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COVID-19 an Updated Roadmap – Current Scenario and Recent Development

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Abstract : Coronavirus (COVID-19) is associated with human-to-human transmission. And it causes severe respiratory and systemic infection. Research interest on coronaviruses has been increased after the outbreak of the highly pathogenic Severe Acute respiratory Syndrome Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV). Wuhan, China was first infected country for COVID-19 and it is now spread wordwide. As on April 14 there are more than 100,000 death reported all over the country. The animal to human transmission is suspected to be the route cause of the viruses. Further investigation need to be confirmed for the origin of the noval virus. COVID-19 was recently identified in saliva of infected people. So the potential transmission of the virus is through saliva of infected people. In this article, we discuss the roadmap of COVID-19 and summerised the clinical clarification, diagnosis, causes and risk factor, currently available test, screening and prevention. **Keywords :** COVID-19, Human-to human, Symptoms, Chloroquine, Respiratory issues, Mucus.

1. Introduction

Coronaviruses infect many species of animals, including humans. Coronaviruses have been described for more than 50 years; the isolation of the prototype murine coronavirus strain JHM, for example, was reported in 1949^{1,2}. The pathogenesisand molecular mechanisms of replication of coronaviruses have been studied since 1970s³. Some examples of animal viruses, are Porcine transmissible gastroenteritis virus (TGEV), bovine coronavirus (BCoV), and avian infectious bronchitis viruses (IBV), are veterinary importance. The murine coronavirus mouse hepatitis virus (MHV) is read as a model for human illness. This group of viruses remained generally dark, presumably in light of the fact that there were no extreme human ailments that could be credited to coronaviruses; human coronaviruses caused only the common cold.

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Now COVID-19 has rapidly emerged as a global health threat. The name COVID-19, which stands for a corona virus, was proposed by WHO⁴. The incubation period of COVID-19 falls within 2 to 14 days according to the centers for disease control and prevention⁵, although the incubation period could be up to 24 days in the rare cases⁶. Symptoms of the infection include fever, cough, fatigue, myalgia, dyspnoea and diarrhea. Scans showed patchy shadows in the lungs. Complications include acute respiratory distress syndrome, arrhythmia, and shock, and the mortality rate was around 3% according to large-scale retrospective study⁷. SAPS-CoV-2 is the highly contagious and has evolved into a global health threat within weeks. Since the first case COVID-19 has been reported from Wuhan, China^{8,9} As of 14th April 2020, the confirmed cases involving more than 120 countries. It has infected some 1200,000 people, with more than 100,000 death¹⁰.

Coronaviruses causes respiratory infection first and intestinal infection in animal and human¹¹. They were not considered to be highly pathogenic until the outbreak of SARS-CoV in 2002 and 2003 in Guangdong province, China^{12,13}. After ten years another Coronaviruses, MERS-CoV entered into middle eastern countries^{14,15}. SARS-CoV and MERS-CoV were transmitted to human from animal¹⁶, and we predict COVID-19 viruses have thought to originated from animal. The recently identified COVID-19 was dangerous example of serious illness in humans caused by a coronavirus. This paper aims to share current scenario and recent development to help globally to take necessary measure to minimize COVID-19 infection.

2. Noval Coronavirus

Coronaviruses are huge, single-stranded, wrapped, positive-sense RNA viruses with a genome of roughly 30 kb long, the biggest found in any of the RNA viruses. The variety *Coronavirus* has a place with the family *Coronaviridae* in the request Nidovirales¹⁷. The coronaviruses are ordered into three gatherings dependent on hereditary and serological connections. COVID-19 is another infection answerable for episode of respiratory disease, which has spread around the world.

In spite of the fact that coronaviruses have been perceived as human pathogens for around 50 years, no powerful treatment technique has been endorsed. This deficiency got apparent during the SARS-CoV flare-up and was the beginning of various examinations. All things considered, 5 years after the episode, we are as yet deficient with regards to a powerful monetarily accessible medication. Chloroquine is a clinically affirmed sedate powerful against malaria fever, and it is known to inspire antiviral impacts against a few infections, including human immunodeficiency infection type 1¹⁸⁻²⁰, hepatitis B infection²¹, and herpes simplex infection type 1²². Savarino and associates theorized that chloroquine may be of some utilization for the clinical administration of SARS²³. Moreover, chloroquine was reported to inhibit the replication of HCoV-229E²⁴ and SARS-CoV²⁵ in vitro

3. Clinical Clarification

COVID-19 is a respiratory tract infection predicted to have oriented as a zoonotic virus. This disease was initially called as 2019-nCoV when initial outbreak began in China, which is effects to date as most widespread. It has spread more than 120 countries and on 14th April 2020 it is declared officially by WHO as pandemic²⁶. Coronaviruses are known to mutate and recombine immediately and vigorously. Doctors currently recognized seven type of coronavirus that can infect human.

