CORONAVIRUS – A DREADED LURGY

Dr. Fareen Jauhar
Bhms intern at Anushree Homeopathic Medical College,
Jabalpur, Madhyapradesh-India
CorrespondinAuthor: fareenjauhar78@gmail.com

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Abstract

Who would have thought that oxygen that was so much abundant in atmosphere would become luxury? 2019 witnessed an emergence of a disease named coronavirus, a disease that affected mankind physically, mentally and socially. The coronavirus disease-2019 (COVID-19) pandemic, caused by the new coronavirus SARS-CoV-2, spread around the globe with unprecedented consequences for the health of millions of people. While the pandemic is still in progress, with new incidents being reported every day, the resilience of the global society is constantly being challenged. Health system has been catastrophied by this pandemic. There is shortage of medicine, hospital beds, hospital staff and basic amenities as well. In these tough times people have looked to alternative system of medicine to get rid of this deadly virus. Homeopaths marched forward in treating mild to moderate cases and the after effects of SARS-COV-2 infection on human economy. Effective results have been noticed the cure process. Prevention and management of this highly transmissible respiratory viral illness require a holistic and interprofessional approach that includes physicians' expertise across specialties, nurses, pharmacists, public health experts, and governmental authorities.

Key Words: ***Morphogenesis, ectodomain, Antibodies, fomites, mutation, incubation period***

Introduction

Coronavirus disease 2019 (COVID-19) is highly contagious infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-COV-2 is positive-sense single stranded RNA virus(ssRNA) ranging between 26 to 32 kb. At this length the coronavirus is the largest among RNA viruses. As described by US National Institute of Health it is successor to SARS-COV-1, the virus that caused 2002-2004 SARS outbreak. During initial outbreak some names used by different sources included the coronavirus for coronavirus in January 2020 recommended "2019 novel coronavirus" 2019. On 11 Feb 2020 International Committee on Taxonomy of Viruses adopted the official name SARS-COV-2. To avoid confusion with SARS disease W H O sometimes refers to SARS-COV-2 as covid-19 virus in public health communications.

UNDERSTANDING OF CORONAVIRUS STRUCTURE

Coronaviruses are large, enveloped, positive-stranded RNA viruses responsible for infecting a wide variety of mammalian and avian species . These viruses contain spike-like projections of glycoproteins on their surface, which appear like a crown under the electron microscope; hence, they are referred to as coronaviruses. The coronavirus genome encodes several structural and nonstructural proteins. The structural proteins are responsible for host infection , membrane fusion , viral assembly, morphogenesis, and release of virus particles, among other functions, and the nonstructural proteins (nsps) facilitate viral replication and transcription. The membrane (M), the envelope (E), and the spike protein (S) make up the structural proteins and are associated with the envelope. Among these structural proteins, the trimeric S proteins protrude from the virus envelope and are the key machinery that facilitates virus entry into the host cell. The S

proteins are clove-shaped, type-I transmembrane proteins and have 3 segments: a large ectodomain, a single-pass transmembrane, and an intracellular tail. The ectodomain of S proteins consist of the S1 subunit, containing a receptor-binding domain (RBD), and the membrane-fusion subunit (S2). The host-cell receptor recognition by the RBDs on S proteins is the initial step of viral infection, and the binding interactions between the coronavirus spike and its receptor is one of the most critical factors for host range and cross-species transmission. Human coronaviruses recognize a variety of host receptors; specifically, HCoV-229E recognizes human aminopeptidase N (hAPN), MERS-CoV binds dipeptidyl peptidase-4 (DPP4), HCoV-OC43 and HCoV-HKU1 bind certain types of O-acetylated sialic acid , and HCoV-NL63 and SARS-CoV recognize angiotensin-converting enzyme 2 (ACE2). The S proteins, common among all coronaviruses, are a major target for eliciting antibodies; therefore, structural and molecular details of S protein and its interactions with cognate receptors would be vital in developing vaccines and antiviral drugs against SARS-CoV-2.

