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Various Variants of COVID-19: An Overview

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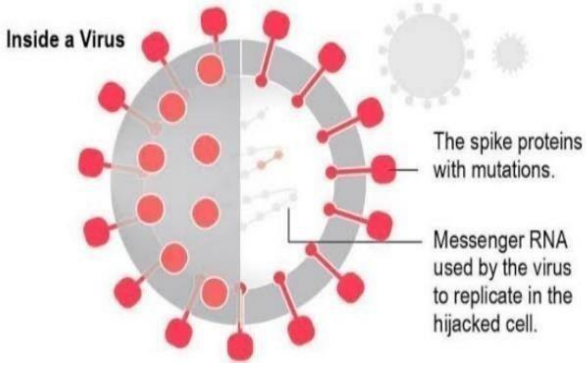
Abstract: ***Considering the situation in last decade. Viruses constantly change through mutation and new variants of a virus are expected to occur. This variant's emerge and disappears. Other times, new variants persist. This becomes more diverse day by day. It's like a tree growing and branching out; each branch on the tree is different. Likewise each and every strain is different than others. There is a rapid spreading of strains of COVID-19.Viruses mutates all the time and they changes in different forms and this makes disease more infectious and harmful. Due to this strain many drugs and vaccines are unable to act against COVID-19. They are only relieving the symptoms but not produce the good therapeutic effect. This new strain made the COVID treatment difficult. Many Scientists trying to develop hundred percent effective treatments of COVID-19 but this strain makes it hard. This review concentrates on the various variants of the COVID -19. This review contains information about the various strains of COVID19.We need to trace it, trap it and find much more meaning out of it.***

Keywords: COVID-19, Infectious, Strain, Variant, Mutation, etc.

