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Article Review: Overview of Covid-19

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ABSTRACT

The coronary virus family involves human pathogens of great importance, so that at the end of December 2019, the new CORONA virus was identified as the origin of a set of cases of pneumonia of unidentified causes in Wuhan, a city in China's Hubei Province. The recent coronavirus quickly turned into widespread and challenging to deal with, leading to its transmission throughout China, followed by a rising number of cases in many communities around the world. COVID-19 is spread through large drops generated during coughing and sneezing by cases with symptoms of the disease, as well as individuals who do not show manifestations before their symptoms begin. Many research has reported that the incubation period for Coronara virus infection 2 (SARS-Cove-2) is 14 days after exposure to the virus four to five days. People of all ages may be infected with SARS-HIV-2, although people are common in middle-aged and older age groups. The clinical characteristics that accompany the patient include fever, dry cough, fatigue, sore throat, runny nose, conjunctivitis headaches, muscle pain, shortness of breath, nausea, vomiting and diarrhea. So, however, there are no particular clinical features that accurately differentiate COVID-19 from other viral infections in the upper/lower airway. In a subset of cases, however, by the end of the first week of infection, COVID-19 may progress into pneumonia and pulmonary failure followed by death. The aim here is to discuss COVID-19 in term of virology and epidemiology to continuing clinical demonstrations, diagnosis and complications, and to complete possible management options and conclusion.

Keywords- Cryptosporidium Parvum, Chronic diarrhea, Entamoeba histolytica, Giardia lambilia, Modified Zeihl Neelsen staining, ELISA.

I. INTRODUCTION

The virus simply recognizes it as an opportunistic intracellular parasite. Each viral particle, or virion, naturally comprises a single DNA, either RNA or DNA, encoding the viral genome enveloped by a protein coat, capable of replicating only within living cells of bacteria, animals or plants. Viruses are distributed into distinct orders and families carried out the type of DNA present (RNA or DNA), whether the DNA is mono or double, and the presence or absence of an envelope (1).

The typical virus comprises a protective protein coat, known as capsid. The shape of this capsid gradually varies from simple helical forms and icosahedral forms down to overly complex structures combined with tails. The function of this Capsid is to hand over protection for the viral genome against the environment and functions in recognizing receptors, targeting the virus to the weak host and confirming the cell type (2).

Viruses are one of the extremely abundant and diverse biological pathogens on earth. Millions of years have proceeded in their development to be close to their susceptible hosts. These viruses have very particular manners in which they target and infect host cells. The initial stage of viral tropes is determined by the path of infection needed to reach specific host tissues, such as lung tissues. For example, influenza A virus is transmitted by spreading infected aerosols during coughing and sneezing, allowing the infection to reach into the respiratory system where its target cells are located. At the end of 2019, the novel coronavirus was investigated in Wuhan, China, where at least 830 cases were recognized on January 24, 2020 in nine countries: China, Japan, South Korea, Thailand, Singapore, Nepal, Vietnam, Taiwan and the United States. There were 26 deaths, most of them appearing in patients with a history of serious underlying disease. Although there are many details about the emergence of this virus, particularly with regard to its origin and its ability to spread among humans - it remains unidentified, it appears that the increasing number of infections with daily suspicion was caused by human-to-human transmission, and the outbreak of the virus in humans is not old and in 2002 was preceded by the outbreak of coronavirus leading to severe acute respiratory syndrome (SARS-KOV) and then in 2012 preceded by the outbreak of (MERS-CoV) leading to respiratory syndrome in the East. While the corona virus disease (2019-nCoV) was the third virus to turn out in the population in the past two decades, provoking high alert in public and global health institutions (4, 5).

Several regions around the world, including the United States, are screening travelers from Wuhan for fever, to distinguish cases of covid-2019 before it develops more widely. Updates from China, Thailand, Korea and Japan show that the CORONA-2019-related

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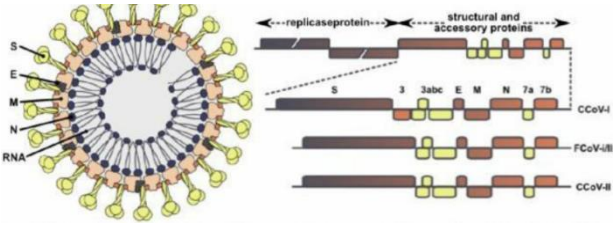
disease-causing respiratory syndrome appears mild compared to SARS and Middle East Respiratory Syndrome (6).

In fact, coronary viruses have a big family of viruses that can infect birds and mammals, including humans. According to the World Health Organization, these viruses have been responsible for many outbreaks around the world, including the severe acute respiratory syndrome (SARS) epidemic that swept the world in 2002-2003 and the outbreak of Middle East Respiratory Syndrome (MERS) in various regions of South Korea in 2015. More recently, a new coronavirus (SARS-Cove-2), also known as COVID-19, has emerged in China, which has caused international concern. While some coronary viruses have caused devastating epidemics, others precipitate mild to moderate respiratory infections, such as colds (7).



Coronavirus structure and comparison of CCoV and FCoV genome.

There are now over 73,435 confirmed cases of coronary virus disease 2019 (COVID-19) and over 2,000 deaths worldwide, approximately often in China. By contrast, the SARS virus killed 774 individuals in 2003, from China. COVID-19 and SARS spread across regions, infecting both animals and humans, and both viruses used similar mechanisms to penetrate and infect the cell. On the front line, covid-19's tactical response is like that of SARS, but there is one major difference. In the past 17 years, SARS has emerged, a compelling new tool has emerged that could help keep this virus within reasonable limits through artificial intelligence. In a hospital in the United States of America, one of the first warnings sounded on December 30, 2019, about 30 minutes before a scientist declared an alert in the Emerging Disease Monitoring Program (PMED). However, AI technology has not yet been useful and guaranteed for further tracking and prediction of how COVID-19 will spread. For several reasons (8,9), the first is that artificial intelligence requires data on COVID-19 that requires training. An example of how to do this is to predict the spread of Zika virus using a dynamic neural network (Akhtar et al. 2019). Because COVID-19 differs from Zika virus, or other infections, and because at the time of writing there is still not enough data to develop a regular artificial intelligence that can track and anticipate its spread. Most of the increasing number of publications that have reported the use of ARTIFICIAL INTELLIGENCE for diagnostic and predictive purposes so far are working on small, biased samples based in China that have not been peer-reviewed (10).

