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Review Article

Coronavirus: An Overview

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ABSTRACT

Coronaviruses also known as Wuhan coronavirus are the type of viruses that cause ailment in mammals, birds. The current outbreak strain of coronavirus 2019-nCoV is causing respiratory infections including common cold to severe pneumonia. In the cows and pigs, that virus causes diarrhea.in the chicken they cause upper respiratory ailments. There are no vaccines or drugs approved for the coronaviruses treatment, but some drug and herbal medicine also show the positive effect against the coronaviruses 2019Nov-Coronaviruses. Coronaviruses are founded in the family Coronaviridae and subfamily Orthocoronavarinae in the order Nidovirales. The term coronavirus is derived from the Latin corona, meaning “crown” or “halo”, because the coronaviruses look like the crown. The first coronavirus was discovered in the 1960s and named Human coronavirus 229E and human corona virusOC43. Other members of these families have been identified, including SARS-Cov in 2003, HCoV NL63 in 2004, HKU1 in 2005, MERS-CoV in 2012, and 2019-nCoV in 2019 has founded recently in the Wuhan City of China. The World Health Organization announced that "COVID-19" will be the official name of the disease on 11 February 2020.

Keywords: Coronavirus, Virus, Respiratory, COVID-19

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INTRODUCTION

In late January 2020 has shown that how rapidly a new disease (COVID 2019) can take root and spread. The goal of this article is to open whatever resources we can to help public health authorities, researchers and clinicians contain and manage this disease. Coronaviruses also are known as Wuhan coronavirus are the type of viruses that cause ailment in mammals, birds. The current outbreak strain of coronavirus COVID 2019is causing respiratory infections including common cold to severe pneumonia. In the cows and pigs, that virus causes diarrhea.in the chicken they cause upper respiratory ailments. Coronaviruses are founded in the family Coronaviridae and subfamily Orthocoronavarinae in the order Nidovirales. Coronaviruses are enclosed viruses with a positive-sense single-stranded RNA genome and with a nucleocapsid of helical similarity. Approximately the genomic size of coronaviruses found to be 26 to 32 kilobases, the largest for an RNA virus. [1, 2]

The first coronavirus was discovered in the 1960s. And named Human coronavirus 229E and human coronavirus OC43. Other members of these families have been identified, including SARS-Cov in 2003, HCoV NL63 in 2004, HKU1 in 2005, MERS-CoV in 2012, and COVID 2019 in 2019 has founded recently in the Wuhan City of China.[3] The WHO announced that "COVID-19" will be the official name of the disease on 11 February 2020. TedrosAdhanomGhebreyesus chief of WHO said "co" imply for "corona", "vi" for "virus" and "d" for "disease", while "19" was for the year, as the outbreak was first identified on December 31. WHO chief said the name had been chosen to avoid references to a specific geographical location (i.e. China). [4, 5]

MORPHOLOGY

The term coronavirus is derived from the Latin corona, meaning "crown" or "halo", because the coronaviruses look like the crown [Figure- 1]. This assigns to the characteristic features of virions by electron microscopy, which has an edge of large, curved surface projections creating an image similar to a royal crown or of the solar corona. This organization is created by the viral spike (S) peplomers, which are proteins that colonize the surface of the virus and determine host tropism.

The spike (S), envelope (E), membrane (M), and nucleocapsid (N) are devoted by protein. In the case of SARS CoV have a specific, a defined receptor binding site on S(Spike) adjudicate binding of the virus to the receptor of the cell, angiotensin-converting enzyme 2 (ACE2). Some other coronaviruses (Beta-coronaviruses subgroup A) which have a shorter spike-like protein called hemagglutinin esterase (HE).[1]

REPRODUCTION (REPLICATION)

As the virus particles enter into the cell, the particle is uncoated and the RNA genome is accumulating in the cell cytoplasm. The RNA genome of coronavirus has a 5′ methylated cap and a 3′ polyadenylated tail. This allows the RNA to attach to ribosomes for the formation of protein. The replicated RNA genome forms a long polyprotein, where all of the protein is attached. A non-structural protein – a protease is found in the coronavirus which able to a breakdown of polyprotein this process is allowing the virus to encode the greatest no of genes in a small number of nucleotides. [6, 7] [Figure- 2]

TRANSMISSION

Transmission of coronaviruses from human to human is primarily through close contact to the symptomatic person, via respiratory droplets generated by sneezing and coughing also broadly separated by the handshake to the infected person.[8]

HUMAN CORONAVIRUS

Coronaviruses are recognized to cause a significant proportion of all common colds in adults and children. [6] The major symptoms caused by a coronavirus, such as fever and a sore throat from swollen adenoids, primarily in the winter and early spring seasons. Pneumonia caused by coronavirus– either direct viral pneumonia or secondary bacterial pneumonia – and may cause bronchitis – either direct viral bronchitis or secondary bacterial bronchitis. [9] There are following strains of coronavirus are known:

