Lockdown, Clinical Characteristics and Diagnostic Challenges of COVID-19

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The entire world is facing lockdown due to coronaviruses has been noticed. The outbreak of such coronavirus, known as COVID-19 came existence since late 2019 and early 2020. The first reported coronavirus patient was from Wuhan, China, on December 31, 2019. It was very rapidly spread across the world and killed several lives. Coronavirus looks very dangerous because there is no specific treatment and no vaccine came on this planet earth. It has been reported that coronaviruses appear to attack lung cells. Cells infected the coronaviruses generate more virus particles. These virus particles can then spread to other people by means of coughing and even aerosol transmission was also noticed in two Wuhan hospitals during the outbreak of COVID-19 in the months of February and March 2020.

Keywords: coronavirus ; COVID-19 ; lockdown ; pandemic

1. Introduction

Lockdown

Due to the pandemic of coronavirus, a frequently used word is a lockdown. In order to control for spreading coronavirus, the governments of different countries apply lockdown to most of the places. The actual meaning of lockdown is an official order to control the movement of people or vehicles because of a dangerous situation. Indeed, a lockdown is a necessity for people because of the specific risks if they travel freely. A lockdown will be used to protect people inside a facility from a threat. During the lockdown, the main gates are usually locked so that no one may come or go.

There are different forms of lockdowns. One is a full lockdown in which people must stay inside their home within their boundary and not allow to go out from the main gate. The term "stay-at-home" or "shelter-in-place", is also often used during lockdowns to escape from mass gatherings. Another form of lockdown is that people can go outside by maintaining some social distance in order to purchase very needy goods. 3.9 billion people worldwide were under some form of lockdown by early April 2020. It was really painful during the lockdowns. But it may control the epidemic that has involved isolation and quarantine, the lockdown of an entire world[1].

2. Clinical Characteristics

It is known that lockdown is due to the spread of coronavirus. The term "coronavirus" refers to a large number of viruses responsible for affecting birds and mammals, including humans. COVID-19, which first appeared in China in December 2019, is a type of coronavirus. These resemble the points on a crown. Corona means a crown, in Latin. There are hundreds of coronaviruses, but only seven trusted sources are known to affect people. Four human coronaviruses only cause mild cold- or flu-like symptoms. Three other coronaviruses pose more serious risks. Coronaviruses are zoonotic that is they first develop in animals before being transmitted to humans. For the virus to be transmitted from animals to humans, a person has to meet closely interaction with an animal that contains the infection. After viruses enter into people, coronaviruses may be transmitted from person to person via respiratory droplets.

Scientists have noticed some clinical characteristics that differentiate Covid-19 from SARS-CoV, MERS-CoV, and seasonal influenza infections. For instance, seasonal influenza is more common in respiratory outpatient clinics and wards, whereas for COVID-19, some unique additional characteristics are given in detail[2]. The causative pathogen of the COVID-19 outbreak has been noticed as a highly infectious novel coronavirus, which is now known as SARS-CoV-2[3][4][5]. It is possible that you could acquire SARS-CoV-2 if you touched your mouth, nose, or eyes after touching a surface or object that has the virus on it that is due of direct contact, but the potential for aerosol transmission was less reported[6][7][8]. The aerodynamic nature of SARS-CoV-2 was noticed by the measurement of viral RNA in aerosols at different areas of two COVID-19 outbreaks Wuhan hospitals in the month of February and March 2020[9].

It was found in the literature that from 2002 to 2003, SARS-CoV-infected people were around 8,000 with a fatality rate of ~10%. But the infected people in 2012 by MERS-CoV were more than 1,700 with a fatality rate of ~36%[10] and until 1:30 PM June 23, 2020, there have been 9,194, 960 confirmed cases of COVID-19, including 474,508 deaths reported to the WHO[11]. As the death toll mounts and millions of us are confined to our homes by COVID-19, it is difficult to ignore how connected we are to one another. But this tragedy also highlights how tied we are to wildlife, the likely source of the pandemic.