However, the trend has used several promising data collection and sharing initiatives - whether pre-existing or new data, or to train new artificial intelligence models. This research is part of the WHO Global Research Database on Coronary Virus Diseases, including GISAID Open Access Data (the Global Initiative on The Sharing of All Influenzas Data). Among other initiatives, perhaps the most ambitious is the joint initiative between semantic researcher, Allen Institute of Industrial Intelligence, Microsoft, Facebook, etc., to have an available domain (11, 12).

Few involved suggest that AI technology is bringing about a typical shift in health care, and there may be value in dealing with ARTIFICIAL INTELLIGENCE at the current COVID-19 outbreak, for example, when trying to predict where the next outbreak is. So this application is useful as decided by the Canadian company, Blue Dot, and it was reported as the first organization to report the news of the outbreak, in late December other applications for artificial intelligence were maintained and responded to the new epidemic benevolent and Imperial College London, which is a certified drug for rheumatoid arthritis, Parisianib, which may be active against the virus, while reported Insilico Medicine based in Hong Kong Artificial intelligence algorithms have been invented six new molecules that can break into viral transcription (13, 14). Since David Heyman led the global response to SARS, it has been showed whether artificial intelligence exists, there are many key components demanded for a prosperous public health response to infer a new infection outbreak, including figuring out the capacity to convert and investigate risk groups; risk factors; and factors for deciding the status of the natural history of infection, including incubation period, illness and potential mortality rate, with the recognition and identification of the agent causing the infection, but occasionally, many epidemiological models have been developed. To plan effective prevention and control methods (15). This essential information can be taken and gathered from employees at outbreak sites that are closely linked to the World Health Organization (WHO). This strategy has been a great success in SARS and has been seen as a major source of information for COVID-19, and emphasizes that this data can be used and operated to train and prepare the AI application for its dedicated mission. "We cannot replace the human brain at this stage, nor the epidemiologist or virologists with anything that can interpret what is necessary and do it at the start point of the outbreak. We still demand that artificial intelligence with information that will be based on considering evidence and linking all of this to the events of the outbreak," highlighted Heyman Peter Hutz (Baylor School of Medicine, Houston, Texas, USA) that ARTIFICIAL INTELLIGENCE can assist to current

outbreak improvements, while using it to predict the effect of the COVID-19 outbreak. It has been pointed out that in the northern hemisphere, the prevalence of upper respiratory coronary viruses peaks in the winter days and subsequently reduces (16, 17). Artificial intelligence may help predict the warmth of the weather, as April and May may have a valuable effect on the progress of infection. It becomes today been reported that such an application could support us stabilize the financial markets of Asia. Because of the covid-19 epidemic, people think that the end of the world is coming, but there are data that express what is declared to be a diminished epidemic and when spring arrives, it may provide some reassurance, and artificial intelligence can play a role here (18). Because it may come into effect by cutting down the burden on doctors in a scenario like the current COVID-19 outbreak." Infervision founder, Kuan Chen points out that Infervision application could maintain keep employees because of growing concern about the increasing spread of the current outbreak among health-care workers, the death of Dr. Li Wen liang, on February 7, 2020, which Chinese authorities reprimanded for warning of the spread of the virus, highlights the predicament of physicians on the front line (19).

II. COVID-19

In 2019, the Centers for Disease Control and Prevention (CDC) initiated monitoring and consciously exploring the outbreak of a new coronavirus, SARS-Cove-2, which allows a direct effect on the respiratory system and causes pneumonia, called COVID-19. Health authorities first identified him in Wuhan, China, affecting over 74,000 Chinses. Health authorities have announced that many people around the world, including the United States, have been infected. On January 31, 2020, the most common cause of transmission is from person to person. WHO then declared public emergencies referred to COVID-19. Since then, the strain has been diagnosed in many people living in the United States, and to reduce and prevent infection, the Centers for Disease Control and Prevention has reported that the virus is likely to spread to more people, as COVID-19 has caused significant disruption to at least 25 other countries (20).

Some note that people who were initially infected with COVID-19 had contacts with animals and seafood. This evidence appearances that these animals initially contributed to the transmission of the virus to humans. However, newly diagnosed persons had no links to or exposure to the market, which confirms that humans have the potential to pass on and transmit the virus to others (21).

Information on the virus is currently limited, but in the past, respiratory diseases caused by coronary viruses, such as SARS and Middle East Respiratory Syndrome, have spread through close contacts. On February 17, 2020, at a press conference, the Director-General of the World Health Organization (WHO) provided an update on how often COVID-19 symptoms could be severe or fatal, based on data from 44,000 people who have suffered from symptoms of the disease and who have been confirmed:

The first indicators of the biological nature of viruses were accompanied by investigations conducted in 1892 by the Russian scientist Dmitry I. Ivanovsky later in 1898, which was conducted by the Dutch scientist Martinus W. Beijerinck and assumed for the first time that the virus under study was a new type of infectious agent, called contagium vivum fluidum, so it is a different cloned organism from other organisms (22, 23). Two researchers found that a disease affecting tobacco plants and the fact that it is transmitted by a causative agent later called the tobacco mosaic virus passes through an accurate filter that can prevent the passage of bacteria. This virus was later discovered not to grow on an artificial medium and was not seen under a microscope, where British researcher Frederick W. Twort, in independent studies applied in 1915, the French-Canadian scientist Félix H. d'Hérelle was followed in 1917, where they identified lesions on bacteria farms and were referred to an agent called bacteria ("bacteria eaters"), now known as viruses that infect bacteria in particular (24). It may cooperate to understand that the unique nature of all these factors results from developing alternative models and updated methods for their study and classification. However, the study of viruses of all kinds is limited to humans. In 1933, a very important problem was posed, which was to find a sensitive animal host. In line with this discovery, the Wilson Smith, Christopher H. Andrewes, and Patrick P. Laidlaw could transmit the influenza virus to rodents. After that, the growth of the influenza virus was adapted to mice, and in 1941, an American scientist George K. Hurst found that the influenza virus, which could grow well on chicken embryo tissue, was detected through its ability to agglutinate (draw together) red blood cells (25).

