SJIF Impact Factor: 5.464

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 4.
Issue: 3.
Page N. 36-39
Year: 2020

Review Article www.wjahr.com

A REVIEW ON QUALITY OF LIFE IN CORONAVIRUSES PATIENTS: AN INDIAN SCENARIO

Niranjan Sutar* and Ranju Sutar

HGEA College of Pharmacy, At/Po-Ghatiali, Via-Chas, Dist-Bokaro-827010.

Received date: 02 February 2020 **Revised date:** 13 March 2020 **Accepted date:** 03 April 2020

***Corresponding Author: Niranjan Sutar**

HGEA College of Pharmacy,At/Po-Ghatiali,Via-Chas,Dist-Bokaro-827010.

ABSTRACT

Coronaviruses are a large family of viruses that can cause illness ranging from the common cold to more severe diseases like Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).The 2019 novel coronavirus, called 'SARS-CoV-2' (previously referred to as 2019-nCoV), is a new strain that has not been identified in humans before. The disease that is caused by SARS-CoV-2 is called 'COVID-19'.Coronaviruses (CoVs), enveloped positive-sense RNA viruses, are characterized by club-like spikes that project from their surface, an unusually large RNA genome, and a unique replication strategy. Coronaviruses cause a variety of diseases in mammals and birds ranging from enteritis in cows and pigs and upper respiratory disease chickens to potentially lethal human respiratory infections.

KEYWORDS: Coronavirus, 'COVID-19', positive-sense RNA viruses, SARS-CoV, MERS-CoV.

INTRODUCTION

The first cases of corona virus infection in Saudi Arabia, specifically Jeddah, were reported on June 13, 2012; after this outbreak, corona virus continued to spread overseas to many countries in Asia, Africa, Europe, and America.[1–4] During this outbreak, most cases occurred in Middle Eastern countries, in- cluding those in the Gulf region (Saudi Arabia, Qatar, United Arab Emirates, Oman, Bahrain, Kuwait, and Iraq), as well as Jordan, Syria, Lebanon, Palestine, and Egypt. These countries were considered to be at high risk for corona virus infection according to the Euro- pean Centre for Disease Prevention and Control (ECDC). Thus, any person arriving from any of these countries should be screened at the airport before en- tering, particularly after several cases of infection were reported in European countries, including France and the United Kingdom[4–6]

In December 2019, 2019 novel Coronavirus (nCoV), which is another public health problem, has emerged in the Huanan Seafood Market, where livestock animals are also traded, in Wuhan State of Hubei Province in China and has been the focus of global attention due to a pneumonia epidemic of unknown cause.[7] At first, an unknown pneumonia case was detected on December 12, 2019, and possible influenza and other coro- naviruses were ruled out by laboratory testing. Chinese authorities announced on January 7, 2020 that a new type of Coronavirus (novel Coronavirus, nCoV) was isolated.[8] This virus was named as 2019-nCoV by WHO on January 12 and COVID-19 on 11 February 2020. As of February 12, 2020, a total of 43.103 confirmed cases and 1.018 deaths have been announced.[9]

SIGNS AND SYMPTOMS

The WHO reports that human-to-human transmission is occurring with a preliminary R0 estimate of 1.4–2.5. Current estimates of the incubation period of the virus range from 2–14 days, and the virus seems to be transmitted mainly via flu-like symptoms and respiratory droplets that people sneeze, cough, or exhale.

Typical symptoms of COVID-19 include fever, cough, difficulty breathing, muscle pain and tiredness. More serious cases develop severe pneumonia, acute respiratory distress syndrome, sepsis and septic shock.

Generally, older people and those with underlying conditions (such as hypertension, heart disorders, diabetes, liver disorders, and respiratory disease) are expected to be more at risk of developing severe symptoms.

The evidence from analyses of cases to date is that COVID-19 infection causes mild disease (i.e. non-pneumonia or mild pneumonia) in about 80% of cases and most cases recover; 14% have more severe disease and 6% experience critical illness.

Sources and Modes of Transmission

COVID-19 is spread primarily via respiratory droplets—little blobs of liquid released as someone coughs, sneezes, or talks. Viruses contained in these droplets can infect other people via the eyes, nose, or mouth—either when they land directly on somebody's face or when they're transferred there by people touching their face with contaminated hands. Because respiratory droplets are too heavy to remain suspended in the air, direct person-to-person transmission normally only happens when people are in close contact—within about six feet of each other, according to the US Centers for Disease Control and Prevention (CDC). It could also occur in a medical setting, if someone has to handle respiratory secretions such as saliva or mucus from an infected person.

