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Coronavirus COVID-19 Detection, Symptoms, Spread and Prevention

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Abstract

An ongoing outbreak of pneumonia associated with 2019 novel coronavirus (2019- nCoV) was reported in China. The epidemiological evidence has shown a potential transmission of the 2019-nCoV during the incubation period. It is unclear if the infectivity exists during the incubation period, although a person-to-person transmission has been reported in previous studies. It was believed that 2019-nCoV was transmitted through respiratory tract and then induced pneumonia, thus molecular diagnosis based on oral swabs was used for confirmation of this disease. Likewise, patient will be released upon two times of negative detection from oral swabs. This review provides a cautionary warning that COVID-19 may be shed through multiple routes.

Keywords

COVID-19; Symptoms; Spread; Control; Prevention

Introduction

Coronavirus diseases (COVID-19) in Wuhan, China has spread quickly nationwide. In December 2019, an outbreak of the novel disease COVID-19 caused by the newly identified severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was reported in Wuhan City, Hubei province, China [1]. As of March 4, 2020, more than 93,000 COVID-19 cases have been reported in 73 countries, confirmed and presumptive patients with COVID-19 have been identified, one has been previously described in detail. SARS-CoV-2 RNA detection, virus culture and the relationship to the clinical course of COVID-19 are not fully understood. COVID-19 is one of the strongest viral disease which causes of morbidity and mortality in the world. Virus-specific vaccines and antiviral drugs are the most powerful tools to combat viral diseases. However, broad-spectrum anti-COVID19 agents still unknown. Results among different ages were commonly reported signs and symptoms at illness of fever and cough. The patients were hospitalized with radiographic evidence of pneumonia and demonstrated clinical or laboratory signs of worsening during the second week of illness.

COVID-19 can result in severe disease, including hospitalization, admission to an intensive care unit and death, especially among children and older adults. Everyone can take actions, such as social distancing, to help slow the spread of COVID-19 and protect older adults and children from severe illness. Globally, approximately 170,000 confirmed cases of coronavirus disease 2019 (COVID-19) caused by the 2019 novel coronavirus (SARS-CoV-2) have been reported, including an estimated 7,000 deaths in approximately 150 countries [2]. Data from China have indicated that older adults, particularly those with serious underlying health conditions, are at higher risk for severe COVID-19–associated illness and death than are younger persons. Although the majority of reported COVID-19 cases in China were mild (81%), approximately 80% of deaths occurred among adults aged ≥ 60 years; only one (0.1%) death occurred in a person aged ≤ 19 years. In this review, COVID-19 cases were analyzed by age group among adults aged ≥ 65 years with the highest percentage of severe outcomes and among persons aged ≥ 85 years. In contrast, no ICU admissions or deaths were reported among persons aged ≤ 19 years. Globally this finding suggests that the risk for serious disease and death from COVID-19 is higher in older age groups [3].

All patients had SARS-CoV-2 RNA detected in respiratory specimens, typically for 2-3 weeks after illness onset, with lowest rRT-PCR Ct values often detected in the first week. SARS-CoV-2 RNA was detected after reported symptom resolution the patients. Hospitalized patients showed signs of worsening for use under license, all listed references help for prevention of COVID-19.

Description of Coronavirus

The coronavirus is a big family of pathogens (Fig. 1). Some of them cause mild illnesses like the common cold. Others can cause fatal infections. A coronavirus gets its name from how it looks. Under an electron microscope, these pathogens exhibit spikes that resemble the angles of a crown. There are many coronaviruses that only infect animals. Some evolve in their animal hosts to infect humans. The type that infects humans was first identified in the 1960s. Since then, seven human-infecting types of coronavirus have been identified, including the new Coronavirus also known as COVID-2019. For the latest news updates, facts and resources, please visit the [Medicine Net Coronavirus COVID-19 Health Center](#).