III. TYPES

Coronavirinae viruses belong to the Coronavirinae family, which differ in the severity of their disease transmission, with medical experts currently finding seven types of these viruses that infect humans (26).

Common types

1. 229E (alpha coronavirus)
2. NL63 (alpha coronavirus)
3. OC43 (beta coronavirus)
4. HKU1 (beta corona virus)

These strains are among the rarest of strains that cause extremely serious complications MERS-CoV, causing Middle East Respiratory Syndrome (MERS), and SARS-CoV, the virus responsible for severe acute

respiratory syndrome (SARS). In 2019, a risky new strain called SARS-CoV-2 began spreading, causing the disease COVID-19 (27).

IV. HISTORY OF CORONA VIRUS

The transmission of Coronavirus virus disease (COVID-19) has developed into a global epidemic disease with a high prevalence rate with transmission of the virus by a mechanism that is not totally interpreted. The affected patient usually presents with limited or no symptoms, and the disease may also complicate, contributing to rapidly progressing, generally fatal pneumonia in 2-8% of those infected (28, 29, 30).

The dynamics of mortality and spread of the disease are still somewhat unclear in part because of the unique challenges of SARS-CoV-2 infection, such as the severity of peak infection when symptoms of the disease appear or even before they appear, as well as the understood multi-organ physiology, which decimating the lungs (31). The rapid spread of infection has strained and impaired distinct health-care systems around the world because of a marked lack of key prevention and protection equipment and a decrease in the number of qualified health service providers (Government of Canada, 2020), partly changing access to care point testing methodologies, including reverse polymerase chain reaction (RT-PCR). As the rapid RT-PCR test becomes widely available, challenges remain, including the increasing emergence of false negative rates, delays in providing treatment, changes in multiple testing techniques, and a sensitivity level sometimes reported as 60-70% (32, 33).

Computerized tomography (CT) is one of the medical examinations that provide a window into the pathophysiology, which can shed light on several stages to discover the disease and its stages of development (34), as front-line radiologists have declared that the pattern of infection with the Corona virus is distinguished to a certain extent. What are typical features including ground-glass opacities in the lung's periphery, state of the round opacity, and level of intra-infiltrative vascular enlargement, while computed tomography (CT) scans with RT-PCR (polymerase chain reaction) are often identical to the diagnosis (35), but using CT scans, COVID-19 can be detected early in patients who show a negative RT-PCR test, in asymptomatic patients, in pre-symptomatic or after symptom resolution (36). The CT assessment has been considered an effective and integral part of the initial assessment of persons suspected or confirmed to have been diagnosed with MERS-CoV in numerous centers in Wuhan, China, and northern Italy (37). A recent global consensus report supported those experts computed tomography of COVID-19 cases with worsening respiratory conditions or with moderate to severe clinical symptoms with a high probability of contracting COVID-19 (38). However, it is recommended that chest CT not be applied in screening or diagnostic settings in part because of the similar radiographic presentation with other influenza-associated pneumonias. Given the burgeoning number of new and suspected COVID-19 cases, artificial intelligence (AI) approaches to detecting or indicating COVID-19 may cooperate to image. So computed tomography provides a simple and fast view into the process, and multinational deep learning processes of computed tomography data can provide automated and reproducible biomarkers for the classification and quantification of COVID-19 disease, as previous investigations of the single center showed the feasibility of artificial intelligence to distinguish infection COVID-19, or even differentiation from community-acquired pneumonia (39, 40).

AI models are often highly restricted in terms of utility because of the homogeneity of data sources, which narrows their appropriateness to other populations, geographical areas, or demographics. This study aims to develop and evaluate the AI algorithm for detecting COVID-19 semen based on chest CT scans applying a globally diverse and multi-institutional data set. Here we present powerful models that can achieve up to 90% accuracy in independent test groups, maintain high privacy in non-COVID-19 pneumonia, and show sufficient generalization of invisible patient groups/centers (41).

Table 1: Comparison of key features of influenza, SARS-CoV-2, respiratory syncytial virus (RSV) and rhinovirus

Key features	Seasonal Influenza	SARS-CoV-2 (COVID-19)	Respiratory Syncytial Virus (RSV)	Rhinovirus
Most common symptoms	Sudden onset of fever, dry cough, chills, headaches, fatigue, sore throat, runny nose, muscle pain or body pain (1, 2).	Like influenza with the possibility of other symptoms, including loss of taste and smell (3).	Similar to influenza (1, 2).	Runny nose, sneezing and coughing with sore throat, muscle pain, fatigue and mild fever (1, 2).
Most common symptoms/ More severe manifestation/ complications	Lower respiratory infection in infants most important (pneumonia, bronchitis) (1),	Pneumonia, bronchiolitis, and death (1).	Pneumonia, blood clots, sepsis, cardiac, neurologic, and renal involvement (4), multisystem	Lower respiratory infection in infants is most important (pneumonia, bronchitis) (1),