Classification of Coronaviruses

Coronaviruses (CoVs) are the largest group of viruses belonging to the *Nidovirales* order, which includes *Coronaviridae, Arteriviridae, and Roniviridae* families. The *Coronavirinae* comprise one of two subfamilies in the *Coronaviridae* family, with the other being the *Torovirinae*. As the largest known RNA viruses, CoVs are further divided into four genera: α-CoVs, β-CoVs, γ-CoVs, and δ-CoVs[10], among which α- and β-CoVs are able to infect mammals, whereas the other two genera can infect birds and could also infect mammals.[11] So far, seven coronaviruses have been found to infect humans and cause respiratory diseases. Four of seven are common human CoVs (HCoVs) usually leading to common self-limited upper respiratory disease: HCoV-229E, HCoV-OC43, HCoV-NL63, and HCoV-HKU1. These viruses can occasionally cause more serious disease in young, elderly, or immunocompromised individuals.

The first two HCoVs, HCoV-229E and HCoV-OC43, have been known since the 1960s. With the emergence of SARS in 2002, a novel β- coronavirus came to attention; and subsequently, HCoV-NL63 and HCoV-HKU1 were identified in 2004 and 2005, respectively.[12] MERS-CoV, which was isolated in 2012, is similar to SARS-CoV—both can infect the lower respiratory tract and usually cause a severe respiratory syndromein humans[13] with a case fatality rate of 35.5% and 10%, respectively.[14] SARS-CoV-2was recently isolated fromhuman airway epithelial cells, characterized by next-generation sequencing in January 2020, and identified to be a new member of β-CoVs.[15] SARS-CoV-2 can also infect the lower respiratory tract, but the clinical symptoms are milder than SARS and MERS according to current limited evidence and reports.

Prevention & Treatment

Many of the things you do to help prevent colds and the flu can help protect you against other respiratory viruses, including COVID-19.1.Wash your hands often with soap and warm water for at least 20 seconds.2.Avoid touching your eyes, nose and mouth.3.Clean things that are frequently touched (like doorknobs and countertops) with household cleaning spray or wipes.4.Cover your mouth when you cough or sneeze. Use a tissue or your inner elbow, not your hands.5.Stay home if you are sick and avoid close contact with others.6. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.

Avoid close contact with people who are sick, put distance between yourself and other people if COVID-19 is spreading in your community. This is especially important for people who are at higher risk of getting very sick. Many measures should be taken, such as timely publication of epidemic information for elimination of the source of infection, early diagnosis, reporting, isolation, supportive treatments and for avoiding unnecessary panic. CDC reminds basic measures such as hand washing, using disinfectant solutions, avoiding contact with patients in order to prevent the spread of viruses by droplets.

There are no specific treatments for illnesses caused by human coronaviruses. Most people with common human coronavirus illness will recover on their own. However, you can do some things to relieve your symptoms, including: Take pain and fever medications (caution: do not give aspirin to children), Use a room humidifier or take a hot shower to help ease a sore throat and cough, If you are mildly sick, you should drink plenty of liquids, stay home and rest.

According to a human MERSCoV case report from South Korea, the use of the combination of Lopinavir/Ritonavir (LPV/RTV) (Anti-HIV drugs), pegylated interferon and ribavirin provided a successful viral clearance.[16] For this purpose, a randomized control trial (MIRACLE Trial), that aimed to determine whether LPV/RTV-IFNb improved clinical results in MERS-CoV patients, was initiated in 2016 and 76 patients were enrolled.[17] Although another antiviral drug, remdesivir was used in the first case reported from the United States of America, seemed successful, controlled studies with more cases are needed.[18] In-vitro studies have shown that viral RNA transcription was terminated with remdesivir in early stage.[19,20] There are publications demonstrating that remdesivir has a strong antiviral activity in epithelial cell cultures against SARS-CoV, MERS-CoV and related zoonotic bat CoVs.[21,22]

Laboratory Diagnosis of 'Covid-19' **Infection**

The decision to test should be based on clinical and epidemiological factors and linked to an assessment of the likelihood of infection. PCR testing of asymptomatic

or mildly symptomatic contacts can be considered in the assessment of individuals who have had contact with a COVID-19 case. Screening protocols should be adapted to the local situation. The case definitions are being regularly reviewed and updated as new information becomes available. For the WHO suspected case definition see: Global Surveillance for human infection with coronavirus disease (COVID-2019).[23] Rapid collection and testing of appropriate specimens from patients meeting the suspected case definition for COVID-19 is a priority for clinical management and outbreak control and should be guided by a laboratory expert. Suspected cases should be screened for the virus with nucleic acid amplification tests (NAAT), such as RT-PCR or antigen detection by EIA is the alternative.

