from delta variant, but WHO warns that it should not be dismissed as "mild", precaution should be taken care of, we herein provide the overall about the omicron disease.

INTRODUCTION:

Omicron is the 15th letter of the Greek alphabet. this letter is derived from the Phoenician letter ayin: O. the world health organization uses Greek letter names to communicate than scientific name variants because this name is easy to communicate than scientific like B.1.617.2.^[1]

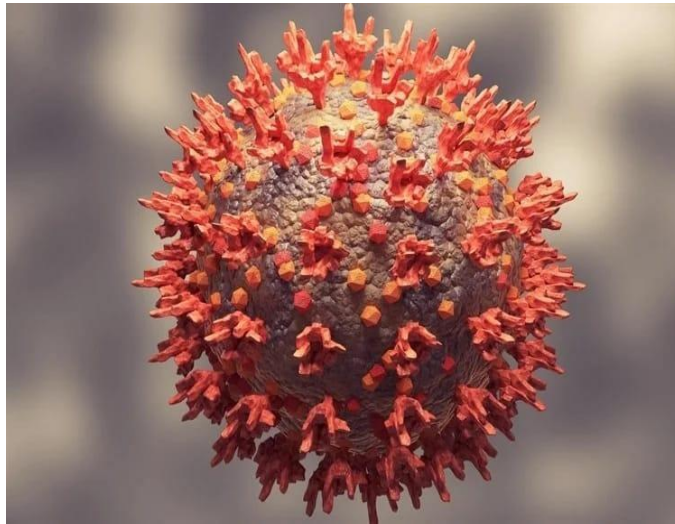


Fig 1: structure of omicron virus.

On November 25, 2021, after the first reported cases of corvid 19 and a global estimated 260 million cases and 5.2 million death a new SARs-CoV-2 variant of concern (VoC)Omicron was reported. During COVID-19 when there is anger and frustration with the pandemic and negative impact on social, mental, and economic wellbeing, the omicron is detectable on the widely used PCR platform inpatient Botswana and South Africa. It is not yet clear whether its transmission is greater than Delta, omicron is anticipated to displace delta as the dominant variant in South Africa.^[2]

SYMPTOMS:

The most common symptoms for the new variant COVID Variant “Omicron” are fever, cough, tirelessness, loss of taste or smell.

Although it is still early days and much more data needs to be collected, initial anecdotal, evidence was somewhat reassuring omicron, suggesting it caused milder Covid symptoms,

The South African doctor who was first found a spot of virus said that she had seen extremely mild symptoms among her patient, which are fatigue, scratchy throat but no cough or loss of taste or smell- these symptoms are associated with previous strains of the coronavirus.^[3]

Unusual Omicron symptom that occurs at night:

While treating a patient of omicron in South Africa, the medical expert of this country's Dr. Angelique Coetzee had noted that a new type of symptoms in COVID-19 patients infected with the variant, which are different than Delta. While fatigue weakness is omicron symptoms in line with other variants, patients are also developing night sweats. Some patients are observably ending up in drenched clothes and bed during their sleep due to excessive sweating. Omicron patients have complained that their throat feels exceptionally 'scratchy'. Delta symptoms, the loss of smell, is not associated with Omicron. ^[4]

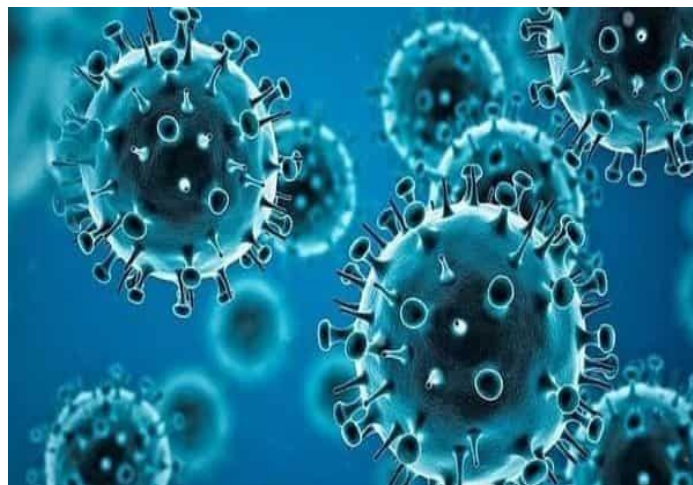


Fig 2: Omicron virus poses risks to global growth and inflation, fear

TRANSMISSION OFOMICRON VIRUS:

It is unknown how efficiently the omicron virus can spread from person to person. The replacement of delta by omicron as the main variant in South Africa raises concerns that the Omicron variant may be more transmissible than Delta, but there is very few cases are shown in South Africa when the Omicron virus emerges, that why it is unclear that omicron is more transmissible thanDelta variant. Changes in the spike protein indicate that the omicron has increased transmission than the original SARS-CoV-2 virus, but it is difficult to identify that it is more transmissible than Delta.^[5]

Researchers are still greatly augmenting their findings, but omicrons, heightened transmissibility appears to be a combination of several properties-it seems that omicrons more easily bind to and break into human respiratory cells; it replicates rapidly in our bodies and can avoid the immunity gained from past infection or vaccination, that means the omicron are spreading across the world at a breakneck pace.^[6] researchers predict the omicron effect and said, Omicron multiplies faster in airways, slower in lungs, As compared to the Delta variant, Omicron multiplies itself 70 times more quickly in tissues that lines airways passages, which spread from person to person, but in lungs, they Omicron replicate 10 times more slowly than the original version of the coronavirus, researchers also modeled the spike with different classes of antibodies trying to attack it, the antibodies attack from different angles, like a football team defense might tackle a ball carrier, with one person grabbing from behind, another from the front.^[7]

MUTATION OFOMICRON:

The variant has many mutations, the Omicron has a total of 60 mutations compared to the original Wuhan variant, in that 50 nonsynonymous mutations, 8 synonymous mutations, 2 non-coding mutations, 32 mutations affect the spike protein, the principal antigenic target of antibodies generated by infections and many vaccines are administered. The variant is characterized by 30 amino acid changes, three small deletions, and one small insertion in the spike protein as compared to the original virus, of which 15 are located in the receptor-binding domain. The variant has additionally three mutations at the furin cleavage site. It increases the SARS-CoV-2 infectivity.^[13]

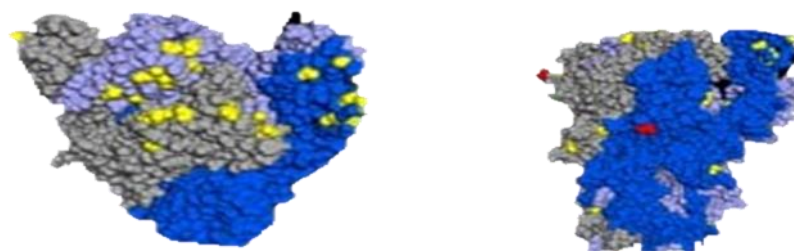


Fig 3: The location of the Omicron mutations in the spike.,top view (left) and side view(right), showing amino acid substitutions (yellow), deletions (red), and insertions(green).in this trimeric structure, two monomers(gray and light blue)have their receptor-binding domains in the “down” conformation while one (dark blue) is in the “up” or “open” conformation.

How is Omicron different from the Delta Variant?

In India, the delta variant of COVID -19 was first discovered and was responsible for 2nd wave of the pandemic in the country. Omicron has many more mutations in its spike protein than the delta variant. And this variant can be more transmissible than the delta variant, the delta variant is a lethal variant and is responsible for heavy infection and mortality. Reinfection rate and transmissibility rate are predicted to be higher in the omicron variant.^[8]

The test used in the detection of omicron variant –

The widely used PCR tests used to detect infection, including infection with omicron, also use rapid antigen detection tests.^[9]

PRECAUTIONS:

Omicron strains are spreading rapidly, many nations have started commanding travel restrictions precautions for nations.

Who and Government-mandated safety measures for omicron variant-

1. Wear masks and use sanitizers when meeting any outsider.
2. Do not ignore any sign of illness and go to your doctor immediately.
3. Maintain physical distancing.^[8]
4. Should be vaccinated-

According to the latest imperial modeling omicron variant largely evades immunity from past infection or two vaccine doses, the study includes due to S gene target failure (SGTF), as well as people with genotype data peoples are identified as having omicron infection.^[10]

DRUG USED INOMICRON TREATMENT:

1. Molnupiravir-

The EMA(European Medicines Agency) has recommended that patients begin treatment with the Merck tablet- within five days of first symptoms for adults who do not need oxygen support. Merck is yet to test its drug against the Omicron Variant, the company said that it should have the potency based on effectiveness against other strains of coronavirus.

2. Paxlovid-

The Pfizer company said that paxlovid is appeared to be effective against and has been detected in more countries around the world.^[11] but it is not yet been approved by the FDA, and at this point, the supply of the drugs is limited.^[12]

ABBREVIATIONS-

Voc-Variant of concern, PCR- Polymerase chain reaction, FDA- Food Drug Administration, EMA- European Medicines Agency, SGTF-S gene target failure, WHO- World Health Organization.

CONCLUSION:

In this review, we outlined the study on omicron disease and we hope this paper will help to improve the understanding of collaborative work.

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