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COVID-19 pandemic: A literature review

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Abstract

Corona virus disease (COVID-19) is an infectious disease caused by a newly discovered corona virus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. The first case of COVID-19 in India, which originated from China, was reported on 30 January 2020. India currently has the largest number of confirmed cases in Asia, and has the second-highest number of confirmed cases in the world after the United States, with more than 9 million reported cases of COVID-19 infection and more than 100 thousand deaths. By mid of 2020, India had approached in position of conducting highest number of daily tests in the world which subsequently translated to a high number of positive cases. The per day cases peaked mid-September in India with over 90,000 cases reported per day and have since come down to below 40,000 in December ^[1].

Keywords: COVID-19, Virus, Disease

Introduction

The pandemic namely corona virus is rapidly out breaking from its primary source i.e. from the city of Wuhan, situated in China to the entire world ^[2]. This disease is a serious out break to the rest of the countries, resulting in damaging effect to the human body. This article gives broad spectrum of view for the pandemic disease ^[3]. Firstly in the month of December 2019; many patients of unspecified etiology of pneumonia which all had a history of visit to seafood whole sale market in Wuhan, China were come across. The virus causing COVID-19 has been named by international committee on taxonomy of viruses as Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) in month of February 11, 2020. The virus causing this pandemic disease is termed as COVID-19 by the world health organization on 11th February 2020 ^[4]. Recently, Corona virus has become a critical condition of international concern of public health, WHO stated its danger to the extreme highest level. This virus has damaging effects over various human organs like lungs, can disrupt cardiac function by affecting the heart, may lead to renal problem by affecting the kidneys, hepatic dysfunction, and also affect genital organs of the human body ^[6].

The numbers of confirmed cases worldwide as of 23 November 2020 are 58,425,681 with over 1,385,218 deaths as per WHO COVID -19 Dashboard. The largest numbers of cases have been reported in U.S.A with over 11,972,556 cases and 253,931 deaths followed by Brazil and Russia with 6,052,786 and 2,114,502 confirmed cases. China where the pandemic began has reported 92,733 confirmed cases with 4,749 deaths till now. In India there have been 9,139,865 total cases with over 133,738 deaths till now (23 November 2020). This pandemic has led to worldwide lockdown, strangling of the global economy and devastation of human life ^[7].

Incubation period

According to the Centers for Disease Control and Prevention (CDC), the mean incubation period of COVID-2019 is approximately 5.1 days (range 2-14 days) ^[8].

Pathogen

SARS-CoV-2 is an animal virus that belongs to the b-corona virus genus. Current studies showed that bats, snakes, and pangolins may be the hosts for SARS-CoV-2. Result of genetic sequencing shows that bats are the primary host for corona virus as the homology between two coincides 96% (16) but the intermediate host for the same virus is still unknown ^[9].

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Clinical presentation

The patients infected with COVID 19 can either be asymptomatic (without any symptoms) or symptomatic. The most common symptoms of COVID-19 are

- Fever
- Dry cough
- Fatigue

Other symptoms that are less common and may affect some patients include

- Loss of taste or smell,
- Nasal congestion,
- Conjunctivitis (also known as red eyes)
- Sore throat,
- Headache,
- Muscle or joint pain,
- Different types of skin rash,
- Nausea or vomiting,
- Diarrhea,
- Chills or dizziness.

Symptoms of severe COVID-19 disease include

- Shortness of breath,
- Loss of appetite,
- Confusion,
- Persistent pain or pressure in the chest,
- High temperature (above 38 °C).

Other less common symptoms are:

- Irritability,
- Confusion,
- Reduced consciousness (sometimes associated with seizures),
- Anxiety,
- Depression,
- Sleep disorders,
- More severe and rare neurological complications such as strokes, brain inflammation, delirium and nerve damage ^[10].

Investigations

Polymerase Chain Reaction method is considered as the 'gold standard' for the detection of some viruses because of its high sensitivity, specificity and rapid detection. So, real-time reverse transcriptase-PCR (RT-PCR) has been used for the detection of SARS-CoV-2 due to these benefits. However, the sensitivity and specificity of the real-time RT-PCR test is not 100% and it has its own disadvantages which include false negative and false positive results. RT-PCR should be combined with other diagnostic modality like computed tomography (CT) of the chest in an appropriate clinical setting to best investigate any patient. Chest ultrasound is primarily performed in some centers to triage patients, to monitor treatment effects, and for diagnosing complications of COVID-19 pneumonias, such as pleural effusions ^[11].

The other common laboratory investigations include chest x-ray complete blood count, coagulation profile, serum biochemical tests (KFT, LFT, creatine kinase, lactate dehydrogenase, and electrolytes), myocardial enzymes, and procalcitonin. The most common reported laboratory findings include leucopenia (WBC count) ^[12].

Treatment

Till date no effective cure (vaccination /antiviral drugs) are available. However on May 1 2020 FDA issued an emergency use authorization for the investigational antiviral drug remdesivir for the treatment of suspected or laboratory confirmed COVID-19 in adults and children hospitalized with severe disease. The investigational drug has been shown in a clinical trial to shorten the time to recovery in some patients. Various other drugs which have been used as treatment with variable benefits include interferon α and β , Lopinavir/ritonavir, Faviparivir, Umifenovir, Darunavir, Sarilumab, chloroquine and hydroxychloroquine.

However, supportive care to help alleviate symptoms is the best current approach being followed by all the medical centers worldwide. Supportive care includes isolating the patient to a negative pressure isolation room, and providing adequate rest, hydration, nutritional support and electrolyte balance. Complicated cases developing respiratory failure, ARDS, heart failure and septic shock also require a high level of care and other life support like invasive ventilation, extracorporeal membrane oxygenation (ECMO), and renal replacement therapy and so on ^[13].

Prevention

No effective treatment/vaccination are available till date. As the infection spreads through droplets and close contact so following preventive measures have been advocated. To prevent the spread of COVID-19:

1. Clean your hands often. Use soap and water, or an alcohol-based hand rub.
2. Maintain a safe distance from anyone who is coughing or sneezing.
3. Wear a mask when physical distancing is not possible.
4. Don't touch your eyes, nose or mouth.
5. Cover your nose and mouth with your bent elbow or a tissue when you cough or sneeze.
6. Stay home if you feel unwell.
7. If you have a fever, cough and difficulty breathing, seek medical attention ^[14].

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