1. Human coronavirus 229E (HCoV-229E)
2. Human coronavirus OC43 (HcoV-OC43)
3. Severe acute respiratory syndrome coronavirus (SARS-CoV
4. Human coronavirus NL63 (HcoV-NL63, New Haven coronavirus)
5. Human coronavirus HKU1
6. Novel coronavirus 2012 and HcoV-EMC
7. 2019 novel coronavirus (2019-nCoV). [10]

2019 NOVEL CORONAVIRUS (COVID 2019)

COVID-19, also known as 2019-nCoV acute respiratory disease, is an infectious disease delivered by SARS-CoV-2, a virus almost similar to the SARS virus. [11] It is spread between people via respiratory droplets from infected individuals when they cough or sneeze. The spread of COVID-

19 can be limited by hand washing and good hygiene. The disease may initially present with few or no symptoms or may develop into a fever, coughing, shortness of breath, pain in the muscles and tiredness. Complications may include pneumonia and acute respiratory distress syndrome. There are neither vaccines nor specific antiviral treatments, with efforts typically confined to the management of symptoms and supportive measures.

SIGN AND SYMPTOMS

The persons who have infected either asymptomatic either symptomatic. Like fever, cough, shortness of breath. Diarrhea or upper respiratory symptoms (e.g. sneezing, runny nose, and sore throat) are less frequent. These symptoms can progress to severe pneumonia, multi-organ failure, and some time death. [12][Table- 1]

CAUSE

This disease is caused by a virus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Previously called 2019 novel coronavirus (2019-nCoV). The virus is a belief to have an animal origin. [13].

DIAGNOSIS

The WHO has published many numbers of testing protocols for the disease. That uses real-time reverse transcription-polymerase chain reaction (RRT-PCR). The test can be done on either respiratory or blood samples. Within a few hours to days, the result is available. A strain of the coronavirus was separated by Chinese scientists and produces the genetic sequence so that laboratories across the world could separately develop PCR tests to detect infection by the virus. Zhongnan Hospital of Wuhan University released Diagnostic guidelines to suggest methods for detecting infections based upon clinical features and epidemiological risk. [14]

PREVENTION

The preventive measures were published by Global health organizations to reduce the chances of infection. Guidance is alike to those published for other coronaviruses and include: periodic washing of hands with soap and water; not touching the eyes, nose, or mouth with unwashed hands; and practicing good respiratory hygiene. [15]

SUPERVISION

There is no conspicuous antiviral medicine against this disease, the comes out clinical demonstration and complications are determinates with the supportive therapy. The detailed treatment pleading for hospitalized patients was published by WHO with a severe acute respiratory infection (SARI) when a COVID-19 infection is suspected. [16] Research into potential treatments for the disease was initiated in January 2020, and new therapies may take until 2021 to develop. There has also been an inspection of the RNA polymerase inhibitor remdesivir and interferon-beta. In late January 2020, Chinese medical researchers expressed intent to start clinical testing on remdesivir, chloroquine, and lopinavir/ritonavir. As they have effects counter other coronaviruses and modes of action that propose they may be effective, lopinavir/ritonavir has been the target of significant research and analysis. Chloroquine was being trialed in China in February 2020, with preliminary results that seemed quite positive. The drug was enrolled in treatment guidelines. [17] The Beijing branch of China's National Health Commission Mentioned that there is currently no effective antiviral medication available. It indicated the use of lopinavir/ritonavir as part of treatment plans.

ALTERNATIVE MEDICINE

Chinese health authorities suggested the use of traditional Chinese medicine (TCM) to inhibit or treat the disease. On January 22, the National Health Commission put traditional Chinese medicine into the third issue of the COVID 2019 diagnostic and treatment plan. On February 2, Wuhan officials ordered all patients to be put on a specific traditional Chinese medicine treatment. On February 14, Wuhan opened a traditional Chinese medicine-oriented temporary hospital. The efficacy and safety of traditional Chinese medicine have not been established in COVID 2019 infections. [18]

CONCLUSION

In late January has shown that how rapidly a new disease (COVID 2019) can take root and spread. Human Coronaviruses also are known as COVID 2019 are the type of viruses that cause ailment in mammals, birds. The current outbreak strain of coronavirus COVID 2019 is causing respiratory infections including common cold to severe pneumonia in humans.

The first coronavirus was discovered in the 1960s. and named Human coronavirus 229E and human corona virusOC43. The WHO announced that "COVID-19" will be the official name of the disease on 11 February 2020. As the virus particles enter into the cell, the particle is uncoated and the RNA genome is accumulating in the cell cytoplasm. Coronaviruses are recognized to cause a significant proportion of all common colds in

adults and children. The symptoms like fever, cough, shortness of breath. Diarrhea or upper respiratory symptoms (e.g. sneezing, runny nose, and sore throat) are less frequent.

These symptoms can progress to severe pneumonia, multi-organ failure, and some time death. The preventive measures, washing hands with soap and water; not touching the eyes, nose, or mouth with unwashed hands; and practicing good respiratory hygiene. Some antiviral drugs and Chinese health authorities suggested the use of traditional Chinese medicine (TCM) to inhibit or treat the disease. The main objective of this review article to provide awareness to the society to reduce the spread of COVID 2019 by taking precautions like washing hands with soap and water; not touching the eyes, nose, or mouth with unwashed hands and make the environment clean and safe.