History and origin

The first human case of COVID-19, the disease caused by novel coronavirus causing COVID-19, subsequently named SARS-COV-2 were first reported by officials in Wuhan City, Hubei province, China in December 2019. Further investigations by Chinese authorities have identified human cases with onset of symptoms in early December 2019 although an earlier case could have occurred. There is no definite proof of time of origin. On 30Jan 2020, WHO declared it Public Health Emergency of International Concern and and by 11 March 2020 it was declared pandemic.

Bats are considered the most likely natural reservoir of SARS-COV-2 but difference between bat coronavirus and SARS-COV-2 suggests that humans were infected via an intermediate host. Mere speculation is noticed regarding origin and research is still going on.

MODE OF TRANSMISSION

Respiratory infections can be transmitted through droplets of different sizes: when the droplet particles are >5-10 μm in diameter they are referred to as respiratory droplets, and when then are <5μm in diameter, they are referred to as droplet nuclei. According to current evidence, COVID-19 virus is primarily transmitted between people through respiratory droplets and contact routes. Droplet transmission occurs when a person is in in close contact (within 1 m) with someone who has respiratory symptoms (e.g., coughing or sneezing) and is therefore at risk of having his/her mucosae (mouth and nose) or conjunctiva (eyes) exposed to potentially infective respiratory droplets. Transmission may also occur through fomites in the immediate environment around the infected person. Therefore, transmission of the COVID-19 virus can occur by direct contact with infected people and indirect contact with surfaces in the immediate environment or with objects used on the infected person (e.g., stethoscope or thermometer). Airborne transmission is different from droplet transmission as it refers to the presence of microbes within droplet nuclei, which are generally considered to be particles <5μm in diameter, can remain in the air for long periods of time and be transmitted to others over distances greater than 1 m. In the context of COVID-19, airborne transmission may be possible in specific circumstances and settings in which procedures or support treatments that generate aerosols are performed; i.e., endotracheal intubation, bronchoscopy, open suctioning, administration of nebulized treatment, manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator, non-invasive positive-pressure ventilation, tracheostomy, and cardiopulmonary resuscitation. There is some evidence that COVID-19 infection may lead to intestinal infection and be present in faeces. However, to date only one study has cultured the COVID-19 virus from a single stool specimen.

SPREAD

Basic reproduction number has been estimated to be around 5.7 this means each infection from virus is expected to result in 5.7 new infection when no members of community are immune and

no preventive measures are taken. On 25 Jan 2020 alone in Wuhan, China 75815 cases were reported and worldwide only 2015 cases were recorded. Before 24Feb, 2020 95% of all deaths from COVID-19 had occurred in Hubei province.

VARIANTS

When a virus replicates or makes copies of itself, it sometimes changes a little bit, which is normal for a virus. These changes are called "mutations". A virus with one or more new mutations is referred to as a "variant" of the original virus. When a virus is widely circulating in a population and causing many infections, the likelihood of the virus mutating increases. The more opportunities a virus has to spread, the more it replicates – and the more opportunities it has to undergo changes. Two important dominant variants has been identified namely UK B.1.1.7 and Indian B.1.617. Mutation in L452R have seemed to increase infectivity. Brazilian variant is regarded the deadly variant with 18 different mutations including Brazilian, British and South African varieties. Variants can override vaccines and unleash severe disease according to US Center for Disease Control and Prevention. Currently 3 vaccines have been approved in Indian namely Covaxin, Covishield and Sputnik V.

SYMPTOMS

Once a person has contracted coronavirus, it can take 2-4 days for symptoms to appear. The average incubation period appears to be roughly 5-6 days. According to the WHO, symptoms of coronavirus can be mild and come on gradually. According to *The Lancet*, when hospital admission is necessary, this typically occurs from 7 days onwards. The Centres for Disease Control and Prevention(CDC) , state that a person with COVID-19 can experience a wide range of symptoms, often including a dry cough and shortness of breath. Symptoms may appear 2-14 days after exposure to the virus. Anyone can have mild to severe symptoms. People with these clinical manifestations may have COVID-19

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

In some patients particularly the elderly adults and people who have severe underlying medical conditions like heart or lung disease or diabetes seem to be at higher risk for developing more serious complications from COVID-19 illness.

