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Novel Corona Virus (2019-nCov): A Short Review

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INTRODUCTION:

Coronaviruses (Cov) are a large family of viruses that cause illness ranging from the common cold to move severe diseases such as Middle East Respiratory Syndrome (MERS-CoV). A novel coronavirus (nCOV) is a new strain that that not been previously identified in humans.

Coronaviruses are zoonatic, meaning they are transmitted between animals and people. According to many investigations it has been found that SARS-CoV from dromedary camels to humans. Several known coronaviruses are circulating in animals that have not yet infected humans.

Coronaviruses are enveloped non-segmented positive sense RNA viruses belonging to the family coronaviridac and the order Nidovirales and broadly distributed in humans and other mammals.[1] Although most human coronavirus infections are mild, the epidemics of the two betacoronaviruses, Severe Acute Respiratory Syndrome Coronavirus (SARS-COV)[2-4] and Middle East Respiratory Syndrome Coronavirus (MERS-CoV)[5-6], have caused more than 10000 cumulative cases in the past two decades, with mortality rates of 10% for SARS-CoV and 37% for MERS-CoV[7-8]. The coronaviruses already identified might only be the tip of the iceberg, with potentially more novel and severe Zoonotic events to be revealed.

Coronaviruses were first identified in 1960s, but we do not know where they come from. They get their name from their 'Crown-like shape'. This virus, enveloped positive-sense RNA viruses, are characterized by 'Club-like spike' that project from their surface, an unusually large RNA genome, and a unique replication strategy. Coronaviruses causes a variety of diseases in mammals and birds ranging from enteritis in cows and pigs and upper respiratory disease chickens to potentially lethal human respiratory infections.

Coronaviruses (CoVs) are the largest group of viruses belonging to the *Nidovirales* order, which includes *Coronaviridae, Arteriviridae* and *Roniviridae* families. The coronavirinae comprise one of two subfamilies in the coronaviridae family, with the other being the *Torovirinae.* The *Coronavirinae* are further subdivided into four groups, the alpha, beta, gamma and delta coronaviruses. The viruses were initially sorted into these groups based on serology but are now divided by phylogenetic clustering.

All viruses in the *Nidovirales* order are enveloped, non-segmented positive-sense RNA

viruses. They all contain very large genomes for RNA viruses, with *coronavirinae* having the largest identified RNA genomes, containing approximately 30 kilobase (Kb) genomes. Other common features within the *Nidovirales* order includes:

(a) A highly conserved genomic organization, with a large replicase gene preceding structural and accessory genes.

(b) Expression of many nonstructural genes by ribosomal frame shifting.

(c) Several unique or unusual enzymatic activities encoded within the large replicas-transcriptase polyprotein.

(d) Expression of downstream genes by synthesis 3' nested sub-genomic mRNAs. as *nido* is latin for 'nest'.

The major differences within the nidovirus families are in the number, type and sizes of the structural proteins. These differences causes significant attractions in the structure and morphology of the nucleocapsids & visions.

SYMPTOMS:

The symptoms of most coronaviruses are similar to any other upper respiratory infection including runny nose, coughing, sore throat, headache and sometimes a fever. In most cases, we don't know whether we have a coronavirus or a different cold-causing virus, such as rhinovirus.

Common human coronaviruses, including types 229E, NL63, OC43 and HKU1, usually cause mild to moderate upper-respiratory tract illnesses like the common cold. Most people get infected with these viruses at some point in their lives. These illnesses usually only last for a short amount of time. Human coronaviruses can sometimes cause lower-respiratory tract illnesses, such as pneumonia or bronchitis. This is more common in people with cardiopulmonary disease, people with weakened immune systems, infants and older adults.

Two other human coronaviruses, MERS-CoV and SARS-CoV have been known to frequently cause severe symptoms. MERS symptoms usually include fever, cough and shortness of breath which often progress to pneumonia. About 3 or 4 out of every 10 patients reported with MERS have died. MERS cases continue to occur, primarily in the Arabian Peninsula. SARS symptoms often included fever, chills and body arches which usually progressed to pneumonia. No human cases of SARS have been reported anywhere in the world since 2004.