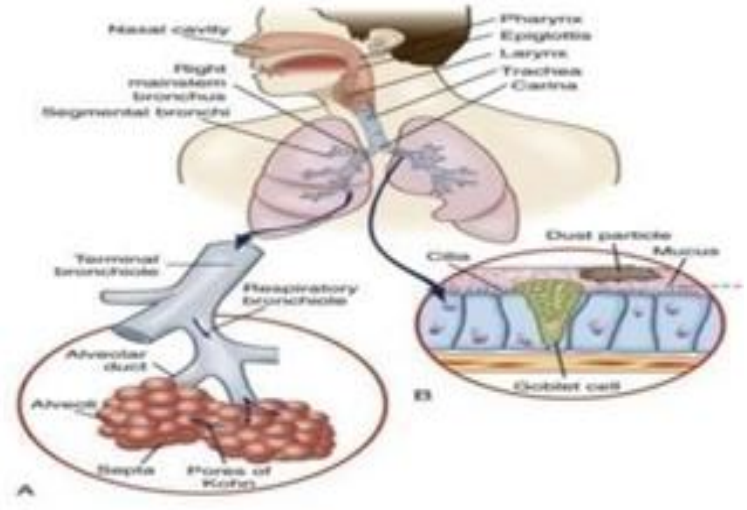
1. Introduction

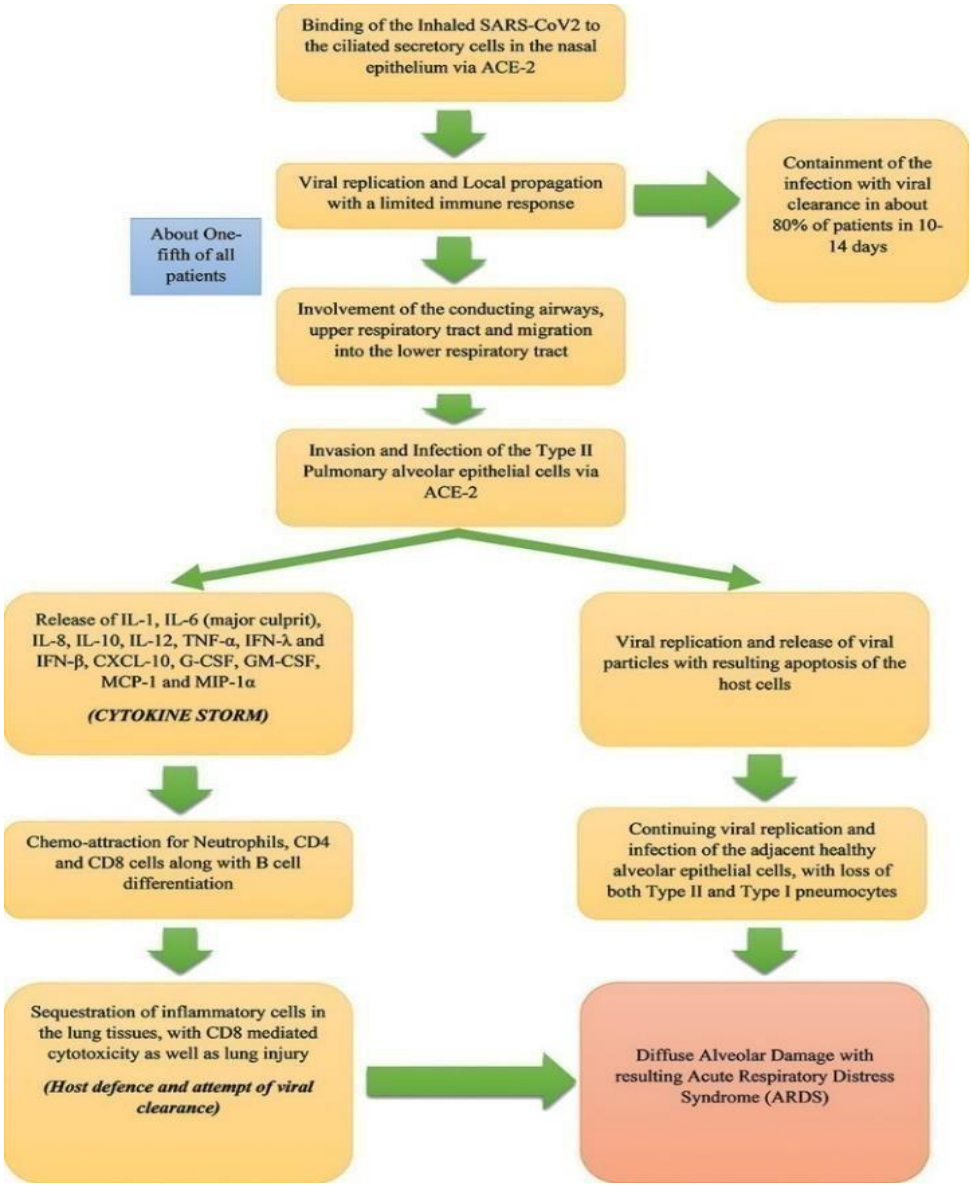
Strains means genetically different virus lineage, distinguishable by one or more mutations from strains. This strain may Or may not be functionally different. The severe acute respiratory syndrome (SARS CoV2) Corona virus was originated in China in 2003. The Middle East respiratory syndrome (MERS) was originated in Saudi Arabia in 2012 and the SARS Cov-2 was reported in Wuhan, China in 2019.The new Strains was discovered by public health England's genomic surveillance. For B. 1.617.2 the COVID-19 variant first discovered in India in Oct 2020, the WHO has assigned the name Delta and this Delta becomes a variant for concern. The Union health ministry has declared the Delta plus Mutation of the Corona virus disease 'A variant of concern'. Alpha, Beta, Gama, Delta are the four subgroups of Corona virus. These all are the four subgroups of Corona Virus. These all are spherical RNA virus. Their stability are low but their mutation potential are very high so they produces a various variants. These viruses are very intelligent and catalyzed reaction and symptoms at the host. The new 50 Corona virus variants causes Covid-19 has several mutations on its spike proteins. Spikes are used by the virus to attach to and infect cells.



Pathophysiology

When virus enters into the body, there is a Multiplication of cells of virus. SO immune system is activates. Due to this activation there is a inflammation of lung occurs. It increased levels of plasma proinflammatory cytokines.IL1, IL7, IL10, GCSF, IP10, MCP1, MIP1 and TNF alpha that are reasoned to promote disease severity. It increases permeability. So fluid leaks into the lungs, this decrease lungs ability to oxygenate blood organ failure Occurs and it causes COVID-19.





