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New Corona Variant seems to be a dangerous new mutant.

Transcript:

What is Variant Covid19?

When the SARS-CoV mutates, or produce copies, the resulting mutations are known as variants.

In early January, the Centers for Disease Control and Prevention reported that dozens of people within the U.S. had become infected with a new variant of the SARS-CoV-2 virus, which originally emerged in the United Kingdom. It's one of a handful of virus variants that have emerged worldwide in recent months. You may wonder how this news may impact your health and safety.

Sir Patrick Vallance, the government's chief scientific adviser in UK, described the data so far as "not yet strong".

He said: "I want to stress that there's a lot of uncertainty around these numbers and we need more work to get a precise handle on it, but it obviously is a concern that this has an increase in mortality as well as an increase in transmissibility."

The new variant was first detected in Kent in September. It is now the most common form of the virus in England and Northern Ireland, and has spread to more than 50 other countries. Virus SARS-CoV-2 genome is just a bundle of generic material enclosed in a protein shell. In the case of COVID -19 the genetic material is RNA.

When the virus gets into your body, it starts mutating, that is more viruses are formed as copies of the RNA. That copying process is called mutation. In a course of pandemic such mutations are accepted. Most of these mutations do not have a strong impact. But that is not always the case. In the case of coronavirus, the impact will have how the virus spreads and the second generation of the virus is more dangerous.

Most mutations in our body do not change very much, but it is part of the process and they may go away with silent mutation.

Mutations we see now is making the coronavirus more severe and contagious. There are silent and non-silent mutations.

So, this is a transmittable virus, and we should be more careful

The Pfizer and Oxford-AstraZeneca vaccine are both expected to work against the variant that emerged in the UK.

That is favorable news.

However, Sir Patrick said there was more concern about two other variants that had emerged in South Africa and Brazil.

He said: "They have certain features which means they might be less susceptible to vaccines.

Architecture of the spike protein

Let us talk about the spike proteins of COVID-19 that is mainly involved in mutation and variants.

This is important to know, then we can grasp the significance of mutation.

As you are aware it is the spike glycoproteins- a slippery sugar molecule, which plays an important role in virus attachments and entry into a human cell and interlocks with the receptors in the mucosal surfaces of the respiratory tissue.

On the surface of our cells is a protein called Angiotensin Converting Enzyme-2 receptor (ACE2), triggers the uptake of the virus particles that enters the cells.

SARS-CoV-2 uses ACE2 to enter target cells

In mutations in the variants there is a change in the structure of the spike protein.

The new variants carry several peculiar changes to the spike protein, and in mutating alters the biochemistry of the spike and could affect how transmissible the virus is.

The spike proteins swivel around on three hinges to the body of the virus.

You can see these flowers waving with all kinds of bending angles, a long, slender stalk with so much flexibility."

Flexibility of the spike is important to the virus's success of getting into our bodies. By sweeping around, the spike increases its odds of encountering the protein on the surface of our cells it uses to attach.

One of the most concerning features of the spike protein of SARS-CoV-2 is how it moves or changes over time during the evolution of the virus. Encoded within the viral genome, the protein can mutate and changes its biochemical properties as the virus evolves.

Most mutations will not be beneficial and either stop the spike protein from working or have no effect on its function. But some may cause changes that give the new version of the virus a selective advantage by making it more transmissible or infectious.

The spike protein is also the basis of current COVID-19 vaccines, which seek to generate an immune response against it.

For SARS-CoV-2, the vaccines produced by Pfizer/BioNTech and Moderna give instructions to our immune system to make our own version of the spike protein, which happens shortly following immunization. Production of the spike inside our cells then starts the process of protective antibody and T cell production.

Now let us talk about the antibodies that are formed to attack the spike proteins formed in our body from the spike proteins of the SARS-CoV-2

The antibodies are called immunoglobulin G or IgG antibodies.

These antibodies are formed in our body after 7-14 days after the infection and remain in the blood for months or years.

When a person gets infected with the Coronavirus infection, the body produces distinct IgG antibodies, whether they have symptoms or not.

The IgG antibodies formed in our body from the vaccine targets the receptor domain of the spike protein and is the key to the immune response in our body.

Coronavirus in our body cells starts mutating, that is more viruses are formed as copies of the RNA.

mRNA Vaccines hopefully according to the researchers will destroy the mutated variants too through the IgG antibodies.

..According to a Moderna press release, their COVID-19 vaccine is still effective against the SARS-CoV-2 variants, B.1.1.7 and B.1.351, which scientists first identified in the United Kingdom and South Africa, respectively. However, the vaccine had a significantly reduced antibody response to the variants.

While most people are familiar with the hallmark symptoms of COVID-19 by now, with the variants a new crop of wide-ranging symptoms are noticed, including skin rashes, diarrhea, kidney abnormalities and life-threatening blood clots.

Vaccines prevent many millions of illnesses and save numerous lives every year. So far, the conventional vaccines made from live attenuated and inactivated pathogens have provided protection against a very of dangerous illnesses, especially in the eveloping countries, as we know.

These traditional vaccines take 5-10 years to get a new vaccine. So, the traditional vaccine cannot be modified in a few weeks unlike the mRNA vaccines produced by Pfizer and BioNtech and Moderna

mRNA vaccines represent a promising alternative to conventional vaccine approaches due to their high potency, capacity for rapid development.

Conclusion

In December, the UK reported a Covid-19 variant of concern, commonly referred to as the B117 variant, which appeared to be more transmissible. Since then, scientists have established that B117 is somewhere between 50% to 70% more transmissible than other variants.

This variant will increase the death rate by 30% to 40%.

B117 variant is now detected in more than 50 countries.

There are other variants identified in California, South Africa and Brazil and are quite a concern

Another variant of concern, known as P1 or B1128, was first detected in January in travellers who arrived in Japan from Brazil.

Then, on 17 January, the California Department of Public Health in the US revealed a variant known as L452R

The good point is that all these virus mutants create sufficient antibodies for the mRNA vaccines.

But then, what about the developing countries.

They cannot afford to pay \$19.50 for each mRNA vaccine, and the convention vaccines produced by Bharat Tech in India will not work.

This would create a big problem in the developing countries including Sri Lanka.

I have taken much of your time to explain how the variants of the deadly coronavirus works in our body, and the havoc they can cause in the future to mankind.

I hope ultimately herd immunity will help us all for a better happier world.

Thank you for watching this video.

Goodbye for now.