Most coronaviruses are not dangerous. Some type of coronaviruses are serious, though. About 858 people have died from Middle East Respiratory Syndrome (MERS), which first appeared in 2012 in Saudi Arabia and then in other countries in the Middle East, Africa, Asia and Europe. In April 2014, the first American was hospitalized for MERS in India and another case was reported in Florida. Both had just returned from Saudi Arabia. In May 2015, there was an outbreak of MERS in Korea, which was the largest outbreak outside of the Arabian Peninsula. In 2003, 774 people died from a severe acute respiratory syndrome (SARS) outbreak. As of 2015, there were no further reports of cases of SARS.

In December 2019, a series of pneumonia cases of unknown-cause emerged in wuhan, Hubei, China with clinical presentations greatly resembling viral pneumonia.[6] Deep sequencing analysis from lower respiratory tract samples indicated a novel coronavirus (2019-n Cov). Thus far more than 800 confirmed cases, including in health-care workers, have been identified in wuhan, and several exported cases have been confirmed in other provinces in China, and in Thailand, Japan, South Korea and the USA[7-10].

METHOD OF SPREAD:

Most coronaviruses spread the same way other cold-causing viruses do: through infected people coughing and sneezing, by touching an infected person's hands or face, or by touching things such as doorknobs that infected people have touched. Almost everyone gets a coronavirus infection at least once in their life, most likely as a young child. In the United states coronaviruses are more common in the fall and winter, but anyone can come down with a coronavirus infection at any time.

Bats have been recognized as the natural reservoirs of a large variety of viruses. Special attention has been paid to bat coronaviruses as the two emerging coronaviruses which have caused unexpected human disease outbreaks in the 21st century, Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome coronavirus (MERS-CoV), are suggested to be originated from bats. Various species of horseshoe bats in China have found to harbar genetically divers SARS-like coronaviruses. Some strains are highly similar to SARS-CoV even in the spike protein and are able to use the same receptor as SARS-Cov for cell entry. On the other hand, diverse coronavirus phyla genetically related to MERS-CoV have been discovered worldwide in a wide range of bat species, some of which can be classified to the same coronavirus species as MERS-CoV. Coronaviruses genetically related to human coronavirus 229E and NL63 have been detected in bats as well. Moreover, intermediate hosts are believed to play an important role in the transmission and emergence of these coronaviruses from bats to humans.[12]

DIAGNOSIS:

Your health care provider may order laboratory tests on respiratory specimens and serum (part of your blood) to detect human coronaviruses, laboratory testing is more likely to be used if you have severe disease or are suspected of having MERS.

If you are experiencing symptoms, you should tell your healthcare provider about any recent travel or contact with animals. Most MERS-CoV infection have been reported from countries in the Arabian Peninsula. Therefore reporting a travel history or contact with camels or camel products is very important when trying to diagnose MERS.

Prevention:

If anyone sick with 2019-n CoV the following steps are helptal to prevent them:

1. **Stay home except to get medical care:**
    a. You should not leave your home, except to get medical care. Do not go to work, school, or public areas, and do not use public transportation or taxis.
2. **Separate yourself from other people in your home:**
    a. As much as possible you should stay in a different room from other people in your home. Also you should use a separate bathroom, if available.
3. **Call ahead before visiting your doctor:**
    a. Before your medical appointment, call the healthcare provider and tell them that we have, or being evaluated for, 2019-n CoV infection. This will help the health care provider's office take steps to keep other people from getting infected.
4. **Wear a facemask:**
    a. You should wear facemask when you are in the same room with other people and when you visit a healthcare provider. If you cannot wear a facemask, the people who

live with us should wear one while they are the same room with us.

5. **Cover your coughs and sneezes:**
    a. Cover your mouth and nose with a tissue when you cough or sneeze, or you can cough or sneeze into your sleeve. Throw use tissues in a lined trash can, and immediately wash your hands with soap and water for at least 20 seconds.
6. **Wash your hands:**
    a. Wash your hands often and thoroughly with soap and water for at least 20 seconds. Use an alcohol based hand sanitizer that contains at least 60% alcohol if soap and water are not available. Avoid touching your eyes, nose and mouth with unwashed hand.
7. **Avoid sharing household items:**
    a. You should not share dishes, drinking glasses, cups, eating utensils, towels, bedding or other items with other people in your home. After using these items, you should wash them thoroughly with soap and water.
8. **Monitor your symptoms:**
    a. Get medical care quickly if your illness is getting worse (for example if you are having trouble breathing), call the healthcare provider ahead of time and tell them that you have, or are being evaluated for, 2019-n CoV infection. This will help the healthcare providers office take steps to keep other people from getting infected.

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