Symptoms
1) Fever
2) Cough
3) Shortness of breath
4) Breathing Difficulties
5) Headache
6) Chest Pain
7) Pneumonia

Diagnosis

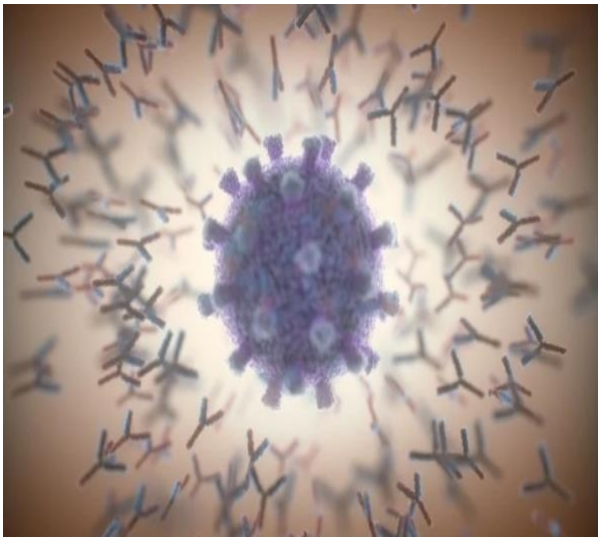
Samples
1) Sputum
2) Swabs
3) Lavage
4) Apsirates
5) Serum

Confirmation
Real time PCR

Treatment: Supportive
1) Ventilator Support.
2) Oxygen.
3) Fluid Balance.

Drugs
1) Chloroquine500mg/Hydrochloroquine400mg
2) Loponovir 400mg/Ritonavir 100 mg
3) Remdesivir

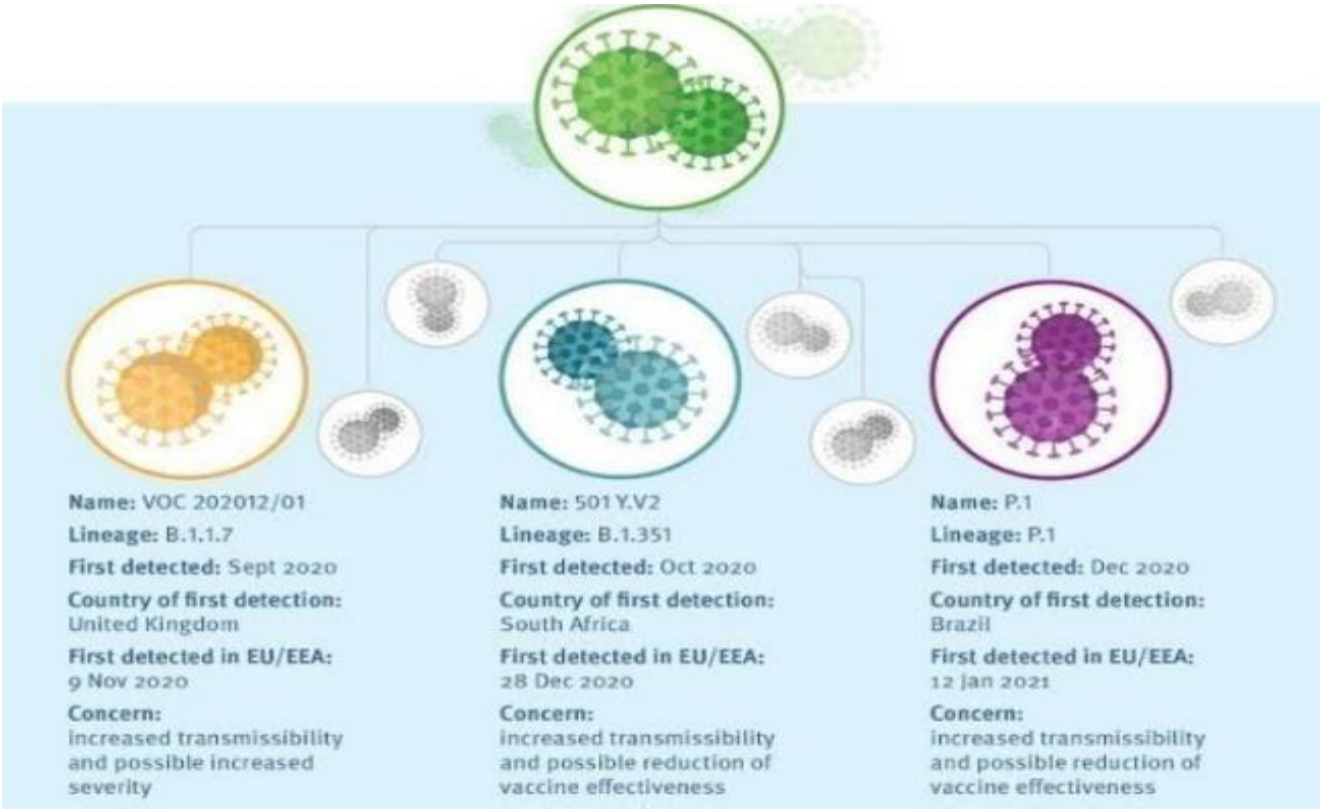
Preventive
1) Vaccines
2) Boosting Immunity
3) Corona appropriate behavior