4. Transmission

COVID-19 spreads vigorously from one person to out but limited research is available. However, researcher believe that viruses spreads through fluid in the respiratory system like mucus. It is a human-tohuman transmission²⁷ and is presumed to occur by close contact²⁸. Most probably by respiratory droplet²⁹. It can be spread by coughing and sneezing without covering the mouth can spread droplet in air. By touching and shaking hands with the person who infected by virus. Making contact with object that has virus and then touching nose, eyes or mouth. It is also not known when the course of infection a person become contagious to others. Chinese authorities have reported the possibility of thransmission may occur before the symptomps developed³⁰. However, it is important in epidemiological studies to identify an etiological agent. But the original source and reservoir of infection is still unknown.

5. Diagnosis

Collection of specimens from respiratory and serum is collected for polymerase chain reaction, additionally sputum specimen if productivity cough is present²⁸. Blood sample should be collected for other testing in order to perform other test simultaneously. Oxygenation should be assessed by pulse oximetry or by arterial blood gas test³¹. Below are the few confirmation reported. Leukopenia may be observed, especially in patients with severe illness^{27,32,33}. In another series about half of the patients was noted as anemia and noted with low platelet count³². Increase in liver enzymes and lactate dehydrogenase are common^{32,33}. Serum levels of some other acute phase reactants are elevated in most patients, as is the erythrocyte sedimentation rate. Bacterial pneumonia includes fever, cough, and dyspnea, pleuritic pain occurs in some cases. Positive outcome on quick flu analytic test affirms flu finding with high explicitness during run of the mill season; negative outcome doesn't preclude flu.

6. Control measures

Prevention depends on standard infection control measure, including isolation of infected people. Due to lack of effective therapeutics or vaccines, the best measure to control human coronaviruses remains a strong public health surveillance system coupled with rapid diagnostic testing and quarantine when necessary. Should wash hands often and thoroughly, avoid public contact, cover coughs using tissues and greet other without touching.

5. Conclusion

COVID-19 is respiratory track infection due to noval coronavirus. Virus is thought to be zoonotic in origin, but the animal reservoir is not known, and it is clear that human-to human transmission is occurring. Diagnosis is confirmed by the detection of viral RNA on polymerase chain test of serum specimen. There is no specific antiviral therapy and vaccine available. However review and studies are available that Chloroquine and hydrochloroquine can be use for treatment and past research study has confirmed that the drug used for treating SARS-CoV. It is relatively safe, effective and cheap drug used for treating many disease including malaria. From the past studies cloroquinone has significant inhibition antiviral effect when the susceptible were treated either prior to or after infection.

Conflict of Interest

No Conflict of interest.

References

- Bailey, O. T., A. M. Pappenheimer, F. Sargent, M. D. Cheever, and J. B. Daniels. 1949. A murine virus (JHM) causing disseminated encephalomyelitis with extensive destruction of myelin. II. Pathology. J. Exp. Med. 90:195-212
- [2] Cheever, F. S., J. B. Daniels, A. M. Pappenheimer, and O. T. Baily. 1949. A murine virus (JHM) causing disseminated encephalomyelitis with extensive destruction of myelin. I. Isolation and biological properties of the virus. J. Exp. Med. 90:181-194
- [3] Zuckerman, A. J., P. E. Taylor, and D. Almeida. 1970. Presence of particles other than the Australia-SH antigen in a case of active hepatitis with cirrhosis. Br. Med. J. 1:262-264.
- [4] WHO Director-General's remarks at the media briefing on 2019-nCoV on 11 February 2020. (2020) World Health Organization. https://www.who.int/dg/speeches/detail/who-director-genereral-s-remarksat-the-media-briefing-on-2019-nCoV-on-11-february-2020. Accessed 18 Fen 2020.
- [5] Symptoms of Coronavirus Disease 2019. (2020) centers for Diseases control and Prevention. Accessed 16 Feb 2020