Figure 1: COVID-19 is a novel coronavirus that spreads via infected respiratory droplets.

On Jan. 7, 2020, Chinese health authorities announced that they had isolated the virus spreading in Wuhan. This novel coronavirus was named COVID-2019, 2019-nCoV and was also called Wuhan coronavirus (Fig. 2). This virus resembles other serious human coronavirus types MERS and SARS in that all belong to the "beta" subgrouping of virus. The CDC notes that MERS and SARS both began as infections in bats before mutating to infect humans.

Figure 2: National Institute of Allergy and Infectious Diseases (NIAID).

Symptoms of Coronavirus (COVID-19)

The symptoms of this virus illness resemble other respiratory infections. Infected people may experience coughing and fever, as well as shortness of breath. Some patients have had vomiting, diarrhoea and similar stomach symptoms. The most severe cases have caused pneumonia, severe acute respiratory syndrome, kidney failure and death. According to the CDC, some infected people have few or no symptoms, whereas others may be severely ill or die from the disease. Initial estimates suggest symptoms begin after exposure from 2-14 days with an average of 5 days. Typical symptoms of COVID-19 include fever, coughing and shortness of breath. Symptoms can range from mild to severe [4].

Risk for Contracting a Severe Case of COVID-19

The most vulnerable populations for having a bad outcome with COVID-19 including needing to be in the hospital or on a ventilator are people over the age of 60 (especially men) with additional medical concerns. This includes people who are smokers, who have hypertension (high blood pressure) and diabetes, people who have low immune systems, people with underlying lung disease or who take medicines to suppress their immune systems because they have some sort of autoimmune condition or cancer [5,6]. These people should not be traveling

and they should not be out in crowds. They should be staying home as much as possible and if haven't been instructed to work from home, should ask about working from.

Patient's Medical Care from COVID-19

A lot of the critically ill patients wind up needing to be hospitalized for their pneumonia-like illnesses. They typically require critical care and ventilation machines that help them breathe and some need to stay on ventilators for weeks at a time. It's this portion of patients that is most concerning. Depending on how many cases develop, providing that level of care for so many people over a number of weeks runs the risk of overwhelming the nation's health care system pretty quickly [7,8]. Supportive care is the treatment; a large number of patients need hospitalization to obtain appropriate care. Work is underway to develop antiviral medications to combat the illness. Meanwhile the CDC says that health care workers should strive to treat the symptoms of an infection through supportive care. Researchers are also trying to develop a vaccine against the virus. So far, no vaccine has been developed for this newly discovered virus. On Jan. 28, the US Department of Health and Human Services announced that the National Institute of Health has begun to collaborate on the development of a COVID-19 vaccine. Early trials have begun, but it will likely take a year or longer before a safe, proven vaccine can be released to the public, according to HHS officials. The National Health Commission in China is collaborating with various health organizations, including the World Health Organization (WHO), to further study how severe and how contagious this virus may be. By sharing data and continuing to study the illness, health researchers worldwide hope to contribute to the development of a vaccine [9].

Virus Mutation

This is a class of virus that is known to mutate easily. Prior mutations led to the 2002-2003 SARS outbreak, in which a virus native to civet cats mutated to spread the illness to humans. In Saudi Arabia in 2012, a coronavirus that infected camels mutated to become infectious in humans, leading to the MERS outbreak. Currently, researchers have not discovered the original source of the COVID-19 coronavirus, but they suspect it came from wild animals killed and sold for food [1].

