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Review Article

Delta the Deadly Variant of Corona Virus – An Update

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ABSTRACT:
The world is currently witnessing a dramatic disruption of everyday life owing to the rapid progression of the coronavirus disease 2019 (COVID-19) pandemic. As the pandemic evolves, there is an urgent need to better understand its epidemiology, characterize its potential impact, and identify mitigatory strategies to avert pandemic-related mortality.

Keywords - COVID-19, Pandemic Efficiency Index, PEI, Corona virus, Mortality, Pandemic, Epidemic, Global health, delta variant.

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INTRODUCTION

A Covid-19 variant that likely wreaked havoc during India's second wave has now spread to 80 countries. The Delta variant, or B.1.617.2, which was first identified in India in October 2020, has now become the dominant strain in the UK, currently accounting for more than 90% of cases there. In the US, too, the number of Delta variant cases is rapidly rising, up from 10% of the total Covid-19 cases last week to 20% this week. According to a Financial Times analysis, the delta variant accounts for more than a third of new cases each day in the US. Thus far, there are four "variants of concern" flagged by the World Health Organization (WHO) and seven "variants of interest." Despite the strain being identified last year, the Delta variant was tagged as a variant of concern only on May 11. This is because the WHO uses three parameters—increased transmissibility, more virulence, and decreased effectiveness of public health measures—to determine its seriousness. The variants of concern—Alpha (first identified in the UK), Beta (South Africa), Gamma (Brazil) and Delta—are different from all other countless variants for this very reason. The Delta variant has certain significant mutations in the spike protein of the virus—the pointy elements that give it the shape of a crown (which is why it's called the *corona* virus). These spikes are like hooks that have to find the receptors in a human cell to link with. Studies have shown that these spikes hook onto receptors called ACE-2. Once these spike proteins can unlock the cells, the infection spreads by replicating the genetic code of the virus. Some key mutations in the Delta variant—such as the E484Q, L452R, and P614R—make it easier for the spikes in the virus to attach to ACE-2 receptors. This means it can infect and replicate faster, and even evade the body's natural disease-fighting immunity more efficiently.

The spike protein mutations make the Delta variant the "fastest and fittest" variant yet, according to the WHO. The disease caused by this variant might also exhibit different symptoms than other viral mutations. Those with the Delta variant often complain of headaches, sore throat, and a runny nose, replacing cough and loss of taste of smell as the most common symptoms. The Delta variant has developed a new mutation of a type that was first found in the Beta variant. The new variant—which is being labelled Delta Plus, though not officially by the WHO yet—additionally has the K417N mutation in its spike protein, which is associated with increased immunity escape.

Shahid Jameel, a top virologist in India, has said that Delta Plus could also render cocktail antibody

treatments—like the one given to former US president Donald Trump—ineffective in fighting the disease. This variant could also potentially lead to vaccines being less effective. India has officially flagged Delta Plus a "variant of concern," though after a great deal of indecision.

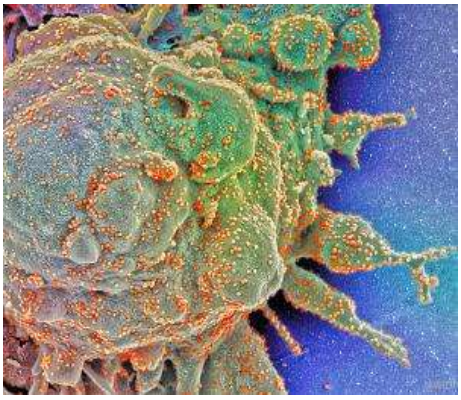

Figure 1: Photograph showing Delta variant of corona virus

MUTATION

Delta's unique mutations delete the amino acids at positions 156 and 157 in the supersite and change the 158th amino acid from arginine to glycine; the latter eliminates a direct contact point for antibody binding, says David Ostrov, a structural biologist at the University of Florida. "We think the 157/158 mutation is one of the hallmark mutations in Delta that has given it this more immune-evasion phenotype," concurs Trevor Bedford, a computational biologist at the Fred Hutchinson Cancer Research Center

SYMPTOMS

Cough, diarrhoea, fever, headache, and skin rash, discolouration of fingers and toes, chest pain, shortness of breath stomach ache, nausea and appetite loss.

SPREAD it is spreading very fast has also been seen in Punjab, madhyapradesh, Tamil nadu, Maharashtra, West Bengal and Jharkhand. The main part of corona virus is spike protein due to which it spreads

Current measures to reduce transmission – including frequent hand washing, wearing a mask, physical distancing, good ventilation and avoiding crowded places or closed settings – continue to work against new variants by reducing the amount of viral transmission and therefore also reducing opportunities for the virus to mutate.

Precautions-

1. Get vaccinated
2. do not go out of the house if it's not essential
3. maintain a distance of six feet while meeting people
4. use sanitizer
5. Sanitize or disinfect things or items used in the house.
6. Wash your hands for 20seconds several times a day.
7. Wear double mask.

Vaccine

The COVID-19 vaccines that are currently in development or have been approved are expected to provide at least some protection against new virus variants because these vaccines elicit a broad immune response involving a range of antibodies and cells. Therefore, changes or mutations in the virus should not make vaccines completely ineffective. In the event that any of these vaccines prove to be less effective against one or more variants, it will be possible to change the composition of the vaccines to protect

Sputnik V also known as Gam-COVID-Vac, is based on a proven and well-studied platform of human adenoviral vectors and uses two different vectors for two shorts in course of vaccination, providing immunity with a longer duration using the same delivery mechanism for both shorts. The vaccine uses a heterologous recombinant adenovirus approach using adenovirus 26 (Ad26) and adenovirus 5 (Ad5) as vectors for the expression of the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) spike protein. The use of two varying serotypes, which are given 21 days apart, is intended to overcome any pre-existing adenovirus immunity in the population.

Efficacy of the vaccine

The vaccine efficacy percentage is seen around 91% in India. It costs around 700-800 rupees in India.

Dosage

It is mandatory to give a gap of 21days i.e. 3weeks in between the dosage**.**

Side effects

1. Fatigue
2. Joint ache
3. Muscle pain
4. Chills
5. Fever
6. Nausea
7. vomiting

Treatment

Sputnik V records 97.8% efficacy against Covid-19 in UAE, fully effective against severe cases. It's one of the safest and most effective vaccines.

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