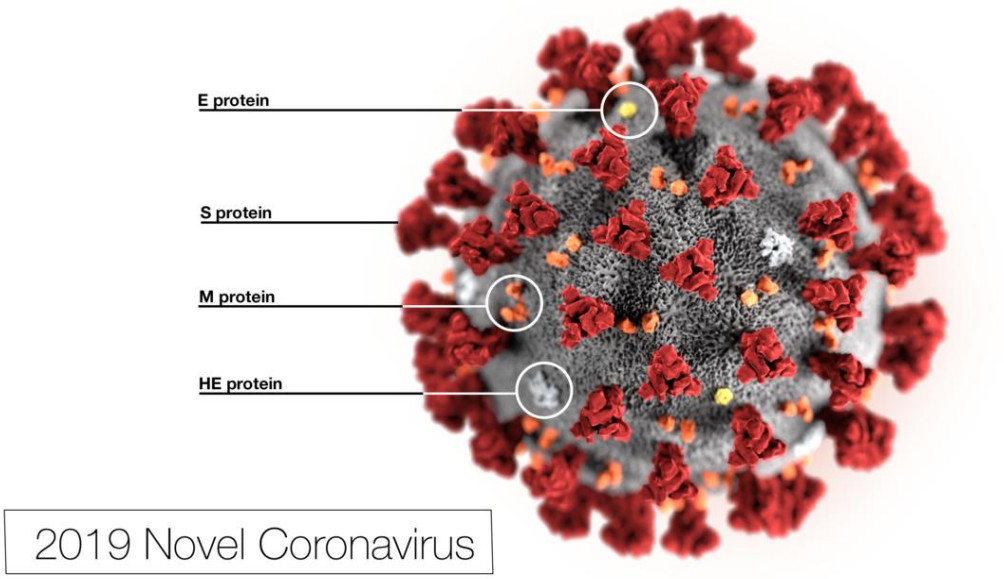

Figure: 1(morphology of coronaviruses)

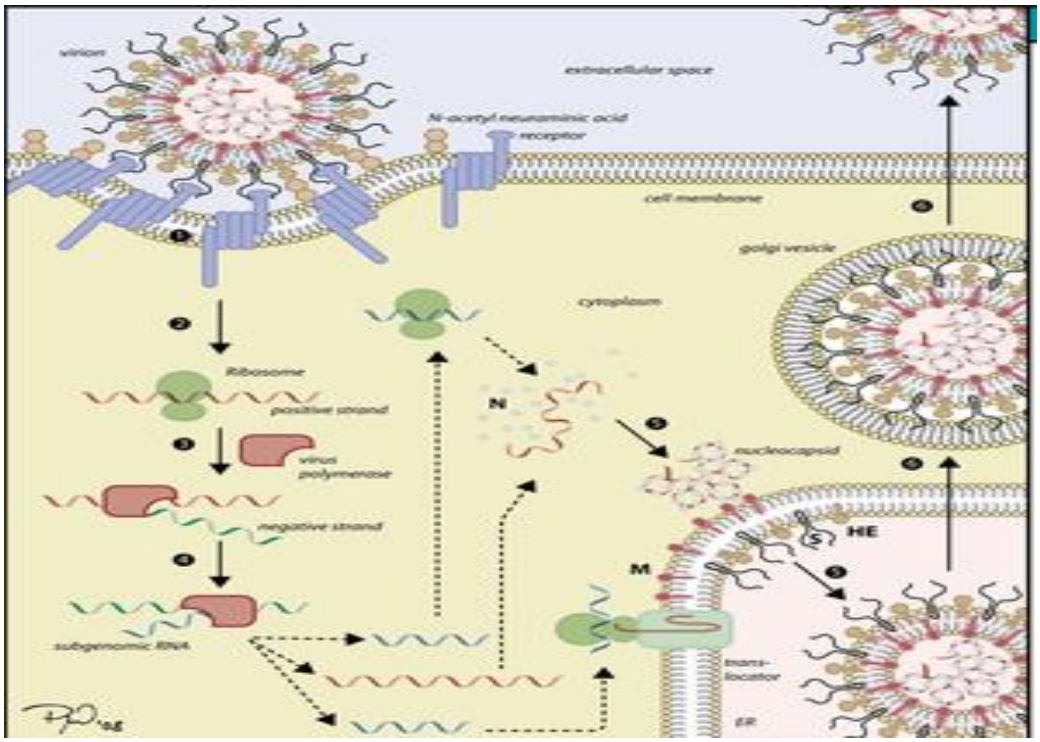

Figure: 2 (Replication of Coronavirus)

Symptoms	**Percentage**
Fever	87.9%
Dry cough	67.7%
Fatigue	38.1%
Sputum production	33.4%
Shortness of breath	18.6%
Muscle pain or joint pain	14.8%
Sore throat	13.9%
Headache	13.6%
Chills	11.4%
Nausea or vomiting	5%
Nasal congestion	4.8%
Diarrhoea	3.7%
Haemoptysis	0.9%
Conjunctival congestion	0.8%

Table-1: Symptoms

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