Some experts suggest that the spread of the virus from wildlife to humans came from a "wet market" in China, where live animals are purchased and slaughtered. It may have originated from a bat or an illegally trafficked scaly mammal called a pangolin or both. It should be noted that a direct link has not been established. But this proximity between people and wildlife (or sometimes domestic animals) has been shown to lead to 70 % of zoonotic diseases. Indeed, scientists in China repeatedly warned the world about the coronavirus risks of wildlife markets. The solution could not be more precise: one crucial way to reduce disease risk is to curb wildlife exploitation. China, to its credit, slapped a moratorium on live markets and a temporary trade ban earlier this year. But much more durable, broader action is needed around the planet. Wildlife trade is not the only cause of this dangerous problem. Human destruction of and infringement in animal habitats also increases disease risk. Together, these practices have helped spread truly terrifying zoonotic diseases. Ebola, for example, infected people as they entered pristine primate habitat and sought gorillas or chimpanzees for trade, food, or both.

Diagnosis, Treatment, and Prevention

In the previous days, it was not so easy for diagnose coronavirus. Recently, The WHO listed two COVID-19 tests for emergency use, namely the ***Real-Time PCR Coronavirus (COVID-19)*** (Primerdesign, United Kingdom). This test is an open system more suitable for laboratories with a moderate sample testing capacity. The other is the ***cobas® SARS-CoV-2 for use in the cobas® 6800/8800 Systems*** (Roche, United States of America), which is a closed system assay for larger laboratories. Currently, the RT-PCR test came the most popular method of choice for the diagnosis of SARS-CoV-2 and COVID-19[12][13][14][15][16][17][18][19].

Regarding the treatment of COVID-19, there are current therapies and antiviral treatments that are only preventive methods and will not cure completely. Current therapies basically deal with symptomatic and respiratory support[20]. Oxygen therapy and WHO recommend extracorporeal membrane oxygenation (ECMO) are using for patients with refractory hypoxemia[21]. For some critical cases, rescue treatment with convalescent plasma and immunoglobulin G is used[22]. For antiviral treatments, Remdesivir was successfully used to treat the first US case of COVID-19[23]. It was noted in the literature[24] that a repurposed drug that, chloroquine, has great potential to treat COVID-19. However, chloroquine is famous for the treatment of malaria[25]. Recently, a combination of chloroquine and remdesivir was proven to effectively inhibit the emerged SARS-CoV-2 in vitro[24]. Protease inhibitors like lopinavir and ritonavir, which were utilized for HIV treatment[26], could improve infections of MERS-CoV[27] and SARSCoV[28] patients. It was observed that the β-coronavirus viral loads of a COVID-19 infected patient in Korea remarkably improved after treatment with lopinavir/ritonavir[29]. Recent studies on COVID-19 treatment that dexamethasone reduced the number of deaths in coronavirus patients requiring a ventilator by one-third, and for those requiring oxygen, the number of deaths was reduced by one-fifth. Full details of the Oxford study have yet to be published, but the researchers are planning to do so as soon as possible[30].

Therapeutic SARS-CoV neutralizing antibodies were generated and used again in the incident of another SARS-CoV outbreak[31]. Such antibodies will be effective for saving our healthcare people. It is a well-known proverb in healthcare systems in which prevention is better than cure. For the preventive aspect of COVID-19, vaccines are essential to discover. For this, the virus genome was very quickly sequenced, which allowed the development of diagnostic tests and for research into vaccines and therapeutics to start [32].

Vaccine Development

Indeed, it is a big challenge to develop a COVID-19 vaccine both scientific and logistical because it is very difficult to understand how the immune system reacts not only with the pathogen but with the vaccine itself. Scientists normally agree that animal experiments and human clinical trials of candidate vaccines for COVID-19 should do a careful evaluation of possible immune complications before coming to the vaccine to the public[33]. Scientists can not guarantee the availability and accessibility of the COVID-19 vaccine. The way out of this pandemic will be built on the established public health practices of testing, contact tracing, quarantine of contacts, and isolation of cases[34]. The vaccines for COVID-19 are still under development[35].

The entire world has faced the problem of COVID-19. Due to this pandemic, the lockdown is still happening on this planet Earth. This lockdown has created a financial crisis in the world. In such situations, medical experts are trying to cure COVID-19 through different drugs and have not got success completely. To control such Pandemic, one needs to have a permanent vaccine so that the entire world will revive from free of COVID-19. To achieve the discovery of such a vaccine, one needs to wait because scientists are trying their best and have already started a trial for vaccines on animals and if it successes then it will come for human beings. This COVID-19 is giving a very powerful message to the entire human being that we should not use the same way of living as before COVID-19.

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