- [6] Wei-Jie Guan, Zheng-yi Ni, et al., Clinical characteristics of 2019 novel coronavirus infection in China, New England Journal of Medicine (2020)
- [7] Team TNCPERE (2020) The epidemiology Characteristics of an outbreak of 2019 novel Coronavirus diseases (COVID-19). China CDC weekly 2020
- [8] Zhou P, et al., A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature 579 (2020) 270-273
- [9] Wu E, et al., A new coronavirus associated with human respiratory disease in China. Nature 579 (2020) 265-269
- [10] Coronavirus diseases 2019 (COVID-19). Situation Report 38. (2020) World Health Organization. Accessed 28 February 2020
- [11] Masters, P.S., and Perlman, S., in: Fields Virology, Vol. 2 (eds Knipe, D.M. & Howley, P.M.) 825-858 (Lip Pincoll Williams & Wilkins (2013))
- [12] Antony R. Fehr and Stanley Perlman, Coronaviruses An overview of their replication and pathogensis methods, Mol. Biol 1282 (2015) 1-23
- [13] Fouchier, R.A., et al., Aetiology: Koch's Postulates fulfilled for SARS Virus, Nature 423 (2003) 240
- [14] Drosten, C. et al., Identification of a novel coronavirus infection in humans, china. Virol Sin 33 (2006) 104-107
- [15] Zaki, A.M., van Boheener, et al., Isolation of Novel Coronavirus from a man with pneumonia in Saudi Arabia. N. Engl. I. Med., 367 (2012) 1814-1820
- [16] Li, W.H., et al. Anginotensin Converting enzyme 2 is a functional receptor for the SARS Coronavirus. Nature, 426 (2003) 450-454
- [17] Els Keyaerts, Sandra Li, Leen Vijgen, Evelien Rysman, Jannick Verbeeck, Marc Van Ranst, Piet Maes, Antiviral Activity of Chloroquine against Human Coronavirus OC43 Infection in Newborn Mice. American Society for Microbiology, 53(8) (2009) 3416-3421
- [18] Pardridge, W. M., J. Yang, and A. Diagne. 1998. Chloroquine inhibits HIV-1 replication in human peripheral blood lymphocytes. *Immunol. Lett.* 64:45-47.
- [19] Savarino, A., L. Gennero, K. Sperber, and J. R. Boelaert. 2001. The anti-HIV-1 activity of chloroquine. *J. Clin. Virol.* 20:131-135.
- [20] Tsai, W. P., P. L. Nara, H. F. Kung, and S. Oroszlan. 1990. Inhibition of human immunodeficiency virus infectivity by chloroquine. *AIDS Res. Hum. Retrovir*. 6:481-489
- [21] Kouroumalis, E. A., and J. Koskinas. 1986. Treatment of chronic active hepatitis B (CAH B) with chloroquine: a preliminary report. *Ann. Acad. Med. Singapore* 15:149-152
- [22] Singh, A. K., G. S. Sidhu, R. M. Friedman, and R. K. Maheshwari. 1996. Mechanism of enhancement of the antiviral action of interferon against herpes simplex virus-1 by chloroquine. *J. Interferon Cytokine Res.* 16:725-731.
- [23] Savarino, A., J. R. Boelaert, A. Cassone, G. Majori, and R. Cauda. 2003. Effects of chloroquine on viral infections: an old drug against today's diseases? *Lancet Infect. Dis.* 3:722-727
- [24] Blau, D., and K. V. Holmes. 2001. Human coronavirus HCoV-229E enters susceptible cells via the endocytic pathway, p. 193-197. *In* E. Lavi (ed.), *The nidoviruses, coronaviruses and arteriviruses*. Kluwer, New York, NY.
- [25] Keyaerts, E., L. Vijgen, P. Maes, J. Neyts, and M. Van Ranst. 2004. In vitro inhibition of severe acute respiratory syndrome coronavirus by chloroquine. *Biochem. Biophys. Res. Commun.* 323:264-268.
- [26] WHO: Coronavirus Disease 2019 (COVID-19) Situation Report-51. WHO website. Published March 11, 2020. Accessed 12 March 2020. https://www.who.int/docs/default-source/coronaviruse/situationreports/20200311-sitrep-51-covid-19.pdf
- [27] Chan JFW et al., A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. Lancet. Epub (2020)
- [28] CDC: Coronavirus Disease 2019 (COVID-19): Evaluating and Reporting persons under Investigation (PUI). Updated 4 March, 2020. Reviewed March 4, 2020. Accessed March 12, 2020. https://www.cdc.gov/coronavirus/2019-nCoV/hcp/clinical-criteria.html
- [29] CDC: Coronavirus Disease 2019 (COVID-19): How COVID-19 Spreads. CDC website. Updated 4 March, 2020. Reviewed March 4, 2020. Accessed March 12, 2020. https://www.cdc.gov/coronavirus/2019-nCoV/about/transmission.html

- [30] WHO: Novel Coronavirus (2019-nCoV): Situation Report-7. WHO website. Published January 27, 2020. Accessed 12 March 2020. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200127-sitrep-7-2019-nCov.pdf
- [31] WHO: Clinical Management of Severe Acute Respiratory Infection When Novel Coronavirus (nCoV) Infection is Suspected: Interim Guidance. WHO website. Updated January 28, 2020. Accessed 12 March 2020. https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratoryinfection-when-novel-coronavirus-(nCoV)-infection-is-suspected
- [32] Huangna C et al., Clinical feature of patients infected with the 2019 noval coronavirus in Wuhan, china. Lancet. Epub (2020)
- [33] Chen N et al., Epidemiology and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet. Epub (2020)