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	bronchitis (2).		inflammatory syndrome in children (MISC), death occurring (5).	bronchitis (2).
Risk groups for complications	Young children, elderly people, subjects with underlying medical conditions, including immunodeficiency patients; obese people. Pregnant ladies (2).	Elderly population, underlying medical conditions, including immunocompromised (5, 6); obese people (6).	Infants and children under the age of 2 with chronic lung disease or congenital heart disease or; premature babies, elderly and immunocompromised cases (1, 2).	Young children; cases of immunodeficiency, or respiratory diseases (1).
Strains	Of which frequent mutations, different types, other subtypes, and strains (1).	Mutations, however, there are no major genetic changes yet (7).	Subgroups and genotypes (1).	Several serotype (1, 2).
Incubation period (period of time from exposure to symptoms)	1 to 4 days (8).	1 to 14 days; median: 5 to 6 days (8).	3 to 7 days (8).	2 to 4 days (8).
The time period of communicability that can be transmitted to others	One day before and up to about 5-10 days after the onset of symptoms (peak 24-48 hours after symptoms) (1, 8).	The transmission period is still uncertain, but medical evidence shows about 48 hours before symptoms appear to ~10 days after symptoms appear (4), and it could prolong in some infected people (9).	Usually it may reach 3 to 8 days after symptoms appear, but sometimes it's up to 4 weeks in infants and those with immunodeficiency	1-3 weeks (peaks 2-3 days after symptom onset) (8).
How is the virus spread?	Infection is transmitted directly from person to person and the spread of fomites, possibly through small aerosols under specific conditions (1).	The infection is mostly transmitted directly from person to person, possibly fomites 4 or small aerosols (12, 13).	Direct transmission from person to person, as well as fomites.	Direct transmission from person to person, as well as fomites.
Spread of the disease before symptoms begin	Yes, it can spread within 24 hours before symptoms begin (4, 10).	Yes, from ~ 48 hours or possibly earlier before symptom onset (4, 11).	Uncertain yet	Uncertain yet
The nature of the spread of the disease with no symptoms	Yes, the disease can happen without obvious symptoms and can be transmitted to others (10).	Yes, it can spread without symptoms (11).	Uncertain yet	Uncertain yet
Type of precautions like reporting, and identify personal0 protective equipment	Droplet and contact (14).	Droplet transmission and contact, airborne transmission when performing aerosol-	Droplet and contact (14).	Droplet and contact (14).

to be used		generating medical procedures (15).		
How infectious is the virus? (The higher the basic reproductive number (R0) the larger the number of people infected by each case on average)	R0: 1.27*16	R0: 3.32*1	R0:3.0*	Not available
Case-fatality (number of deaths divided by number of specific cases, expressed as a percentage)	<0.1% (6)	Variable ~ 3% (19)	Not available	Extremely unlikely to result in death (No vaccine 2)
Vaccine availability	Available seasonally and recommended annually (20)	Under development and not currently available	Currently in development, however, Palivizumab is currently available and is a human monoclonsic immunoglobulin recommended for high-risk infants (1)	Not available

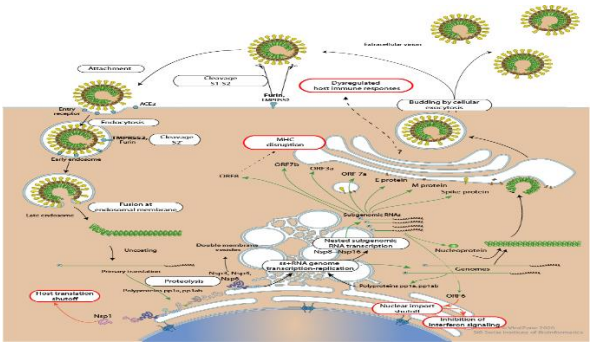
High-prevalence events contributed to the widespread spread of the virus because of the tendency of a cruise ship in Japan, the mass gathering of a religious group in South Korea, ski resorts in Italy and Austria, and the Popular Pilgrimage City (Iran). Since then, the global prevalence rate has sped up, and large-scale epidemics have appeared in many countries (42).

SARS-CoV-2 virus was found to be closely linked to SARS-CoV, the first deadly epidemic threat of a new coronavirus that emerged in late 2002 and caused an outbreak of respiratory distress syndrome. Severe acute (SARS), then faded after intensive and emergency measures to ease public health (2). The new SARS-CoV-2 virus, which emerged in December 2019, rapidly caused a global pandemic.

In 2003, the SARS outbreak was observed to have stopped, with 8,098 cases documented by the world's health authorities, including 774, and the mortality rate was estimated at 9·7% (2). By comparison, cases of MERS-CoV, a deadly coronavirus, have emerged, yet it does not currently pose a serious epidemic threat, but in 2012, it caused 2,494 cases among of these, 858 occurred in 27 countries, where the death rate was 34% and 3,000, and because the virus is widespread among Arab camels, this suggests that animal-origin cases continue to occur, The SARS-Cove virus was reversed, emerging from wildlife and disposed of by eliminating the intermediate host reservoir (43, 44).

It has been revealed that the new SARS-CoV-2 virus is less deadly to humans, but its transmissibility is much higher than the MERS-CoV or SARS-CoV. As this virus recently appeared in December 2019 as a first epidemic wave, followed by another wave on June 29, 2020, when the infection rate was high and increasing day by day, reaching 10 million known cases all over the world. As for deaths, it has exceeded 500,000 deaths (4). Because of its broad clinical spectrum and high transmissibility between people of all ages, eradication, as happened with SARS-CoV in 2003, does not appear to be a realistic and effective short-term goal (45).

Personally, we summarize the main epidemiological characteristics of SARS-CoV-2 and compare them with other pandemic coronaviruses and pandemic influenza to explore what makes SARS-CoV-2 different from pandemic influenza virus and other pandemic coronaviruses such as SARS-CoV and MERS-CoV besides addressing to study the different characteristics of each virus, the most important of which is the transmissibility of the virus and its severity, and also to determine the infection rates and death rates registered globally for the SARS-CoV-2 pandemic and other corona viruses if possible (46).



Life cycle of Corona virus (Unhale et.al ,2020)