Ensure that adequate standard operating procedures (SOPs) are in use and that staff are trained for appropriate specimen collection, storage, packaging, and transport. All specimens collected for laboratory investigations should be regarded as potentially infectious. Ensure that health care workers who collect specimens adhere rigorously to infection prevention and control guidelines.Specific WHO interim guidance has been published.[24] Additional clinical specimens may be collected as COVID-19 virus has been detected in blood and stool, as had the coronaviruses responsible for SARS and MERS.[25,26,27,28]

Specimens for virus detection should reach the laboratory as soon as possible after collection. Correct handling of specimens during transportation is essential. Specimens that can be delivered promptly to the laboratory can be stored and shipped at 2-8°C. When there is likely to be a delay in specimens reaching the laboratory, the use of viral transport medium is strongly recommended. Specimens may be frozen to - 20°C or ideally -70°C and shipped on dry ice if further delays are expected. It is important to avoid repeated freezing and thawing of specimens.

Transport of specimens within national borders should comply with applicable national regulations. International transport of potentially COVID-19 virus containing samples should follow the UN Model Regulations, and any other applicable regulations depending on the mode of transport being used. More information may be found in the WHO Guidance on regulations for the Transport of Infectious Substances 2019-202022 and WHO interim guidance for laboratory biosafety related to coronavirus disease.[24]

Serological testing

In cases where NAAT assays are negative and there is a strong epidemiological link to COVID-19 infection, paired serum samples (in the acute and convalescent phase) could support diagnosis once validated serology tests are available. Serum samples can be stored for these purposes. Cross reactivity to other coronaviruses can be challenging,[29] but commercial and non-commercial serological tests are currently under development. Some studies with COVID-19 serological data on clinical samples have been published.[30,31]

REFERENCES

1. Zaki A. Novel coronavirus–Saudi Arabia: human isolate. Int Soc Infect Dis., 2012. Pro MED mail. http://www.promedmail.org/direct.php?id=20120920. 1302733.
2. Zaki AM, van Boheemen S, Bestebroer TM, Osterhaus AD, Fouchier RA. Isolation of a novel coronavirus from a man with pneumonia in Saudi Arabia. NEngl J Med., 2012; 367: 1814–20.
3. Mailles A, Blanckaert K, Chaud P, van der Werf S, Lina B, Caro V, et al. First cases of Middle East respiratory syndrome Coronavirus (MERS-CoV) infections in France, investigations and implications for the prevention of human-to-human transmission, Euro Surveill, 2013; 18: 20502.
4. Buchholz U, Müller MA, Nitsche A, Sanewski A, Wevering N, Bauer-Balci T, et al. Contact investigation of a case of human novel coronavirus infection treated in a German hospital, October-November 2012. Euro Surveill, 2013; 18: 20406.
5. European Centre for Disease Prevention and Control (ECDC). Update: severe respiratory disease associated with a novel coronavirus. Stockholm: ECDC, 2012.
6. Bermingham A, Chand MA, Brown CS, Aarons E, Tong C, Langrish C, et al. Severe respiratory illness caused by a novel coronavirus, in a patient transferred to the United Kingdom from the Middle East, September 2012. Euro Surveill, 2012; 17: 20290.
7. Seven days in medicine, Jan 2020; 8-14. BMJ 2020;368:m132.31948945
8. Imperial College London. Report 2: estimating the potential total number of novel coronavirus cases in Wuhan City, China.Jan 2020. https://www.imperial.ac.uk/mrc-globalinfectiousdisease-analysis/news--wuhan-coronavirus.
9. European Centre for Disease Prevention and Control data.Geographical distribution of 2019- nCov cases. Available online:(https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases) (accessed on 05 February 2020).
10. Yin Y, Wunderink RG.MERS, SARS and other coronaviruses as causes of pneumonia. Respirology, 2018; 23: 130–7. http://doi.org/10.1111/resp.13196.
11. Chen Y, Liu Q, Guo D. Emerging coronaviruses: genome structure, replication, and pathogenesis. J Med Virol, 2020. https://doi.org/10.1002/jmv.25681.
12. Enjuanes L, Zuniga S, Castano-Rodriguez C, Gutierrez-Alvarez J, Canton J, Sola I. Molecular basis of coronavirus virulence and vaccine development. Adv Virus Res., 2016; 96: 245–86. http://doi.org/10.1016/bs.aivir.2016.08.003.
13. Ding Y, Wang H, Shen H, Li Z, Geng J, Han H, et al. The clinical pathology of severe acute respiratory

