



A Review on Corona Virus Disease (COVID-19)

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Abstract

The coronavirus disease 2019 (COVID-19) is a highly transmittable and pathogenic viral infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which emerged in Wuhan, China and spread around the world. Genomic analysis revealed that SARS-CoV-2 is phylogenetically related to severe acute respiratory syndrome-like (SARS-like) bat viruses, therefore bats could be the possible primary reservoir. The intermediate source of origin and transfer to humans is not known, however, the rapid human to human transfer has been confirmed widely. There is no clinically approved antiviral drug or vaccine available to be used against COVID-19. However, few broad-spectrum antiviral drugs have been evaluated against COVID-19 in clinical trials, resulted in clinical recovery. In the current review, we summarize and comparatively analyze the emergence and pathogenicity of COVID-19 infection and previous human coronaviruses severe acute respiratory syndrome coronavirus (SARS-CoV) and middleeast respiratory syndrome coronavirus (MERS-CoV). We also discuss the approaches for developing effective vaccines and therapeutic combinations to cope with this viral outbreak.

Key Words: Corona virus, Covid-19, Outbreak, Spread

Introduction

In December 2019 there was the cluster of pneumonia cases in china. Investigation found that was caused by previously unknown virus now name 2019 novel coronavirus. Coronavirus is a large group of virus .they consist of a core of genetic material surrounded by an envelope with protein spikes. This gives the appearance of a crown. Crown in latin is called corona and hence of this virus get the name corona virus. Corona viruses are group of related RNA viruses that cause diseases in mammals and birds. In human these viruses cause respiratory infection that can range from mild to lethal. Mild illnesses include some cases of common cod (which is also caused by other viruses predominantly rhinoviruses).

While more lethal varieties can cause severe acute respiratory syndrome (SARS), middleeast respiratory syndrome(MERS) and COVID-19.

Symptoms in other species vary; in chicken, they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhea.

There are as yet no vaccines or antiviral drugs to prevent or treat human corona virus infection.

Illustration of the morphology of corona virus; the club- shaped viral spike peplomers (red) create the look of a corona. Surrounding the virion when seen with an electron microscope.

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Coronaviruses constitute the subfamily Orthocoronavirinae, in the family Coronaviridae, order Nidovirales and realm Riboviria. They are enveloped viruses with a positive – sense single – standard RNA genome and a nucleocapsid of helical symmetry. This is wrapped in a icosahedral protein shell the genome size of corona viruses range from approximately 26 to 32 kilobases , one of the largest among RNA viruses. They have characteristic club- shaped spike that project from their surface which in electron micrographs create an image reminiscent of the solar corona. From which their name derived.[1]

Signs and symptoms

Signs and symptoms of corona virus disease 2019 (COVID19) may appear two to 14 days after exposure. This time after exposure and before having symptoms is called the incubation period.

1. Fever
2. Cough
3. Tiredness

Other symptoms can include;

1. Shortness of breath or difficulty breathing
2. Muscles ache
3. Sore throat
4. Loss taste or smell
5. Headache
6. Chest pain. The list is not all inclusive. Other less common symptoms have been reported, such as rash, nausea, vomiting and diarrhea.

Children have similar symptoms to adult and generally have mild illness. The severity of COVID-19 symptoms can range from very mild to severe.

Some people may have only few symptoms, and some people may have no symptoms at all. People who are older or who have existing chronic medical conditions, such as heart disease, lungs disease, diabetes, severe obesity, chronic kidney or liver disease, or who have compromised immune system may be at higher risk of illness.

This is similar to what is seen with other respiratory illness such as influenza.

Some people may experience worsened symptoms, such as worsened shortness of breath and pneumonia, about a week after symptoms start.[2]

Causes

Infection with the new corona virus (severe acute respiratory syndrome coronavirus 2, or SARS-COV-2) causes corona virus disease 2019 (COVID-19).

The virus appears to spread easily among people, and more continues to be discovered over time about how it spreads.

Data has shown that it spreads from person to person among those in close contact (within about 6 feet, or 2 meters).

The virus spread by respiratory droplets released when someone with the virus coughs, sneezes or talks. These droplets can be inhaled or land in the mouth or nose of a person nearby.

It can also spread if a person touches a surface with the virus on it and then touches his or her mouth, nose, or eyes, although this isn't considered to be a main way it spreads.[2]

Risk factors

Risk factor for COVID-19 appear to include;

Recent travel from or residence in an area with ongoing community spread of COVID-19 as determined by CDC or WHO.