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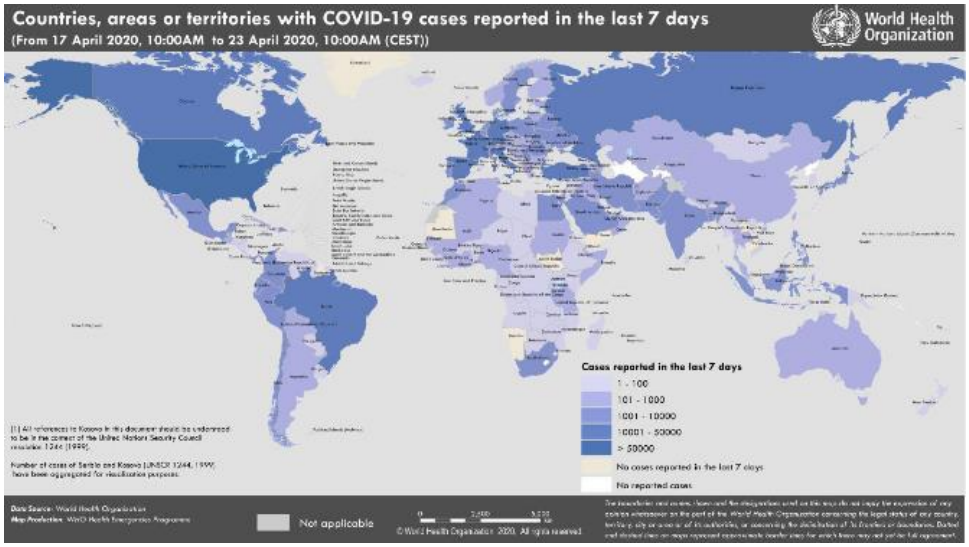
V. EPIDEMIOLOGY

As of April 15, 2020, globally 210 countries and areas around the world have reported over 1,998,111 confirmed cases of COVID-19, consisting of 126,604 deaths. And corresponding to the reports of the Medical Journal at Johns Hopkins University. Although the proportion of confirmed cases of infection with this virus outside China is increasing rapidly, the data of most countries infected with the COVID-19 virus have been simplified in the graph below Figure 2. over 44,000 cases of infection originated in China. Mortality rates are also ten times higher in the elderly compared to middle-aged people.

Where death rates were low for those under the age of thirty, and 8 deaths were recorded out of 4,500 confirmed cases, and it was inferred that deaths were at least five times more common in people with chronic diseases such as diabetes, high blood pressure, heart problems or Respiration, mortality was more concentrated in men than in women (47).



Countries, territories or areas with reported confirmed cases of COVID-19, 23 April 2020 (WHO)

Subject In Focus: Origin of the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), the virus causing COVID-19.

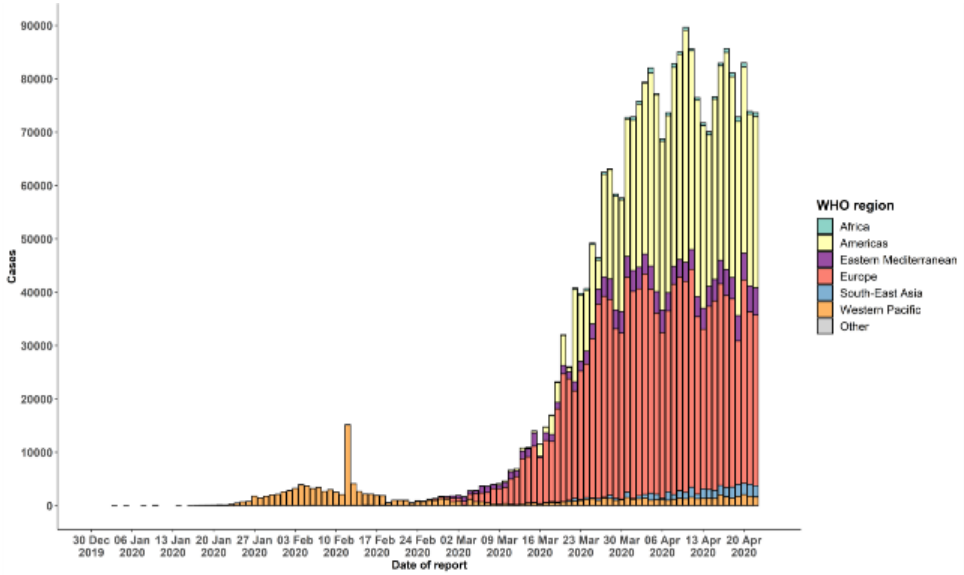
As pointed out earlier that the first human cases of COVID-19, later named SARS-CoV-2, were reported in Wuhan, China among officials, in December 2019. Relevant investigations by Chinese authorities identified human cases of infection with symptoms in early December 2019 (48). While some of the first confirmed cases were linked to a well-known food market in Wuhan, some of them were not, as many of the initial cases were revealed either from stall owners, market employees or wandering guests in this market.

Environmental samples taken from this market in December 2019 tested positive for SARS-CoV-2, and later showed that this market in Wuhan was the source of the outbreak of this virus or had an active role in the initial amplification of the outbreak, as the Chinese health authorities Market closed on January 1, 2020 and since then SARS-CoV-2 was identified in early January and its genetic sequence was openly declared on January (11, 12). Studies have revealed that the complete genetic sequence of SARS-CoV-2 that was isolated early from humans and the sequence of many other viruses that were isolated from human cases in China and all over the world that SARS-CoV-2 has an ecological origin in bat groups, and this shows that it is A virus of natural animal origin and not a manipulative or complex virus (49). Several researchers inspected the hereditary inference features of SARS-CoV-2 and found that their evidence did not support that SARS-CoV-2 is a laboratory construct. If it was a complex virus, its genome sequence would be a mixture of known elements, but this was not the case for another coronavirus. SARS-CoV-2 was not the only virus isolated from bats but it was preceded by SARS-CoV-1 that causes severe acute respiratory syndrome (SARS) that was isolated in bats in 2003.

In line with this, the close genetic relationships of SARS-CoV-1, SARS-CoV-2 and other coronaviruses show that these viruses have an ecological origin from bats. However, many corona viruses can infect other types of animals, for example, the SARS-CoV-1 virus that infects civet cats and then humans, and the virus that causes Middle East respiratory syndrome (MERS-CoV) infects Arabian camels, which led to Infection in humans since 2012 (50).

It is likely that transmission of the Covid-19 virus to humans occurred through animal species other than bats. These animals can serve as intermediate animal hosts and this animal may be domesticated, wild or domesticated, and until now, scientists have not

identified all published genetic sequences of SARS-CoV-2 isolated from most similar human cases. This shows that the onset of the MERS-CoV disease outbreak resulted from a single entry point in humans, while it was first reported in humans in Wuhan, China (51). Several investigations are working hard to better understand the source of the outbreak in China and are currently underway or planning, including a focus on investigations into cases that broke out in humans after the onset of symptoms in and around Wuhan in late 2019. Environmental samples were taken from markets and farms in various areas whose residents were exposed to infection with the virus to prepare detailed records on the source and species of wild animals contributing to the infection and to identify farm animals sold in these markets (52). The outcome of these studies is crucial to stop further introduction of SARS-CoV-2 zoonotic diseases into human communities. WHO, in collaboration with animal health professionals and human health experts, is communicating with members and other partners around the world to identify gaps and prioritize research to control COVID-19, including the eventual identification of the source of the Covid-19 virus in China.