2. Various Variants of COVID-19

A) COVID-19 Brazil Variant(B.1.1.28):

This variant originates in the Brazil 1.4 crore cases and over 3.5 lakh deaths occur due to this variant. The scientists evaluated weather anti-SARS-CoV-2 antibodies introduced by SARS-CoV-2 B. 1.1.28 virus strain can neutralize the p. 1 SARS-CoV-2 variant. The P. 1 lineage, a novel SARS-CoV-2 variant, was identified in Manaus, Brazil at the beginning of Nov 2020.This variant has 17 mutations, including three in the gene coding for the spike protein (K417T, E484K and N50IY).These mutations results in antigenic changes in the spike protein, which could reduce the efficacy of neutralizing antibodies generated against a previous SARS-CoV-2 strain.



B) COVID-19 South Africa variant (B.1.351):

B. 1.351 variants were first identified in the United Kingdom and South Africa. Over 50,000 lives have been lost in the Africa. These variant harboring diverse mutations in the gene encoding the spike proteins raise important concerns about their immune evasion potential.

C) COVID-19 variant (B.1.1.7)

This variant was first detected in the United States in Dec 2020.It was initially detected in the United Kingdom. Seen in large number of cases in Delhi and Punjab. It is also known as the 'British COVID19 variant' or 'Kent variant'. Apart from the usual Corona virus symptoms of fever, body ache, persistent cough and loss of smell and taste these affected by the British COVID-19 strains have also complained of conjunctivitis, rashes, upset stomach, sore throat and discoloration of toes and fingers.

D) COVID19 N440K variant and COVID-19 E484Q Variant:

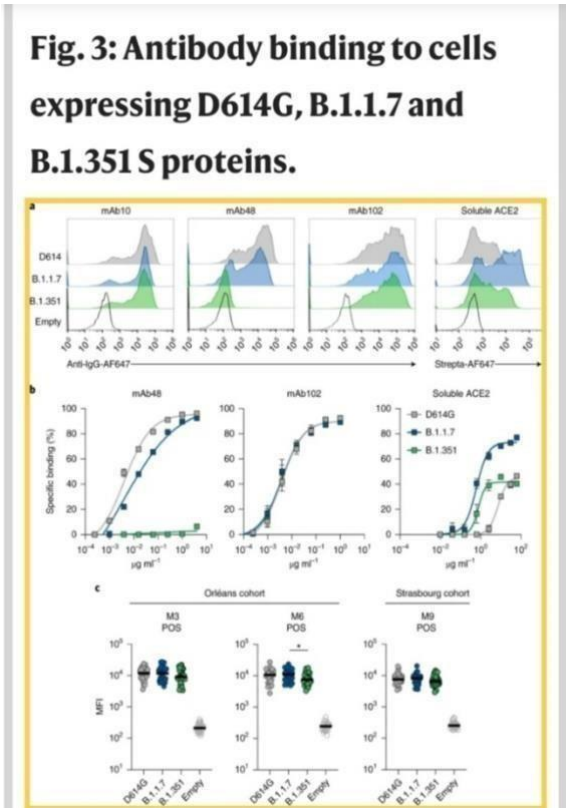
These variant have been responsible for a large no of Corona viruses cases in Maharashtra and Kerala. Some researchers said that the novel Corona virus variant N440K, can cause reinfection. According to them, this variant can escape the immune system and can cause reinfection in patients already recovered from COVID -19.