Close contact (within 6 feet, or 2 meters) with someone who has COVID-19 for more than 5 minutes or being coughed or sneezed on by an infected person.[2]

Complication

Although most people with COVID-19 have mild to moderate symptoms, the disease can cause severe medical complication and leads to death in some people. Older adults or people with existing chronic medical conditions are at greater risk of becoming seriously ill with COVID-19.

Complications can include;

1. Pneumonia and trouble breathing
2. Organ failure in several organs
3. Heart problem
4. A severe lung condition that causes a low amount of oxygen to go through your blood stream to your organs (acute respiratory distress syndrome)
5. Blood clots
6. Acute kidney injury
7. Additional viral and bacterial infection.[2]

Mode of transmission

Respiratory infections can be transmitted through droplets of different sizes. When the droplet

particle are >5 to 10 micron in diameter they are referred to as respiratory droplets.

Droplets transmission occurs when a person is in close contact (within 1 meter) with someone who has respiratory symptoms like - (sneezing or coughing).

Transmission may also occurs through fomites in the immediate environment around the infected person. Therefore transmission of COVID-19 virus can be occurs by direct contact with infected people and indirect contact with surface. Another type of transmission (Air born transmission) it is different from droplet transmission as it refers to the presence of microbes within droplet nuclei.

Air born transmission may be possible in specific circumstances and setting in which procedures or support treatments that generate aerosols are performed.

There is some evidence that COVID-19 infection may lead to intestinal infection and be present in feces. However, to date only one study has cultured the COVID-19 virus from a single stool specimen. There have been no reports of faecal – oral transmission of the COVID-19 virus to date.[4]

Prevention

Although there is no vaccine available to prevent COVID-19, you can take steps to reduce your risk of infection. WHO and CDC recommend following these precaution for avoiding COVID-19-

1. Avoid large events and mass gathering
2. Avoid close contact (within 6 feet, or 2 meter) with anyone who is sick or has symptoms
3. Stay home as much as possible and keep distance between yourself and others (within 6 feet, or 2 meter). Especially if you have a higher risk serious illness. Keep in mind some people may have COVID_19 and spread it to others, even if they don't have symptoms or don't know they have COVID-19.
4. Wash your hands often with soap and water for at least 20 seconds or use an alcohol- based sanitizer that contains at least 60% alcohol.

5. Cover your face with a cloth face mask in public space. Only use nonmedical cloth mask – surgical mask and N95 respirators should be reserved for health care providers.
6. Cover your mouth and nose with your elbow or a tissue when you cough or sneeze. Through away the used tissue wash your hands right away.
7. Avoid touching your nose, eyes, and mouth.
8. Avoid dish, glasses, towels bedding and other household items if you are sick.
9. Clean and disinfect high touch surface such as doorknobs, and counters, daily.
10. Stay home from work, school and public areas if you are sick.[2]

Treatment

To date there are no specific vaccine or medicine for COVID-19. Treatment are under investigation and will be tasted through clinical trials. But still temporarily we use Hydroxychloroquine and Plasma therapy in treatment of COVID-19.

• HYDROXYCHLOROQUINE

Hydroxychloroquine or Chloroquine, often in combination with a second generation macrolide, are being widely used for treatment of COVID-19. Despite no conclusive evidence of their benefit although generally safe when used for approved indication such as autoimmune disease or malaria, the safety and benefit of these treatment regimens are poorly valuated in COVID-19.

• PLASMA THERAPY

Plasma therapy is done by taking blood plasma from a cured COVID-19 patients to treat positive cases to effectively strengthen the immune system.

The ministry had asked the Indian Red Cross Society (IRCS) to contact recovered COVID-19 patients to come forward for blood donation .from which convalescent plasma could be collected and used for transfusion to the COVID -19 affected patient for their early recovery.[5,6]

Conclusion

There are hundreds of coronaviruses most of which circulate in animals, only seven of these viruses infect humans and four of them cause symptoms of the common cold. But three times in the last 20 years, a coronavirus has jumped from animals to human to cause severe disease.

COVID-19 a new and sometime deadly respiratory illness that is believed to have originated in a live animal market in china, has spread rapidly throughout that country and the world.

The new coronavirus was first detected in wuhan, china in December 2019. Tens of thousands people infected in china, with the virus spreading easily from person to person in many country.

The world health organization (WHO) declared the novel coronavirus outbreak a public health emergency of international concern on January 30. On march11, 2020 after sustained spread of the disease outside of china.The (WHO) declared the COVID-19 epidemic a pandemic. Public health measures like ones implemented in china and now around the world, will hopefully blunt the spread of the virus while treatments and a vaccine are developed to stop it.[7]

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