Epidemic curve of confirmed COVID-19, by date of report and WHO region through 23 April 20209 (WHO)

VI. SYMPTOMS

Signs and symptoms of coronavirus infection (COVID-19) may occur approximately 2 to 14 days after exposure to the virus. The most common signs and symptoms are:

- Fever
- Cough
- Tiredness

The disease may include characteristic early symptoms which are loss of the sense of taste or smell.

Other symptoms can include:

- Shortness of breath or difficulty.
- Pain in chest
- Pain in the muscles of the body.
- Feeling chills
- Symptoms of sore throat with a runny nose
- Headache

These above symptoms are not necessarily all included. Other less common symptoms have been reported, such as nausea, vomiting, bouts of diarrhea and rash. Children can have symptoms similar to those of adults and often have mild disease.

The severity of symptoms for COVID-19 may range from very mild to severe, and some of them do not show any symptoms of the disease. Some of them may have worsening of symptoms, such as severe shortness of breath and pneumonia, about a week after symptoms began (53).

It was observed that older people experienced a high risk after infection with COVID-19, and this indicates that the severity of the disease increases with age, especially in people with existing chronic medical conditions, as shown below:

- More serious heart diseases, the most important of which are coronary artery disease, heart failure or cardiomyopathy
- Chronic Obstructive Pulmonary Disease (COPD)
- Type 2 diabetes mellitus
- Obesity
- Chronic kidney failure
- Sickle cell anemia
- Weakened immune system after solid organ transplants

Other conditions may increase the risk of disease, such as:

- bronchial asthma

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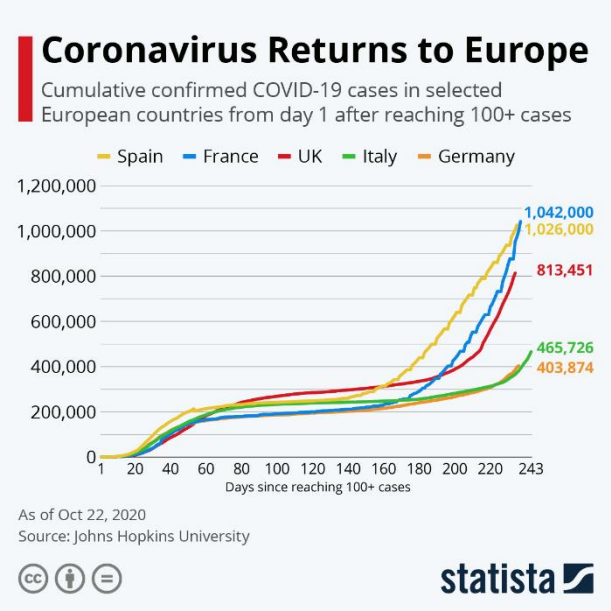
- Liver disease
- Lung cystic fibrosis
- Brain and nervous system diseases
- Impaired immune system caused by bone marrow transplantation.
- HIV
- Chronic medication
- Type 1 diabetes
- High blood pressure

These cases mentioned above may not be inclusive.

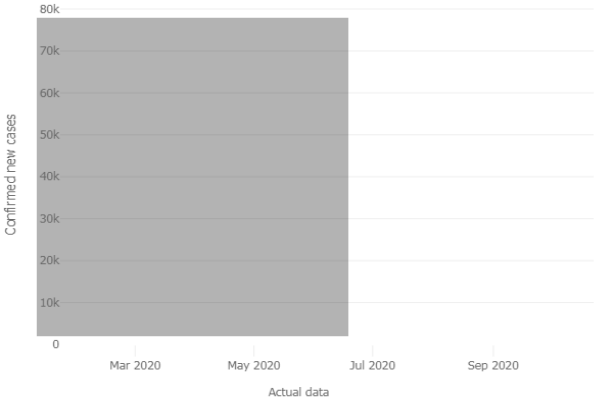


Western European countries are witnessing remarkable success in flattening the curve of infections with the COVID-19 virus, as they witnessed a wave of new cases, according to figures published by Johns Hopkins University, so that it was observed that the infection cases raised rapidly again in both Spain and France, the total number exceeded Confirmed cases infected one million cases within a week. Whereas, the UK has clearly moved away from the flat track with over 800,000 cumulative cases currently. Spain and France have both made it into the top ten worst affected countries in the world and are currently ranked 6th and 7th in total confirmed cases. The United Kingdom still ranks fifth in the number of deaths.

Regarding the most confirmed cases and deaths in the states, at the present time it also has an infection curve and still shows a significant increase in the number of infections, it has exceeded 8.4 million cases (54).

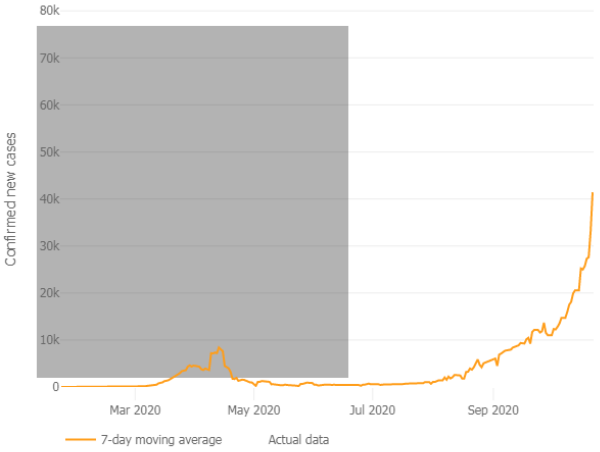
UNITED STATES: *Reports new confirmed cases daily (7 days on average).*