World Responded to COVID-19 Infection

Authorities from China confirmed the identity of the new virus on Jan 7, 2020 and began working with the WHO on the same day to learn more about the virus. Chinese authorities have reacted to the virus outbreak with an unprecedented lockdown of Hubei province. The travel restrictions affect millions of people in cities, airports, public transportation, workplaces and schools have been shut down to prevent further contagion. As of March 17, 2020, the number

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of COVID-19 has markedly reduced and the Chinese are dismantling their emergency hospitals. Countries around the world have taken steps to prevent the further spread of the COVID-19 virus. Screening is taking place at airports, events are being cancelled, schools are closing, public health officials are urging people to avoid public spaces as much as possible and self-isolation/self-quarantines and social distancing practices are taking place. With the large outbreaks that have followed in South Korea, Europe (especially Italy) and now the US, officials are hoping that the practices being put in place will help educate the public and slow the spread of this emerging disease [10,11].

Causes and Prevention of Risk Factors

It's unclear exactly how contagious the new coronavirus is. It appears to spread from person to person among those in close contact. It may be spread by respiratory droplets released when someone with the virus coughs or sneezes. It may also be spread if a person touches a surface with the virus on it and then touches his or her mouth, nose or eyes. Recent travel from or residence in an area with ongoing community spread of COVID-19 as determined by CDC or WHO. Causes complications such as [12]

1. Pneumonia in both lungs
2. Organ failure in several organs
3. Death

Discussion and Recommendation

Clinicians of the patients with COVID-19 should anticipate that some patients may worsen in the second week of illness. Early and prolonged detection of SARS-CoV-2 RNA suggest the window for diagnosis of COVID-19 is long. Although duration of infectiousness is unclear, almost data show viable virus can be cultured readily from upper respiratory tract specimens soon after illness onset [13-22]. Further investigations are needed to understand clinical, immunologic response, SARS-CoV-2 RNA detection, virus culture and transmission to inform clinical management and public health strategies to prevent disease spread. Coronavirus is a lipid enveloped virus and can survive on surfaces for several days; therefore, infected (confirmed /known cases) linen may pose a risk to laundry staff through textile or contaminated surfaces/PPE. Laundry operations should be able to make a final decision on whether to take the linen back to the laundry to be processed or would they like the linen in question incinerated. Thermal or chemical-thermal laundering processes. Human being have provided specific response to the TSA as follows. The infected linen should be bagged in accordance with infection control procedures [23-25]. Current decontamination guidance for the NHS states 'After cleaning with neutral detergent, a chlorine-based disinfectant should be used, in the form of a solution at a minimum strength of 1,000ppm available chlorine'. Individual

operators should consider robust procedures to collect, sort and disinfect the linen [12-16]. Additionally, the Section on Management of Linen, Page 11 of WHO's Interim Infection Prevention and Control with a focus on Ebola provides clear guidance on managing linen. Every household and business in the UK has been advised on measures for restricting the spread of the Coronavirus (COVID-19). Central to this advice is the need for frequent and correct hand washing as the virus can be readily spread by contact with contaminated surfaces. Over the years, we have seen reliable evidence of the effectiveness of cabinet roller towels in hygienically providing hand drying solutions to millions of users. Especially, at a time when we are fighting a high consequence air borne disease, it is vital to restrict the spread of infection to the individual, to surrounding objects/surfaces and to other people. Correct hand washing must be followed by hand drying and there is currently no public information on the safest arrangements for hand drying in washrooms either at home, in the public or work places. Most people would prefer the option of drying hands with a towel and in the current situation this means a fresh towel every time [26-38]. The use of a cabinet roller towel system will provide this option most hygienically and at incredibly sustainable scale. It will avoid the inevitable spread of infection from possibly contaminated warm blasts of moist air (warm air driers) which can carry infection throughout the wash room and to individuals present either by contact or inhalation. On the other hands, Cabinet towel system dispenses a fresh, hygienically disinfected towel portion on demand and automatically stores used towel safely away from contact with the next user. The positioning of the locked and secure cabinet and the length of towel dispensed means it is far less open to abuse or contamination from alternative use such as wiping down surfaces, discarding after catching sneezes, etc. Use of a cabinet roller towel system together with a hygienic hand wash offers a safe option for controlling the spread of infection to individuals in the Washroom [38-49].

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