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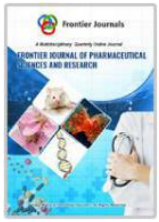

Original Research Paper

A Current Review on Novel Corona Virus-2019

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ABSTRACT

Corona virus belongs to wide class of virus that causes respiratory illness. A novel corona virus known as 2019-nCoV or Covid-19 emerged in Wuhan, located in china, at the end of 2019.In humans there are seven forms of corona virus. The mode of transmission is contagious like through coughing, sneezing etc., Symptoms like cough fever and shortness of breath is common in COVID-19 as like SARS-CoV and MERS-CoV. The pathogenesis of corona virus mostly effects the human cells and causes the replication in the host cells which finally infects all the cells in the human body. The severity of the disease depends on parameters of the symptoms according to the guidelines WHO. The specimen collection is mostly useful in the detection of this virus. The management of the nCoV is different in all children adults and pregnant patients.

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1. INTRODUCTION

These are pleomorphic RNA viruses that characteristically consists of 27-32 kb positive polarity and 80- 160 nm. in size of crown shaped peplomers [1] Coronaviruses are zoonotic pathogens that are present in humans and various animals due to its high rate of mutation, having a broad range of asymptomatic clinical features to necessary of hospitalization in the "intensive care unit" (ICU). They cause infections to neurological, respiratory, gastrointestinal, and hepatic systems [2] Generally, Corona Virus is the name derived from the latin word means crown or halo. Corona virus comes under viruses' group that belongs to the nidovirales order, that includes Atherinidae, Coronaviridae, Roniviridae. The Coronaviridae are further subdivided into alpha, beta, gamma and delta corona virus. These are positive sense single standard RNA genome enveloped viruses and a nucleocapsid of helical symmetry. The size of genome ranges from26 to 32 approximately in corona virus and largest kilobases are present for RNA virus. In humans, it commonly affects respiratory tract often mild whereas in rare cases potentially lethal. There are no proper anti-viral and vaccines for treatment and prevention[3-6].

Types of Corona viruses

There are 7 known forms of human corona viruses;

1. Human coronavirus OC43 (HCoV-OC43)
2. Human coronavirus 229E (HCoV-229E)
3. Human coronavirus HKU1
4. SARS-CoV
5. Human coronavirus NL63 (HcoV-NL63, New Haven coronavirus)
6. Middle East respiratory syndrome coronavirus (MERS-CoV), also known as novel coronavirus2012 previously and HCoV-EMC.
7. Novel coronavirus (2019-nCoV), also known as Wuhan pneumonia or Wuhan coronavirus, (Novel in this case means newly discovered, or newly originated, and is a placeholder name.)[7-12]

2. MODE OF TRANSMISSION

Often, the transmission occurs from human to human with close contact. Primarily the transmission occurs through the respiratory droplets produced just as the spread of influenza, when an infected person sneezes and other respiratory pathogens. When air is inhaled, these droplets can settle in the nasal mucosa or mouth and lungs of people. Currently, it remains not clear if a person can be infected by COVID-19 by touching their mouth, nose, or possibly eyes and then by touching an infected surface or object [13]

It is considered to be the most contagious when people are most symptomatic typically, like most respiratory viruses However, cases, who were infected from the prodrome period of COVID-19, were also reported. Research is ongoing and data sufficiently not available on infectiousness of the disease [14].

Symptoms

The first symptoms are commonly defined as fever, cough, shortness of breath Similar to SARS CoV and MERS CoV [15] Although diarrhea is common symptom in about 20-25% of patients with SARS-CoV or MERS-CoV infection, intestinal symptoms were rarely reported in COVID-19 patients. Signs and symptoms like chest pain, confusion, and nausea-vomiting were noted in addition to previous findings in another study of 99 patients[16]symptoms like fever, dry cough, fatigue and myalgia were reported in most patients, and less often, symptoms of expectoration, headache, hemoptysis and diarrhea were also observed in a cohort study of 41 hospitalized patients[17].