In the United States, the first case of COVID-19 in 274 days was reported by the relevant health authorities on 1/22/2020. Since then, the United States has declared 8,407,702 confirmed cases, consisting of 223,032 deaths

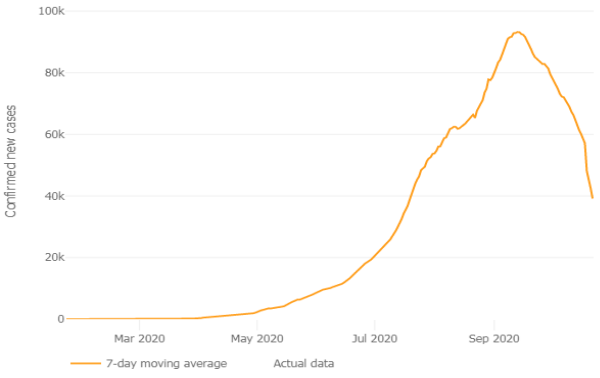


FRANCE: *Reports new confirmed cases daily (7 days on average).*

In France, the first case of COVID-19 was officially reported 272 days ago on January 24, 2020. Since then, France has declared 1,041,991 confirmed cases, consisting of 34,237 deaths.



INDIA: *Reports new confirmed cases daily (7 days on average).*



BRAZIL: *Reports new confirmed cases daily (7 days on average).*

In Brazil, the first case of COVID-19 was officially reported 239 days ago on February 26, 2020.

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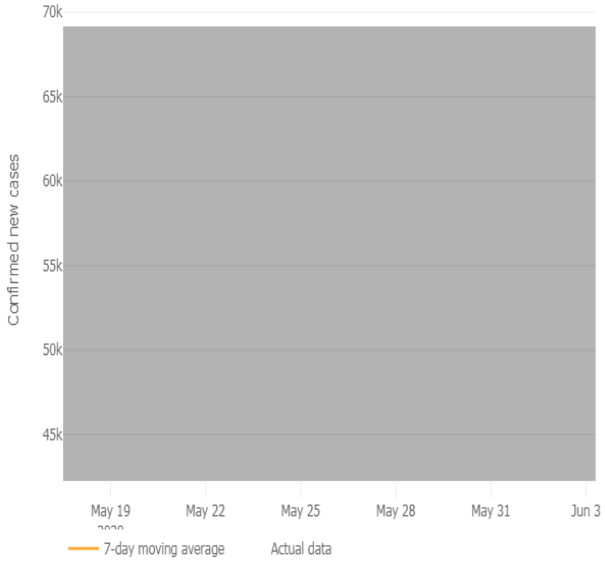
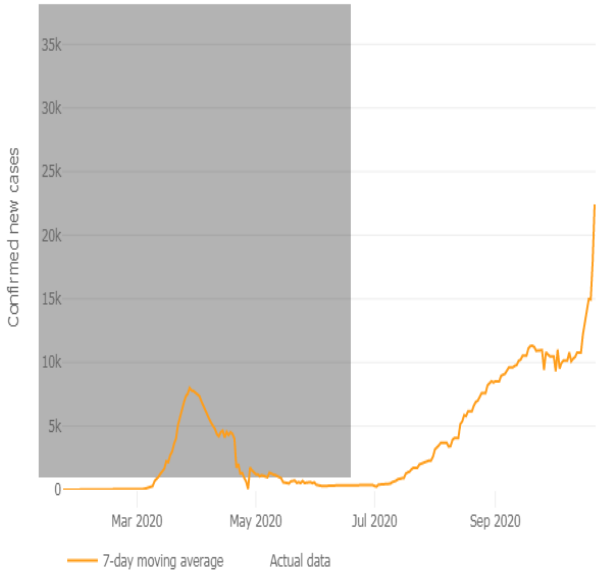
Since then, Brazil has declared 5,323,630 confirmed cases, consisting of 155,900 deaths.



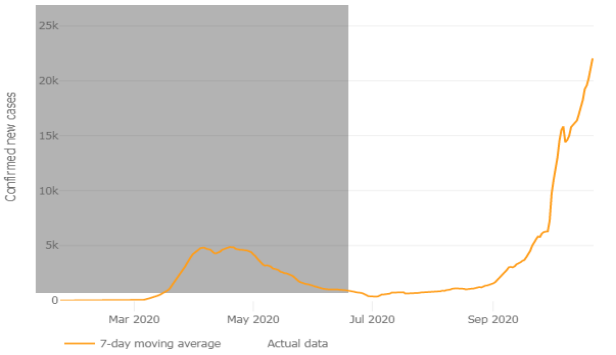
SPAIN: *Reports new confirmed cases daily (7 days on average).*

In Spain, the first case of COVID-19 was officially reported 264 days ago on 2/1/2020. Since then, Spain has declared 1,026,281 confirmed cases, consisting of 34,521 deaths.



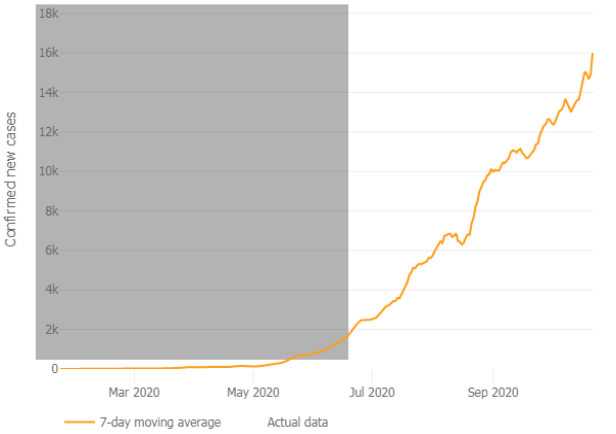
UNITED KINGDOM: *Reports new confirmed cases daily (7 days on average).*

In UK, the first case of COVID-19 was officially reported 265 days ago on 1/31/2020. Since then, UK has declared 813,451 confirmed cases, consisting of 44,437 deaths.



