

Corona Virus (COVID-19): A Brief Status in India about its Transmission and Precaution

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Abstract

Coronaviruses were first discovered in the 1930s when an acute respiratory infection of domesticated chickens was shown to be caused by infectious bronchitis virus (IBV). Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first reported in Wuhan, Hubei province, China has now rapidly spread over 200 countries. Rapid worldwide spread of Coronavirus Disease 2019 (COVID-19) has resulted in a global pandemic. Current Scenario of India is also not however very good and facing a high risk despite a continuous lockdown from 22nd March - 17th May 2020. However, the lockdown is again increased from 18th May - 31st May 2020.

Keywords: Coronavirus; India; WHO; ICMR; COVID-19

Introduction

Coronavirus disease 2019 (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is a member of Betacoronavirus. The International Committee on Taxonomy of Viruses (ICTV) named the virus as SARS-CoV-2 and the disease as COVID-19 [1-3]. The term "coronavirus" refers to a large group of viruses known to affect birds and mammals, including humans. The name coronavirus was derived from the Latin corona, meaning "crown" or "halo", which refers to the appearance mindful of a solar corona around the virus particles. Corona virus (COVID-19), is an type of infectious disease which is caused by a newly discovered Corona strain as Reported by WHO in Dec 2019. The eruption of COVID-19 was first reported in Wuhan an emerging business hub of China experienced an outbreak of a novel coronavirus that killed more than eighteen hundred and infected over seventy thousand individuals within the first fifty days of the epidemic. This virus was reported to be a member of the β group of coronaviruses and has now rapidly spread over 200 countries [4,5]. Clinical spectrum of this disease varies from mild to severe

in many cases. Fever (88%), cough (67%), and fatigue (34%) were the most common symptoms presented by COVID-19 patients [3] which were similar to those with infections caused by other respiratory viruses, such as Influenza A/B, respiratory syncytial virus, and rhino virus. Total seven strains of Corona virus are found in all. Coronaviruses constitute the subfamily Orthocoronavirinae, in the family Coronaviridae, order Nidovirales, and realm Riboviria [6]. Table 1 shows the classification of coronavirus.

Discovery

Coronaviruses were first discovered in the 1930s when an acute respiratory infection of domesticated chickens was shown to be caused by infectious bronchitis virus (IBV). In the 1940s, two more animal coronaviruses, mouse hepatitis virus (MHV) and transmissible gastroenteritis virus (TGEV), were isolated [7,8].

Structure

COVID-19 is a spherical or pleomorphic enveloped particles containing single-stranded (positive-sense) RNA associated with a nucleoprotein within a capsid comprised of matrix protein. Coro-

Virus classification	
(Unranked)	Virus
Realm	Riboviria
Kingdom	Orthornavirae
Phylum	Pisuviricota
Class	Pisoniviricetes
Order	Nidovirales
Family	Coronaviridae
Subfamily	Orthocoronavirinae

Table 1: Classification of coronavirus.

naviruses possess the largest genomes (26.4 - 31.7 kb) among all known RNA viruses (Figure 1) [9].

Figure 1: Schematic of a coronavirus this new virus probably looks a lot like this. From Biowiki (<http://ruleofsix.fieldofscience.com/2012/09/a-new-corona-virus-should-you-care.html>).

The role of replication process in pathogenicity

The SARS-CoV-2 (COVID-19) generally binds to ACE2 (the angiotensin-converting enzyme 2) by its Spike and allows COVID-19 to enter and infect cells and divide. Coronavirus genome replication and transcription generally takes place at cytoplasmic membranes and therefore it involves coordinated processes of both continuous and discontinuous RNA synthesis which are mediated by the viral replicate, a huge protein complex encoded by the 20-kb replicase gene [4].

Current situation in India

In India the first case was reported from Thrissur district of Kerala on 30th January 2020 as this patient returned from Wuhan, China. As on 13th April 2020 total cases which were reported from India were 10,453 Patients out of which 8,902 are active, 1193 were recovered and 358 were dead. According to reports of Ministry of Health and family Welfare the total cases were doubled in last 6 days irrespective of the Lockdown from 22nd March - 14th

April 2020. After that Lock down further extended to 3rd May while it was again extended which is third lockdown commonly known as 3.0 from 4th - 17th May 2020. During this period cases rises to 77,939 in number. 77,939 is the total number of cases as on 13th May 2020 at 22:22 according to Indian standard of time.

