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COVID-19 PANDEMIC: REVIEW AND AN UPDATE ON CASES IN INDIA

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ABSTRACT

The world has experienced several epidemics posing serious threat to global public health, including the 2002 severe acute respiratory syndrome (SARS) epidemic that caused 800 deaths out of about 8 000 cases, the 2009 H1N1 pandemic with 18 500 deaths, the 2012 Middle East respiratory syndrome (MERS) epidemic that caused 800 deaths out of 2 500 cases, the 2014 Ebola outbreak with 28616 cases and 11310 deaths, and the current coronavirus disease (COVID-19) pandemic with more than 934,409 deaths out of over 29,536,091 confirmed cases till now. and is affecting 213 countries all over the world. Coronavirus (CoV) disease-2019 (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome-CoV-2. The disease started in 2019 in Wuhan, China, and has spread globally, resulting in a pandemic. Common symptoms include fever, cough, and shortness of breath. Muscle pain, sputum production, and sore throat are less common symptoms. While the majority of cases result in mild symptoms, some progress to pneumonia and multiorgan failure. The deaths per number of diagnosed cases is estimated at between 1% and 5%, on an average but varies by age and other health conditions. The infection is spread from one person to others via respiratory droplets, often produced during coughing and sneezing. It takes 2–14 days to develop symptoms from the day of exposure. Reverse transcription-polymerase chain reaction from a nasopharyngeal swab or oropharyngeal swab is the standard method of diagnosis. The infection can also be diagnosed from a combination of symptoms, risk factors, and a chest computed tomography scan showing features of viral pneumonia. Measures recommended to prevent the disease include frequent hand washing, maintaining distance from other people, and not touching one's face. The use of masks is recommended for those who are suspected to have the virus and to their caregivers, besides the general public. As of now, there is no

vaccine or specific antiviral treatment for COVID-19; management involves treatment of symptoms, supportive care, and experimental measures. In this review all (upto possible) information about Corona viruses are given.

KEYWORDS: Coronavirus; COVID-19; SARS-CoV-2; Infectious disease; India.

INTRODUCTION

Coronaviruses (CoVs) are enveloped,single-stranded RNA viruses ranging from 60 to 140 nm in diameter with spike-like projections on its surface, giving it a crown-like appearance under the electron microscope, hence the name CoV. Four CoVs namely HKU1, NL63, 229E, and OC43 have been in circulation in humans, and generally cause mild respiratory disease.[1] On December 31, 2019, a cluster of cases of "pneumonia of unknown origin" in people associated with the Wuhan's Huanan Seafood Wholesale Market has been reported in Hubei province, China. Only a few days later, Chinese health authorities confirmed that this cluster was associated with a novel CoV and was named CoV disease-19 (COVID-19) by the World Health Organization (WHO).[2] COVID-19 is closely associated with bat-derived severe acute respiratory syndrome (SARS-CoV)-like CoV (bat-SL-covzc45 and bat-SL-covzxc21) (with 88% identity), but is far away from SARS-CoV (about 79%) and MERS-CoV (about 50%), by 15th September 2020 number of reported cases are 30.5 million worldwide with 953000 deaths reported. India has reported around 5,009,290 cases with 82,045 mortality till 15 September, 2020.[3]

Aetiology and origin of SARS-CoV-2

Coronaviruses (CoVs) are positively sensed single-stranded RNA viruses that belong to the order Nidovirales, family Coronaviridae, subfamily Orthocoronavirinae with 4 genera: alpha, beta, delta, and gamma coronaviruses.[4] Alpha CoVs and beta CoVs originated from bats and rodents while delta CoVs and gamma CoVs have their origins from avian species.[5] The beta CoVs including SARS- CoV-1 was isolated from bats in 1992 with civet cats being the intermediary host; MERS-CoV was isolated from dometry camels in 2003; and of course, the currently circulating SARS-CoV-2 formally referred to as 2019 novel coronavirus (2019-nCoV) causing COVID-19. SARS-CoV-2 has a pleomorphic and circular structure with a diameter of about 60-140 nm. It can be transmitted from human-to-human by respiratory droplets from sneezing, coughing, and aerosols, with symptomatic people being the major source of transmission. It has a dynamic incubation period of about 2 to 14 days.[6]

Epidemiology of Coronavirus Disease-19

A cluster of pneumonia cases of unknown origin in Hubei province, China, caused concern among health officials in late December 2019. On December 31, an alert was issued by the Wuhan Municipal Health Commission, a rapid response team was sent to Wuhan by the Chinese Center for Disease Control and Prevention (China CDC), and a notification was made to the WHO. Likely potential causes including influenza, avian influenza, adenovirus, SARS-CoV, and MERS-CoV were ruled out. Epidemiological investigation implicated Wuhan's Huanan Seafood Wholesale Market, which was shut down and disinfected, and active case finding was initiated and vigorously pursued. On January 7, 2020, the causative pathogen was identified as a novel CoV, and genomic characterization and test method development ensued. Now named 2019-nCoV, the virus is distinct from both SARS-CoV and MERS-CoV, yet closely related. Early cases suggested that COVID-19 (i.e., the new name for disease caused by the novel CoV) may be less severe than SARS and MERS. However, illness onset among rapidly increasing numbers of people and mounting evidence of human-to-human transmission suggests that 2019-nCoV is more contagious than both SARS-CoV and MERS-CoV.[7,8] The first fatal case was reported on January 11, 2020. The massive migration of Chinese during the Chinese New Year fueled the epidemic. Cases in other provinces of China and those in other countries (Thailand, Japan, and South Korea in quick succession) were reported in people who were returning from Wuhan. Transmission to health-care workers caring for patients was described on January 20, 2020.

