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Review Article

Covid 19: A review

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ABSTRACT

Corona virus are well known group of enveloped viruses. They are known as single stranded RNA genomes. Human Corona virus chiefly cause respiratory disease. As the Covid disease rolled out across all over the world, we must prepare for the threat which is directly related to this pandemic. Rapid diagnosis and isolation is considered as very important in case of Covid diseases. In this review, we are trying to give the basic information about the Corona virus.

INTRODUCTION

Novel coronavirus, which is the main etiological agent of Covid-19 (corona virus diseases 2019), appeared in Wuhan, China. Novel coronavirus is officially recognized as SARS-CoV-2 (severe acute respiratory syndrome corona virus 2)¹.

Novel coronavirus was diagnosed from patient's throat swab sample on January 7. WHO (World Health Organization) named the diseases as coronavirus disease 2019 (Covid-19)^{2,3}.

Covid-19 was declared as a universal health emergency on 30th January 2020 by WHO (World Health Organization). Subsequently, it is declared as a pandemic by WHO (World Health Organization) on 11th March^{4,5}.

Virus origin and classification

Coronavirus is known as a large family of RNA (single-stranded) viruses, which belongs to Nidovirales order. This order includes arteriviridae, roniviridae and coronaviridae families. Coronaviridae family can be subdivided into coronavirinae subfamilies and torovirinae subfamilies. Further, coronavirinae is subclassified to 4 types i.e. Alpha, Beta, Gamma, Delta coronavirus^{6,7}. Alpha coronavirus consists of human coronavirus-229e (HCoV-229 e) and human coronavirus-NL63E. Beta coronavirus consists of human corona virus-OC43, SARS-HCoV (Severe Acute Respiratory Syndrome Human Coronavirus), Human Coronavirus-

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HKU1, and MERS-CoV (Middle Eastern Respiratory Syndrome Coronavirus). Gamma coronavirus consists of viruses of birds as well as whales. Delta Coronavirus consists of viruses which is confined from birds as well as pigs.

This classification is based on the phylogenetic clustering. Range of their viral RNA genome is from 26-32 kilobases in length^{8,9}.

People from all ages are sensitive. Coronavirus infection is spreaded through large droplets which is bring out by symptomatic patients during sneezing and coughing. These infected droplets may spread upto 1 to 2 m and can deposit on the surfaces. The virus may be destroyed by using various disinfectants like hydrogen peroxide and sodium hypochlorite. The Corona virus infection bring in by inhalation of the infected droplets or by touching the contaminated surface and then touching the mouth, nose and eyes.

The incubation period of the Coronavirus is from 2 days to 14 days. It has been observed that Angiotensin receptor 2 is the receptor by which the virus invades the respiratory mucosa¹⁰.

Clinical features

The clinical features of Covid 19 are diversified, which ranges from asymptomatic environment to ARDS (acute respiratory distress syndrome) and multi organ dysfunction. The most frequent clinical features are cough, headache, sore throat, myalgia, fatigue and breathlessness. As the first week end, the diseases can advance to respiratory failure, pneumonia and even death can occur. This advancement is related with intense rise in inflammatory cytokines which consist of IL2,IL7,IL10, TNF- α ,MCP1,MIP1a¹².

Along with respiratory illness, some gastrointestinal symptoms features are also seen. These includes nausea, abdominal pain and diarrhoea. These gastrointestinal symptoms thought to occur because of binding of virus

glycoprotein to intestinal ACE 2 (Angiotensin Converting Enzyme) receptors¹³.

It has been seen that considerable number of death occurs in age group of 60 years or in those patients who had already suffering from co-morbid conditions like cardiovascular diseases, hypertension and diabetes¹⁴.

Diagnosis

Various diagnostic test are there to confirm if the patient is suffering from Coronavirus or not.

Those patients who are applicable for SARS-CoV-2 examination, the sample must be collect from upper respiratory tract (i.e nasopharyngeal swab and oropharyngeal swab) and if possible, sample can also be collected from lower respiratory tract (i.e sputum, bronchoalveolar lavage and tracheal aspirate.)¹⁵.The virus can also be present in stool, and in blood also if case is severe,

The chest X-ray mainly shows presence of bilateral infiltrates. CT imaging can also be done. CT imaging typically shows presence of ground glass opacities, infiltrates, and sub segmental consolidation¹⁶.

Presently, for confirming the cases, RRT-PCR (Real Time Reverse Transcription). For fast detection, an advanced kit is made for detection of serum immunoglobulin which provides results in 15 minutes in suspected cases¹⁴.

Laboratory findings

Various other laboratory investigations are routinely non-specific. The white blood cell count is generally either normal or low. The platelet count is generally normal or mild low. The ESR and CRP are mostly elevated. the prothrombin time, CPK, ALT/AST, LDH level is seen to be elevated^{17,18}.

Some patients shows increased level of Creatine Kinase, C-reactive-protein, Elevated Aspartate Aminotransferase and Creatinine¹⁹.

Treatment



Patients need vital organ support. Antibiotics could be started if it is suspected that there is secondary bacterial infection, after dispatching sample for culturing²⁰.

Medicines like Chloroquine and Remdesivir are seen to be effective in vitro. Advanced therapies like Leronlimab, Brilacidin are being tested in conjunction with some distinct Antivirals like Lopinavir, Ritonavir and Oseltamivir. Recently, plasma from the recovered patients is used for treatment of patients.^{21,22}

Preventive measures

It is seen that the best way to pause the spread of infection is prevention. Hand hygiene comprises the use of alcohol-based hand rubs before as well as after contact with each and every patient. It is also suggested that to follow hand hygiene before as well as after food preparation, before eating, even after removing the face masks as well as hand gloves. The health care workers are suggested to always wear personal protective equipment. Also, always use N95 masks and eye shields during taking of respiratory samples²⁰

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