Maharashtra has reported the highest number of cases with total no cases is around 25992 while Delhi which is Capital of India is on fourth position while Tamil Nadu is on the third position and Gujarat is on second position with 9,268 number of cases. Every three in four cases that are infected with novel coronavirus (COVID-19) in India belong to active working population between the age group of 21 to 60 years as on till date. Ministry of Health and Family Welfare (MoHFW), Govt of India has said that of these 75 per cent of the confirmed cases, the maximum cases up to 42 per cent are between 21 to 40 years of age, while 33 percent are between 41 to 60 years of age. The overall active cases is 49,086. The total number of recovered cases is 26300 while the total number of deceased case is 2,548.

“Further, nine percent cases belong to 0 - 20 years while 17 percent belong to an age group of 60 plus individuals,” said Lav Agarwal, Joint Secretary, MoHFW. India is still under the 3rd stage as this lockdown prevented India from the community transmission and according to the WHO India is facing Cluster transmission.

The second Lockdown has been extended from 15th April - 3rd May 2020 to slow down the transmission situation in India. The least affected states are Mizoram, Arunachal Pradesh and one union territory named as Dadar and Nagar Haveli with just one patients in each state. Sikkim is the lone state with no case of Corona virus till date. The graph (Figure 2) below shows the current growth rate of COVID-19. The total number of testing which was done by 12th May 2020 is 17,59,579.

Management, prevention and treatment

The only way to prevent this disease is isolation and Social Distancing as this is the only way we can prevent this situation from Spreading. Respiratory etiquette, hand washing, and personal protective equipment are recommended for all healthcare personnel caring and to normal populations also to remain prevented from COVID-19. Currently, there is no vaccines for this disease and the Hydroxychloroquine is in a class of drugs called as antimalarials. It is used to prevent and treat acute attacks of malaria which is currently in use for this disease in various countries. The ministry of telecommunication has also developed an app called as Aarogya Setu app to keep track on corona patients and made it available to public so that they can also track the infected patients and maintain isolation from them.

Figure 2: Reports as per www.covid19india.org.

The WHO and other organizations like ICMR, INDIA have issued the following general recommendations:

- To Avoid close contact with subjects suffering from acute respiratory infections.
- To Wash your hands frequently, especially after contact with infected people.
- To Avoid unprotected contact with domesticated or wild animals.
- People with symptoms of acute airway infection should keep their distance, cover coughs or sneezes with disposable tissues or clothes and wash their hands frequently.
- Strengthen, in particular, in emergency medicine departments, the application of strict hygiene measures for the prevention and control of infections.
- Individuals that are immunocompromised should avoid any type of public gatherings.

Further, health professionals should be aware of the precautions and necessary steps should be taken to avoid the contraction and spread of the disease [Level 5].

Discussion and Conclusion

The novel coronavirus originated from the one of the human seafood market at Wuhan, China where bats, snakes, raccoon dogs, and other animals are sold, and rapidly spread up to more than 200 countries. The zoonotic source of SARS-CoV-2 is not yet confirmed, however, sequence-based analysis suggested bats as the key reservoir. Severe Acute Respiratory Syndrome coronavirus 2 is the virus responsible for causing COVID-19, which is generally transmitted from person-to-person through close contact by respiratory droplets. The Symptoms of COVID-19 are almost similar to other viral upper respiratory problems. The major flight include mild disease with upper respiratory symptoms, non-severe pneumonia, and severe pneumonia complicated by acute respiratory distress syndrome (ARDS). Emergency physicians should focus on identifying patients at risk, isolating suspected patients, and informing hospital infection prevention and public health authorities. Disposition depends on patient symptoms, haemodynamic status, and patient ability to self-quarantine and isolation.

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Conflict of Interest

Abhishek Jha and Deepak kumar Mishra share first author while Deepika Sharma and Suvercha Arya share second author jointly. The author has no conflict of interest.

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