Covid-19-statewise-cases status in India[9]

Covid India As On: 15 September 2020, 08:00 IST (GMT+5:30)

State Name	Total Confirmed	Cured/ Discharged/ Migrated	Death
Andaman and Nicobar	3557	3278	52
Andhra Pradesh	575079	476903	4972
Arunachal Pradesh	6298	4531	11
Assam	144166	115054	482
Bihar	160366	145560	831
Chandigarh	8245	5300	98
Chhattisgarh	67327	33109	573
Dadra and Nagar-Haveli and Daman and Diu	2763	2513	2
Delhi	221533	188122	4770
Goa	24898	19648	304
Gujarat	114834	95138	3227
Haryana	96129	74712	1000
Himachal Pradesh	9923	6182	82

Jammu and Kashmir	55325	36381	895
Jharkhand	62737	48112	561
Karnataka	467689	361823	7384
Kerala	110818	79809	454
Ladakh	3419	2475	41
Lakshadweep	0	0	0
Maharashtra	1077374	755850	29894
Manipur	7971	6340	46
Meghalaya	3864	2151	27
Mizoram	1468	919	0
Madhya Pradesh	90730	67711	1791
Nagaland	5214	3915	10
Odisha	155005	122024	637
Puducherry	20226	15027	394
Punjab	82113	58999	2424
Rajasthan	104138	86162	1250
Sikkim	2119	1521	16
Tamil Nadu	508511	453165	8434
Telangana	160571	129187	984
Tripura	19696	11925	207
Uttar Pradesh	317195	245417	4491
Uttarakhand	33016	22213	429
West Bengal	205919	178223	4003

Diagnosis of COVID-19

Coronaviruses have been reported to cause 5% to 10% of acute respiratory infections with more than 2% of the population as healthy carriers of HCoV.[10] The clinical diagnoses are similar to those of other human coronaviruses. The WHO gave a case definition as a patient with fever and at least a symptom of cough or shortness of breath, and with no other cause that explains the symptom and history of journey to or residence of any location reporting local transmission of COVID-19 during the 14 days prior to symptom onset, or a patient with acute respiratory illness and having been in contact with a confirmed or probable COVID-19 case in the last 14 days prior to the onset of symptoms, or a patient with severe acute respiratory infection [fever and at least one sign/ symptom of respiratory disease (*e.g.*, cough, shortness of breath)] and requiring hospitalization and with no other aetiology that fully explains the clinical presentation. A probable case is a suspect case with an inconclusive testing for COVID-19 while a confirmed case is a person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.[11]

Laboratory diagnoses require the collection of respiratory specimens including oropharyngeal or nasopharyngeal aspirates or washes, oropharyngeal or nasopharyngeal

swabs, sputum, bronchoalveolar lavage and tracheal aspirates[12] usually examined and tested with the cultural method of viral isolation in tissue culture or cell lines, the serological technique of antibody titre measurement, electron microscopy for examination of viral particles, conventional and real-time reverse transcriptase polymerase chain reaction.

Common symptoms of COVID-19 include

Cold- or flu-like symptoms usually set in from 2–14 days after a coronavirus infection and are typically mild. However, symptoms vary from person-to-person, and some forms of the virus can be fatal.

1. Fever
2. Breathlessness
3. Sore Throat
4. Cough
5. Exacerbated asthma
6. Watery Diarrhoea
7. Runny nose

Treatment of COVID-19

There is no cure, so treatments include self-care and over-the-counter (OTC) medication. People can take several steps, including:

1. Resting and avoiding overexertion and contamination
2. Using 70% alcohol based sanitizer
3. Avoiding touching mouth or nose with unclean hands
4. Washing the hands with soap for over 2 minutes or using alcohol based sanitizer
5. Maintaining social distance of 1-2 meter
6. Drinking enough water
7. Avoiding smoking and smoky areas
8. Taking acetaminophen, ibuprofen, or naproxen for pain and fever
9. Using a clean humidifier or mist vaporizer
10. A doctor can diagnose the virus by taking a sample of respiratory fluids, such as mucus from the nose, or blood.
11. Standard recommendations to prevent infection spread Its include covering mouth and nose when coughing and sneezing.
12. Avoid close contact with anyone showing symptoms of respiratory illness such as

coughing and sneezing.

13. Avoiding going in crowded places and postpone unnecessary travel in public transport
14. Oxygen and Respiratory support wherever required
15. Low molecular weight heparin to stop prothrombin formation
16. Dexamethasone to combat cytokine storm

CONCLUSION

There are currently over 935,058 deaths out of more than 29,568,061 cases from 213 countries/locations globally, with India having 5,009,290 cases with 82,045 mortality till the 15th September 2020. The novel virus whole-genome sequence showed 96.2% similarity to a bat SARS-related coronavirus isolated in China against <80% to the genomes of SARS-CoV and <50% to MERS-CoV. Therefore, the 2019-nCoV can be considered as a SARS-like virus, hence the name SARS-CoV-2 designated by the Coronavirus Study Group of the International Committee on Taxonomy of Viruses. However, the first preventive strategy is to interrupt the chain of transmission from animal-to-human. Since there is no cure, so treatments include self-care and over-the-counter (OTC) medication.

Conlflict of interest

The author declares that there is no conflict of interest.

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