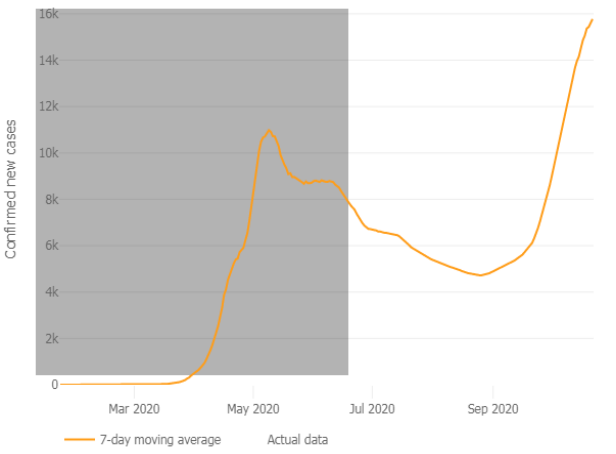
ARGENTINA: *Reports new confirmed cases daily (7 days on average).*

In Argentine, the first case of COVID-19 was officially reported 233 days ago on 3/3/2020. Since then, Argentine has declared 1,053,650 confirmed cases, consisting of 27,957 deaths.



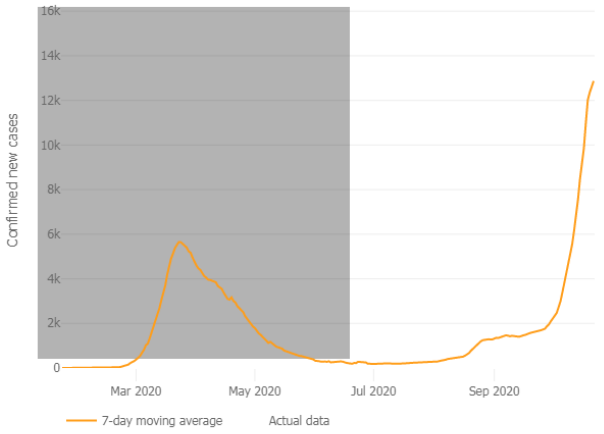
RUSSIA: *Reports new confirmed cases daily (7 days on average).*

In Russia, the first case of COVID-19 was officially reported 265 days ago on 1/31/2020. Since then, Russia has declared confirmed 1,453,923 cases, consisting of 25,072 deaths.



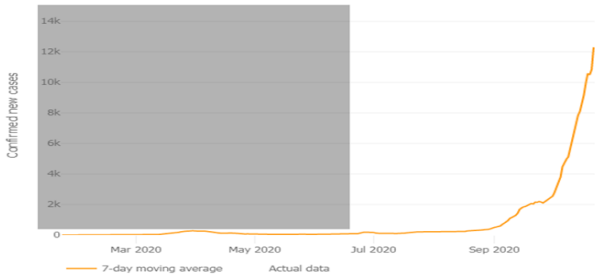
ITALY: *Reports new confirmed cases daily (7 days on average).*

In Italy, the first case of COVID-19 was officially reported 265 days ago on 1/31/2020. Since then, Italy has declared confirmed 465,726 cases, consisting of 36,968 deaths.



CZECHIA: *Reports new confirmed cases daily (7 days on average).*

In Czechia, the first case of COVID-19 was officially reported 235 days ago on 3/1/2020. Since then, Czechia has declared confirmed 223,065 cases, consisting of 1,845 deaths.



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Diagnosis

Patients suspected of contracting COVID-19 are used various diagnostic techniques to confirm the infection: performing real-time fluorescence (RT-PCR), which aims to identify SARS-CoV-2 positive DNA in the sample taken from sputum and throat swabs and lower respiratory secretions (55). Laboratory tests have observed that patients with COVID-19, the number of white blood cells they have can vary so that leukopenia or leukocytosis has been reported, and lymphopenia, although lymphocytes appear to be considerably common (lippi, 2019; lager, 2020).

Levels of lactate hydrogenase and ferritin have been common among infected patients, and a marked rise in aminotransferase levels has also been detected, but when the virus causes pneumonia, many patients have normal procalcytonin levels in their serum. However, in those patients required to be admitted to the intensive care unit, procalcetonin is likely to be at a high level.

Investigations found that higher D-dimer levels and more severe lymphomas are closely linked to covid-19 mortality rates. The results of the imaging - CT are one of the most diagnostic procedures to show the ground-glass opacification with or without consolidative abnormalities, and based on this, doctors agree it is viral pneumonia.

Some other studies have suggested that CT scans of the chest are likely to be bilateral, with peripheral distribution, including the lower lobes of the lungs. The results of less common CT scan findings are pleural thickness, pleural effusion and also lymphadenopathy (56) chest CT may be useful in making a diagnosis, but there is no result that can fully control or exclude the likelihood of covid-19 infection.

Oral pharyngeal swabs can be collected from the patients or suspected person, but in fact they are unnecessary, so if required to collect them, they should be placed in the same preservative container as the nasal pharyngeal sample, where oral pharyngeal swab is an acceptable alternative if the nasal pharyngeal sample is not available (Won, 2020). When taking a sample of sputum from patients or people with a productive cough, it is not recommended to induce sputum. Lower respiratory secretions or snooker bronchodilation should be collected from intubated patients. However, data from this study show that viral RNA levels have increased more frequently in the nose than oral samples, although only eight nasal swabs (57) have been tested. SARS-CoV-2 RNA can be detected through rt-PCR (Loeffelholz, 2020), so if the result is positive, this means covid-19, yet the result may be false positive. The initial result may be negative, but suspected COVID-19 is still doubtful, so who recommends that samples be re-sampled from multiple respiratory sites and then tested to confirm whether they are infected (WHO, 2020). With the obligation to conduct medical tests to confirm Covid-19, both the accuracy and predictive values of SARS-CoV-2 testing have not been systematically evaluated, for example, negative RT-PCR tests have been reported for swabs from oral pharyngeal secretions despite the sign of viral pneumonia in CT results in some patients who eventually tested positive for SARS-CoV-2. Serological tests can show the identification of a current or previous infection of Panama negative PCR test (Ling, 2020; LIM, 2020). A common SARS-CoV-2 infection and other respiratory viruses, such as influenza virus, have been reported and this may adversely affect management decisions (58).

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