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COURSE TITLE : VIROLOGY

COURSE CODE : MLS 406

QUESTION: Discuss Etiology, Origin, Structure and Pathophysiology

Corona Virus is similar to the SARS VIRUS(2002) and MERS(2012).

When we talk about the corona virus we have to talk about the REPRODUCTIVE RATIO and the SERIES INTERVAL. The reproductive ratio simply means the degree of spreadibility or how many people can one person infect.

There are two major ways in which the virus can be transmitted

* FEACAL ORAL ROUTE
* RESPIRATORY TRANSMISSION

FEACAL ORAL ROUTE is one way that is believed that the disease can spread. This is when someone goes into the bathroom and does not completely rinse/ wash up completely.

RESPIRATORY DROPLETS have the potential to spread within 3-6feets. The droplets could stay on surfaces for up to 24hours. It could also be potentially airborne for close to 3hours.

**ETIOLOGY**

CoVs are zoonotic. This means that they first develop in animals before developing in humans. For the virus to pass from animal to humans, a person has to come into close contact with an animal that carries the infection. Once the virus develops in people, coronavirus can spread from person to person through respiratory droplets. This is the technical name for the wet stuff that moves through the air when you cough or sneeze.

The viral material hangs out in these droplets and can be breathed into the respiratory tract where it can later lead to an infection.

**ORIGIN**

Scientists have been trying to understand the origin of COVID-19.

Originally, scientists believed the virus may have been developed in bats and later pangolins. However, genomic comparison suggests that it is as a result of recombination between two different viruses, meaning the exact origin is still very much unclear.

**STRUCTURE**

The CoVs-19 has a thick spike that seem to latch more easily onto human cells than other viruses. They invade cells through a spike protein. It has an envelope protein, membrane protein and s spike protein. It has encoded proteins, replication properties and viral receptors.

**PATHOPHYSIOLOGY**

The virus gets into the respiratory system. Once it gets there, it attacks the alveoli. On getting to the alveoli it attaches to the TYPE2 pneumonocytes. The virus has different type of spike protein on it. One of the specific spike protein is the S –spike . the s- spike on the COVID binds to specific receptors on the TYPE2 pneumonocytes. The receptor is called ANGIOTENSIN converting enzyme TYPE2 and when it binds to this it allows the virus to actually engulf into the cell.

There is a release of tons of interleukin 1 and 6 within the lung perimeter. The interleukin 1 and 6 can travel all the way to the CENTRAL NERVOUS SYSTEM through the aid of the blood. In the central nervous system we have the HYPOTHALAMUS which helps to regulate temperature in the body. When the interlekin 1 and 6 are in high concentration, they tell the hypothalamus to release specific PROSTAGLAADINS and it helps to reset the THERMOSTAT and it increases the temperature of the body which would lead to fever.

If someone has consolidation and there is accumulation of stuffs in the alveoli, eventually after degradation the patient is going to cough it up and during the cough up, there woulod be cough out of PRODUCTIVE MUCCUOUS.

When someone has low partial pressure of oxygen, that stimulates the chemoreceptors and those chemoreceptors can trigger a reflex which could cause the sympathetic nervous system to become stimulated and try to increase the patients heart rate

**REFERENCES**

**World Health Organization Coronavirus disease (COVID-19) outbreak https://www.who.int/emergencies/diseases/novel- coronavirus-2019 Accessed February 18, 2020**

**Youtube(COVID-19) Ninja nerd Science**

**Shanghai officials reveal novel coronavirus transmission modes https://www.chinadaily.com.cn/a/202002/08/WS5e3e7d97a310128217275fc3.html Accessed February 18, 2020**