

## MINI REVIEW

# Systematic Mini Review on Out Break of Corona Virus

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Received: 19 May 2022; Accepted: 13 June 2022; Published: 20 June 2022

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### **ABSTRACT**

Now a days COVID-19 is one of the most dangerous, transmissible and infectious disease. COVID-19, the disease caused by SARS-CoV-2, is a highly infectious disease. This corona virus is originated from Wuhan in China and has now spread to all over the world. This COVID-19 was first reported from place Wuhan, Province in the country of China in the month of December 2019. It was spread on world-wide eventually the name labelled as a “Pandemic virus” declared by World Health Organization (WHO) on 11-03-2020. The outbreak of corona virus caused by SARS-CoV-2, symptoms of this corona virus 2 days - 14 days after exposure this time exposure that symptoms period is known as “Incubation Period (IP)”. Common symptoms of this virus Fever, cough, cold, sore throat headache and shortness of breath etc. At this stage, preparedness, transparency, and sharing of information are crucial to risk assessments and beginning outbreak control activities. This mini review systematically summarizes and consolidates the protection, diagnosis, treatments, and preventions of this new type of coronavirus, and it is hoped that this review will provide a reference for future studies.

### **KEYWORDS**

COVID 19; SARS-CoV-2; Incubation period; Pandemic virus

### **INTRODUCTION**

A virus originated in bats and was transmitted to humans through yet unknown intermediary animals in Wuhan, Hubei province, China in late December 2019. After analysis of respiratory samples, the experts at the PRC Centres for Disease Control declared that the pneumonia, later known as novel coronavirus pneumonia (NCP), was caused by a novel coronavirus [1]. The World Health Organization (WHO) officially named the disease as ‘COVID-19’. The World Health Organization has declared the ongoing outbreak to be a global pandemic virus disease COVID-19, the disease caused by SARS-COV-2. The virus originated from bats and it was transmitted to humans. This corona virus causes severe respiratory infections. Corona virus enters into human cell through membrane ACE2 receptor. The virus disease is transmitted human to human by infected patient via airborne

droplets and the incubation period ranges from 2 days to 14 days. The symptoms are usually fever, cold, cough, breathlessness and sore throat. And also, it may cause pneumonia and multi organs dysfunction. The virus spreads faster than its two ancestors the SARS-CoV and MERS-CoV but has lower fatality. Corona virus shows spike like projections and on its surface crown like appearance. These corona viruses came from the SARS and MERS viruses which are the old viruses. The virus originated from bats these are the main host of this pandemic virus. In one way, this corona virus spreads mostly human to human through droplets. Most damaged organs by SARS-CoV-2 are the lungs. These are the primary site of injury by SARS-CoV-2 infection, which causes COVID-19. The kidneys, liver and digestive tract can also be seriously injured. In addition to this, blood vessels may also be a site for damage with the effect of this corona virus. In generally the corona virus spread via air borne droplets and it was replicated in ciliated epithelium that caused cellular damage and infection at infection site. By the study of angiotensin converting enzyme 2 (ACE2) is the receptor used by corona virus entry to human cells [2-4]. Till there are no treatments for this infection, prevention is a crucial method. Isolation of confirmed or suspected cases with mild illness at home is highly recommended to protect our lives. Usually, the ventilation at home should be good with sunlight to allow for destruction of virus. Particularly patients of corona virus should be asked to wear a simple surgical mask and practice cough hygiene. Its highly important to avoid the contacting with other persons and maintain social distance to avoid the spread of corona virus. Finally, we can say that the COVID-19 virus is a dangerous virus; its main initial symptoms are fever, cough and cold.

### **HOST OF THE VIRUS**

In fact, wild animals and bats are considered as the natural hosts and play a vital role in transmitting various viruses, including Ebola, flu, Nipah and Coronavirus [5,6]. SARS-CoV-2 is the seventh member of the family coronaviruses, which is the beta-CoV with over 70% similarity in genetic sequence to SARS-CoV [7]. Like SARS-CoV, MERS-CoV, and many other coronaviruses, SARS-CoV-2 likely originated from bats, but it requires further confirmation of whether pneumonia infection by the SARS-CoV-2 is transmitted directly from bats or through an intermediate host [8,9].