Pathogenesis

The interaction of sensitive human cells with Spike Protein is the first step in virus infection After entering to the cell Genome encoding occurs and facilitates the gene expression, then encoding of useful accessory proteins takes place, which develops the CoVs adaptation to the human host [18]. In SARS CoV and MERS CoV, the viral RNA change itself in the cytoplasm, after entering the cell. Genomic RNA is and polyadenylated and encapsulated, that encodes different structural and non-structural polypeptide genes. Proteases split these polyproteins which shows activity of chymotrypsin. [18, 20] Through both replication and transcription process, the resulting complex drives (-) RNA production. Full- length (-) RNA copies of the genome are produced and used as a template for full-length (+) RNA genomes, during replication [19,18] A subset of 7-9 sub-genomic RNAs, during transcription which also includes those encoding all structural proteins, are formed by discontinuous transcription.

Nucleocapsids of virus are combined from genomic R protein and RNA in the cytoplasm and then are formed into the lumen of endoplasmic reticulum. Through exocytosis, Virions are then released from the infected cell. The released viruses can infect liver cells, intestines, kidney cells and T lymphocytes as well as the lower respiratory tract, where they form the main signs and symptoms. [20]

Severity definition

The WHO guideline shows five levels of severity [21]: mild, severe, acute respiratory distress, sepsis, and septic shock. It covers both the child and adult age groups. The children one is from less than 2 months to 5 years old. The respiratory rate and SpO_2 are two important parameters for judging patients' clinical condition, from mild to acute respiratory distress levels. The patients' mental, circulating, and respiratory parameters are recommended to rank the severity for sepsis in adults where as in children, the definition of the systemic inflammatory response syndrome (SIRS) are used. Hypotension in adults is a substantial sign or vasopressor maintenance for mean atrial pressure ≥ 65 mmHg with lactate level > 2 mmol/L, in the septic shock adult patients, whereas the criteria are based on the guideline of hemodynamic support of pediatric and neonatal Septic Shock from the American College of Critical Care Medicine in the septic shock for children.

Collection of specimens

1) Combination of oropharyngeal / nasopharyngeal swab.

2) If positive repeats till negative for every 3 days.

3) If negative repeats second test after 24 hours.

4) If 2 consecutive negative isolation can be discontinued.

5) Specimen of lower respiratory tract when applicable.

6) Contact your infection control practitioner when Contact and airborne isolation is recommended for further information.

3.MANAGEMENT GUIDELINES

The oxygen and intravenous fluid treatments are recommended to mild and severe cases, according to WHO guidelines. In non-pregnant adult or child, the targets are $SpO_2 \geq 90\%$ and in pregnant patients $SpO2 \geq 92–95\%$. In the both adults and children with acute respiratory distress syndrome Mechanical ventilation is recommended the tide volume is suggested from 6 ml/kg. In severe ARDS cases, Hypercapnia is acceptable and longer than 12 h ventilation per day is suggested. The treatments involved in sepsis and septic shock are following the 2016 international guideline of sepsis and septic shock.

Treatment protocol

Treatment of COVID-19 upper respiratory tract infections:

Oseltamivir	150mg	BID	5 days	PO
Chloroquine phosphate	500mg	BID	5 days	PO

Treatment of COVID-19 Pneumonia

tazanavir (Reyataz)	400 mg	O D	2 weeks	PO
Oseltamivir	150mg	BID		
Corticosteroids	40mg	q12H	5 days	IV

+

Chloroquine Phosphate	500mg	BID	10 days	PO
Darunavir / Cobicistat (Rezolasta)	400/ 150mg	OD	2 Weeks	

4. CONCLUSION

Corona virus is a group of viruses which mostly effects the respiratory tract of humans. Sars CoV and Mers CoV are the dangerous one. There is a proper treatment for sars and mers corona virus. At present novel corona virus 19 becomes as a global emergency disease which can cause leading death in the world. There is no proper treatment for the corona virus. But preventive measures should be taken to reduce the risk of covid-19 disease. The treatment protocol is necessary that have chances to reduce the risk of nCoV and its symptoms.

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