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A Short Communication on COVID-19 Outbreak

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Abstract

Coronavirus disease 2019 (COVID-19) is a new strain of coronavirus species which has been firstly appeared in Wuhan city, China. Thanks the genetic science a rapid diagnostic tests specific for the COVID-19 has been developed that can be used to detect the infected people. It is reported that the most common symptoms for infected persons with COVID-19 are lymphopenia and bilateral ground-glass opacity or consolidation in chest CT scans. It is found that COVID-19 is able to transmit from human-to-human by fomites, contact, and droplets. New reports also demonstrated that COVID-19 is able to transmit to humans during exposure with high concentrations of aerosol in air. Therefore, in some special conditions COVID-19 may travel long distances in a turbulent atmosphere and it can infect other territories. Washing hands, rapid hospitalization of patients, and avoiding unprotected contact with wild and farm animals are the most important recommendations for protection of people from infection with COVID-19.

Keywords: COVID-19, Coronavirus, Transmission mod, Aerosol

1 Introduction

Around December 2019 a new strain of coronavirus species was appeared in the city of Wuhan located in Hubei Province, China. This new strain was later called "coronavirus disease 2019" (COVID-19) by the World Health Organization (WHO). Firstly, Chinese health authorities could find several pneumonia cases in the city of Wuhan and then they found that the cause of this viral pneumonia is a new strain of coronavirus species [1]. Although the source of the COVID-19 outbreak was firstly unknown, there are reports show that this virus have been found in some samples of food in the Huanan Seafood Wholesale Market in Wuhan city [1]. More investigations showed that many of the most recent cases have not been exposed to animal markets; therefore, it was suggested that the COVID-19 can transmit from human-to-human.

These findings showed the potential of international threat of the COVID-19. The genetic sequence of the COVID-19 was recently investigated. The results of this investigations let us to develop a rapid diagnostic tests specific for the COVID-19 [2]. Since 23 Jan 2020 many confirmed cases have been sequentially reported in several regions in China, such as Taiwan, Macau, and Hong Kong [3]. Patients infected to COVID-19 are no longer limited to city of Wuhan. Many infected patients to the COVID-19 have been diagnosed in other countries including Singapore, Vietnam, USA, South Korea, Japan, Thailand, Italy, Australia, Malaysia, Philippines, Cambodia, India, Nepal, Sri Lanka, Canada, Germany, France, The United Kingdom, Russian Federation, Spain, Belgium, Finland, Sweden, Egypt, and Lebanon (see WHO documents to find a complete list of infected countries). It has been guessed that the COVID-19 can spread around the word by air travel. Figure 1 shows the distribution of COVID-19 in the world. As can be seen the most infected territory with COVID-19 in the world is Chania. Since COVID-19 has been recently detected, there is no enough information about it. That is why it is necessary to collect all scattered pieces of information about COVID-19 in a paper.

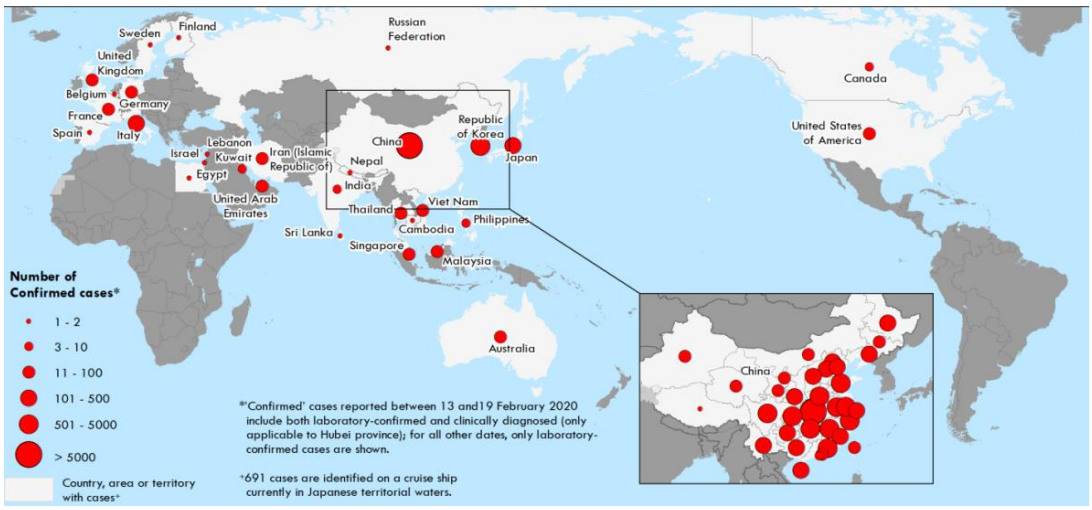

Figure 1: The distribution of COVID-19 cases in the world until 24 Feb 2020 (this figure has been adapted from [4])