It is an important point that Bats are the most possible host of the SARS-CoV-2 virus [9]. Subsequently, those pangolins are intermediate hosts, but in general, there may be multiple intermediate hosts [10]. For many viruses, one of the key steps in the emergence process is the through animals to humans.

### **DIAGNOSIS**

The SARS-CoV-2 infected disease cases have symptoms like fever, fatigue, dry cough, dyspnea etc. with nasal congestion, runny nose or other upper respiratory symptoms [11,12].

### **PHYSICAL EXAMINATION**

Patients with mild symptoms may not present positive signs. Patients in severe condition may have shortness of breath, fever, moist rales in lungs, weakened breath sounds, dullness in percussion, and increased or decreased tactile speech tremor, etc.

## **CLINICAL INFORMATION**

A wide range of clinical information is seen in patients with SARS-CoV-2 from mild, moderate, to severe and rapidly progressive and fulminant disease. Most of the patients with SARS-CoV-2 were normal and mild, and interestingly their mortality rate was lower than in SARS-CoV and MERS-CoV.

## **INCUBATION PERIOD**

In most of the recent publications, the mean incubation period of COVID-19 was a little bit different. According to Wang et al., with 138 cases, reported that the median durations from first symptoms to dyspnea, hospital admission, and acute severe respiratory syndrome (ARDS) were 5 days (range, 1-10), 7 days (range, 4-8), and 8 days (range, 6-12), respectively [11].

Overall, the mean time from symptom onset to hospitalization was between 2 days and 8 days but was shorter toward the later phase of the epidemic. Moreover, the mean time from symptom onset to need for invasive mechanical ventilation (IMV) and to death was 11 days and 23.7 days, respectively [13].

## **USE OF THE MASKS**

Facial masks (breathing masks) are made of materials consisting of spun bond, melt blown, and activated carbon. Activated carbon combination masks can cut toxic pollutants.

Masks protect the wearer and others in a number of different ways. There are two “intuitive ways” that masks filter larger aerosols: mechanical interception and inertial impaction. The denser the fibres of a material, the better it is at filtering. That’s why higher thread counts lead to higher efficacy. There’s just more to block the virus. But some masks (such as those made from silk) also have electrostatic properties, which can attract smaller particles and keep them from passing through the mask as well.

There are two types of face masks that can help cut our odds of getting corona virus. The two face masks are 1) Surgical face masks 2) Respiratory masks. The second type masks are also known as N 95 masks.

The general public does not need the N 95 respirator. The N 95 respirator filters at least 95% of airborne particles but is not resistant to oil [14]. Filtering face piece respirators, commonly referred to as N 95 masks, are regulated by the National Institute for Occupational Safety and Health. N 95 masks provide better protection against corona virus particles than cloth or surgical masks and are covered by health care providers and emergency medical workers. N 95 respirators have an important role in protecting those at the greatest risk of infection. The N 95 mask is meant for healthcare workers and according to the WHO, N 95 mask can be used for many patients with the same diagnosis up to a period of 4 hours.

## **TREATMENT OF CORONAVIRUS BY USING SOME IMPORTANT DRUGS**

Study progress is being made in the treatment of patients hospitalized for corona virus. New generation of drugs should stop the virus altogether before it has a chance to cause much damage to our society.

Treatment of corona virus is mainly focusing on Two Phases.

### **Infection Phase**

In this phase only requires for symptomatic treatment. Infected patients suffered from fever, with or without respiratory symptoms, this patient needs testing only if there is a high risk of contagion.

### **Pulmonary Phase**

In this phase requires mostly antiviral treatment. Patient shows fever, bilateral pulmonary consolidations, this patient needs to be hospitalized immediately. The currently available drug options are: Hydroxychloroquine, Remdesivir, Lopinavir.