syndrome (SARS): a report from China. J Pathol, 2003; 200: 282–9. http://doi.org/10.1002/path.1440.
14. De Wit E, van Doremalen N, Falzarano D, Munster VJ. SARS and MERS: recent insights into emerging coronaviruses. Nat Rev Microbiol, 2016; 14: 523–34. http://doi. org/10.1038/nrmicro.2016.81.
15. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med., 2020. https://doi.org/10.1056/ NEJMoa2001017.
16. WHO. Emergencies preparedness, response. Pneumonia of unknown origin – China. Disease outbreak news. Available online: https:// HYPERLINK "http://www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/" www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/ (accessed on 05 February 2020)
17. Chen N., Zhou M.; Dong X.; Qu J.;Gong F.; Han Y.; Qiu Y.; Wang J.;Liu Y.;Wei Y.; Xia J.;Yu T.; Zhang X.; Zhang L.; Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet, 2020, publish onlined Jan 29, https://doi.org/10.1016/ S0140- 6736(20)30211-7
18. Arabi, Y. M., Alothman, A., Balkhy et. al. Treatment of Middle East respiratory syndrome with a combination of lopinavirritonavir and interferon-β1b (MIRACLE trial): study protocol for a randomized controlled trial. Trials., 2016; 19(1): 81.
19. Warren, T. K. et al. Therapeutic efficacy of the small molecule GS-5734 against Ebola virus in rhesus monkeys. Nature, 2016; 531: 381–385.
20. Jordan, P. C. et al. Initiation, extension, and termination of RNA synthesis by a paramyxovirus polymerase. PLoS Pathog, 2018; 14: e1006889.
21. Cockrell, A. S. et al. A mouse model for MERS coronavirus-induced acute respiratory distress syndrome. Nat. Microbiol, 2016; 2: 16226.
22. Brown, A. J. et al. Broad spectrum antiviral remdesivir inhibits human endemic and zoonotic deltacoronaviruses with a highly divergent RNA dependent RNA polymerase. Antivir. Res., 2019; 169: 104541.
23. WHO laboratory biosafety manual, third edition.Geneva: World Health Organization; 2004. (http://www.who.int/csr/resources/publications/biosafety/ WHO_CDS_CSR_LYO_2004_11/en/).
24. Laboratory biosafety guidance related to the novel coronavirus (2019-nCoV), World Health Organization; 2020 (https://www.who.int/docs/defaultsource/ coronaviruse/laboratory-biosafety-novelcoronavirus-version-1-1.pdf?sfvrsn=912a9847_2).
25. Baric, R. S., T. Sheahan, D. Deming, E. Donaldson, B. Yount, A. C. Sims, R. S. Roberts, M. Frieman, and B. Rockx. SARS coronavirus vaccine development. Adv. Exp. Med. Biol., 2006; 581: 553–560.
26. Bernini, A., O. Spiga, A. Ciutti, S. Chiellini, L. Bracci, X. Yan, B. Zheng, J. Huang, M. L. He, H. D. Song, P. Hao, G. Zhao, and N. Niccolai. Prediction of quaternary assembly of SARS coronavirus peplomer. Biochem. Biophys. Res. Commun, 2004; 325: 1210–1214.
27. Bisht, H., A. Roberts, L. Vogel, A. Bukreyev, P. L. Collins, B. R. Murphy, K. Subbarao, and B. Moss. Severe acute respiratory syndrome coronavirus spike protein expressed by attenuated vaccinia virus protectively immunizes mice. Proc. Natl. Acad. Sci. USA, 2004; 101: 6641–6646.
28. Bisht, H., A. Roberts, L. Vogel, K. Subbarao, and B. Moss. Neutralizing antibody and protective immunity to SARS coronavirus infection of mice induced by a soluble recombinant polypeptide containing an N-terminal segment of the spike glycoprotein. Virology, 2005; 334: 160–165.
29. Meyer B, Drosten C, Müller MA. Serological assays for emerging coronaviruses: challenges and pitfalls. Virus Res., Dec, 19, 2014; 194: 175-83.
30. Bai Shaoli, Wang Jianyun, Zhou (Yingquan Yu Desheng, Gao Xiaomin, Li Lingling, Yang Fan. Analysis of the first family epidemic situation of new coronavirus pneumonia in Gansu Province. Chinese Journal of Preventive medicine, 2020; 54.
31. Shu-Yuan Xiao, Yingjie Wu, Juan Li, Evolving status of the 2019 novel coronavirus infections: proposal of conventional serologic assays for disease diagnostics and infection monitoring. 2020, J Med Virol., 2020; 1-4.