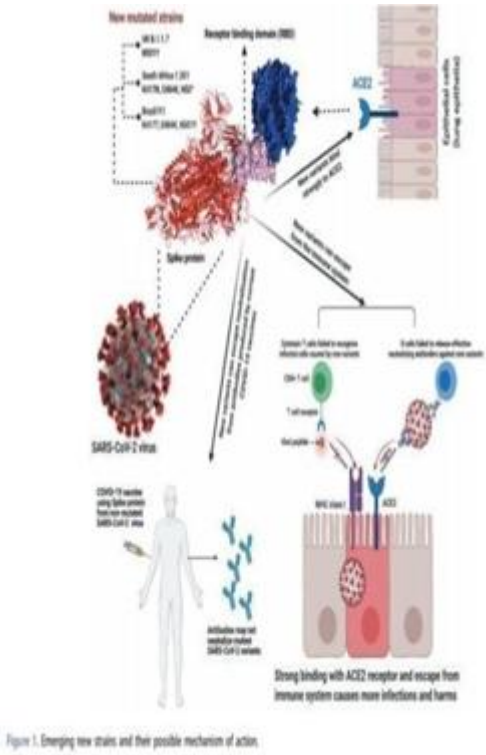
E) COVID-19 (B.1.36 variant):

It is a region specific variant found in a large no of COVID-19 cases in Bengaluru. The B. 1.36 lineage, which contains nine amino acid mutations associated with immune escape, comprises 43.7 % of the some sample. This viruses belonging to the 1.36 cluster.

The Known COVID-19 mutations in India:

COVID-19 double mutant strain





The double mutant Corona virus strains or simply a combination of more than two-COVID-19 variants has been found in sample in Punjab, Delhi and Maharashtra classified as the B. 1.617 variant. It contains mutations from two separate Corona virus variants L452R and E484Q and has been found close to 20 percent samples in the state of Maharashtra. Dr. Rakesh Mishra found this strain. When two variants are mixed with each other and form new strain. This strain causes some symptoms like cough, fever, fatigue, loss of smell and taste. The double mutation transmits rapidly and is affecting children as well.

COVID-19 triple mutant strain:

The meaning is in the name itself 'Triple mutation COVID -19 variant combination involves a strain of three above mentioned COVID-19 variants. A more complex strain, this Corona virus mutation is considered to be the reason behind the surge in cases in Maharashtra and Delhi in the second wave and experts say it is much more contagious. AS per reports, triple mutation Corona virus is more Transmissible. Experts believe that the triple mutation is fueling the infection spike not just in India but all across the globe. For now, India has labeled the triple mutation as a 'variant of concerns. These are multiple variants of the virus that have triple mutation. Two of the three variants with the triple mutation have immune escape responses. This means these triple mutated variants are more resistant to antibodies. Scientists believe that these new variants have some ability to escape the body's naturally acquired immunity to COVID-19.

3. Conclusion

If we know very well about our enemy then we are easily able to win the war. If we know how they are mutates, how they act, how they changes to become more infectious and dangerous. We are able to change our Corona appropriate behavior correspond to that. We are also able to detect the future strains of COVID-19 by lab analysis and genome sequencing. We can develop many more technologies and treatments to fight all the types of the strains. Vaccines are not 100 percent effective against all the strains, so we can modify the vaccines in newer version to fight COVID-19. Studying strains are most important step for further research. Till for the protection from the strains get a COVID -19 vaccines when it is available to you. Wear a mask that covers your nose and mouth to help protect yourself and others. Stay 6 feet apart from the others who don't live with you. Avoid crowds and poorly ventilated indoor space. Wash your hands often with soap and water. Use hand sanitizer if soap and water are not available. Boost your immunity.

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