### **HYDROXYCHLOROQUINE DRUG**

Hydroxychloroquine is a derivative of chloroquine drug which pH of endosome and lysosome essential for membrane fusion between host cell and the virus, this drug alters process of endocytosis. The basic properties and disruption of cellular vesicle compartments, chloroquine drug and hydroxychloroquine drug inhibits virion budding and forming of mature versions [15]. Chloroquine and hydroxychloroquine appear to block viral entry into cells not only by inhibition of endosomal acidification, but also by inhibition of glycosylation of host receptors and proteolytic processing, a critical passage of virus cellig and recognition [16]. Chloroquine and hydroxychloroquine are given orally and are generally well tolerated; however, they can cause rare and serious effects such as hypoglycemia, neuropsychiatric and retinopathy.

### **REMDESIVIR DRUG**

Remdesivir drug was developed by Gilead Sciences and emerged from collaboration between Gilead, the U.S. Centres for Disease Control and Prevention (CDC) and the U.S. Remdesivir is one of the most promising antivirals in fighting SARS-CoV-2. Remdesivir is an intravenous antiviral drug that is developed to block infection with related corona viruses and even Ebola and is one of the drugs the WHO is helping to investigate. Remdesivir is an adenosine nucleotide analogue prodrug with broad spectrum activity against pneumoviruses, filo viruses, para myxoviruses and coronaviruses [17]. It can inhibit the replication of multiple coronaviruses in respiratory epithelial cells. Remdesivir is currently being tested for antiviral activity against the Ebola virus [17].

### **LOPINAVIR/RITONAVIR DRUG**

The main protease is another suitable drug target, one example in doing so is the combination of Lopinavir/Ritonavir [18]. Lopinavir/Ritonavir is a medication for the human immunodeficiency virus (HIV) used in combination with the medications to treat adults and children who are infected with HIV-1. Lopinavir in particular is an HIV-1 protease inhibitor, its combination with Ritonavir has shown to be effective against SARS-CoV-1 in patients and in tissue culture, Previous studies showed the combination of lopinavir and Ritonavir to be of some use for SARS-CoV-1 and MERS-CoV infected patients [19]. Ritonavir showed a somewhat higher number atomic contacts, a somewhat higher binding efficiency, and higher number of key binding residues compared to lopinavir, which correspond with the slightly lower water accessibility at the 3CLpro active site [20]. Adverse effects of Lopinavir/Ritonavir include gastrointestinal distress such as nausea and diarrhea, and hepatotoxicity [21].

## **ZOONOTIC NATURE OF THE COVID-19**

COVID-19 is a new strain that has not been previously identified virus in the human population. Coronaviruses are zoonotic, meaning they are transmitted between animals and people. The virus seems to be transmitted mainly via respiratory droplets that people sneeze, cough or exhale.

## **PROTECTION FROM COVID-19**

Some basic protective measures against the COVID-19 recommended by WHO in the year 2020.

1. Wash your hands with an alcohol-based rub or wash them with soap and water frequently.
2. Maintain at least one-meter social distance between yourself and anyone who is coughing or sneezing.
3. Avoid touching eyes, nose and mouth.
4. Practice respiratory hygiene, yoga etc.
5. If you have fever, cough, and difficulty in breathing, seeks medical care at the earliest possible.
6. Stay informed and follows the advice given by the healthcare provider.
7. Avoid physical contact when greeting.
8. Be supportive, careful, alert, kind and ready to fight COVID-19.

## **CONCLUSION**

At the moment, we know relatively little about CoVID-19, except that it is a highly pathogenic human pathogen, possibly a zoonotic agent. Now that a pandemic has occurred, it is critical that countries around the world take steps to stop transmission and save our lives. In addition, we should actively study its origin, tropism and pathogenesis with the aim of providing some guidance in dealing with this rapidly spreading epidemic. Challenges remain in several key areas, including the recent cases of people who have tested positive for the virus. All of these suggest that we should develop more detailed criteria for the prevention and control of the virus and more stringent criteria for discharge of patient's aftertreatment. Although specific treatments for COVID-19 are not yet available, drugs are being tested and clinical trials and starting to yield results. This, combined with the further knowledge that scientists are gaining about SARS-CoV-2 will help massively until a vaccine becomes available.

## **CONFLICTS OF INTEREST**

The all authors declare there is no conflict of Interest.

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