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Therefore, the aim of this study is to collect correct and up to date information about Symptoms of human infection by COVID-19, transmission modes, and recommended ways to reduce the general risk of COVID-19.

2 Symptoms of human infection by COVID-19

Some symptoms of human infection by COVID-19 at the prodromal phase such as malaise, dry cough and fever are not specific for COVID-19. It seems that in COVID-19 infection symptoms of human upper respiratory system are very infrequent. Although intestinal symptoms reported in SARS is uncommon in COVID-19 infection, few cases reported by [5] had diarrhea. It is reported that the most common symptoms for infected persons with COVID-19 are lymphopenia and bilateral ground-glass opacity or consolidation in chest CT scans [2]. These symptoms for early diagnosis of COVID-19 infection may be similar with other diseases, especially in cases where the patient has other diseases, such as the influenza and other respiratory viruses. Based on WHO 77262 infected cases with COVID-19 have been detected in China which 2595 have died until 26 Jun 2020 [4]. These data show the mortality rate of COVID-19 is around 3.35% while mortality rate for Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS) is 37% and 10%, respectively [2]. WHO also reported that 79331 people infected to COVID-19 has been detected in 29 different countries until 26 Jun 2020.

3 Transmission modes

A few information are presented to describe the COVID-19, and no pharmacological therapies of proven efficacy yet exist. One of the most important acts that must be done in future is collecting all information about challenge and concerns that will be appeared by COVID-19 to our community. Every effort must be given to understand and control the COVID-19, and the time to act is now. During outbreaks MERS and SARS, virus could transfer from human-to-human through fomites, contact, and droplets. Since MERS, SARS, and COVID-19 viruses are from a same family, it is suggested that the transmission mode of the COVID-19 may be similar. COVID-19 has a high potential for mutation. But its mutation rate is slightly lower than other RNA viruses because of its genome-encoded exonuclease; therefore, COVID-19 is able to adapt to become more efficiently transmitted from human to human.

New reports demonstrated that COVID-19 is able to transmit to humans during exposure with high concentrations of aerosol in air [6]. COVID-19 can be mixed with droplets in the air to form aerosols. Aerosols are able to be floated in air for a long period of time especially in a turbulent atmosphere. Therefore, the virus can travel many miles in air and cause infection after inhalation. As a good strategy to prevent spreading COVID-19 people with symptoms of respiratory infection must stay at home and avoid close contact with other people for at least 14 days to decrease the risk of infection with other pathogens. People with symptoms of respiratory infection also should be visited by a medical doctor to be checked for COVID-19 infection. If they be infected with COVID-19, they should be hospitalized at least for four weeks.

4 Recommended ways to reduce the general risk of COVID-19

There are some way that can be used to reduce the general risk of COVID-19 transmission to human: (a) avoiding close contact with persons infected with COVID-19; (b) washing hands, particularly after direct contact with persons infected with COVID-19 or their environment; (c) avoiding close and unprotected contact with animals; (d) People who confirm that they are infected with COVID-19 or each person with symptoms of acute respiratory infection must practice cough etiquette such as wash hands, sneezes with disposable tissues or clothing, cover coughs, and maintain distance; and (d) the enhancement of infection prevention standards within health care facilities including hospitals, particularly in departments of emergency. Any specific health measures has not been recommended by WHO for travelers. If travellers have symptoms of respiratory infection, it is recommended that they must seek medical attention and share their travel history with their health care provider.

5 Conclusion

COVID-19 is a rapid danger for human being worldwide; therefore, it should be controlled as fast as possible. WHO has several recommendations including Washing hands, rapid hospitalization of patients, and avoiding unprotected contact with wild and farm animals to protect people again COVID-19 infection. The possibility of spreading COVID-19 via aerosols in air can increase the danger of this pathogen.

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