It seems to **start with a fever**, **followed by a dry cough**. **After a week, it can lead to shortness of breath,** with about 20% of patients requiring hospital treatment. Notably, the COVID-19 infection **rarely seems to cause a runny nose**, sneezing, or sore throat (these symptoms have been observed in only about 5% of patients). **Sore throat, sneezing, and stuffy nose are most often signs of a cold**.

- **80.9% of infections are mild** (with flu-like symptoms) and **can recover at home**.
- **13.8% are severe**, developing severe diseases including **pneumonia** and **shortness of breath**.
- **4.7% as critical** and can include: **respiratory failure**, **septic shock**, and **multi-organ failure**.
- in about 2% of reported cases the virus is fatal.
- Risk of death increases the older you are.
- Relatively few cases are seen among children.

Using available preliminary data, the Report of the WHO-China Joint Mission published on Feb. 28 by WHO, which is based on 55,924 laboratory confirmed cases, observed the following median time from symptoms onset to clinical recovery:

- **mild cases**: approximately **2 weeks**
- **severe or critical** disease: **3 - 6 weeks**

- time from onset to the development of severe disease (including hypoxia): **1 week**

Among patients who have died, the time from symptom onset to outcome ranges from 2 - 8 weeks.

UNDERSTANDING OF WAVE DURING A PANDEMIC

Wave is defined as the curve of any outbreak that reflects the rise and fall of cases over a definite period. A wave ends only when the virus has been contained and cases have fallen exponentially. A sustained rise in infections indicates a second wave which is what happened in India and is spreading in other countries. Mutation in genetic code and continuous spread of virus allows it to get easily identify and bypass Antibodies since the immune system remains confined to original strain whereabouts. Vaccination on a larger scale of the mutant variant is the only measure to stop these waves outbreak. For various mutant strains, a booster slot of vaccines will be required to protect against variants.

WHERE DOES INDIA STAND SINCE VIRUS OUTBREAK

FIRST WAVE

The first cases of COVID-19 in India were reported in the towns of Thrissur, Alappuzha and Kasargod, all in the state of Kerala, among three Indian medical students who had returned from Wuhan. Lockdowns were announced in Kerala on 23 March, and in the rest of the country on 25 March. By mid-May 2020, five cities accounted for around half of all reported cases in the country: Mumbai, Delhi, Ahmedabad, Chennai an d Thane. On 10 June, India's recoveries exceeded active cases for the first time. Infection rates started to drop in September, along with the number of new and active cases. Daily cases peaked mid-September with over 90,000 cases reported per-day, dropping to below 15,000 in January 2021.

SECOND WAVE

A second wave began in March 2021 was much larger than the first, with shortages of vaccines, hospital beds, oxygen cylinders and other medicines in parts of the country. By late April, India led the world in new and active cases. On 30 April 2021, it became the first country to report over 400,000 new cases in a 24-hour period. Health experts believe that India's figures have been underreported due to several factors. Big religious gathering, reopening of mist public places and crowded election rallies are to be blamed for the uptick. In February, we received warning signs but none of us paid attention to it. A false sense of normalcy crept in and everybody including people and officials did not take measure to stop it. Moreover India lagged behind in genome sequencing of virus. Sequencing becomes important in a pandemic as it allows scientists to monitor changes in virus. If a more infective variant is detected early in a region one can quickly put in public measures to stop it in spreading wider in the community. Larger number of Asymptomatic carriers and marking of containment zone less strict sowed the seed for second wave outbreak .

Since the second wave of the pandemic started, the healthcare system in India has been teetering on the brink, with many hospitals unable to handle the relentless inflow of patients whilst also running short of beds, oxygen cylinders and other essentials. Estimates of the health ministry and Center for Disease Dynamics, Economics & Policy (CDDEP), an independent think tank, along with Princeton University are taken as accurate, India had just about 13.76 beds per 10,000 people when the country was hit by the first wave of the Covid-19 infection. For a country producing over 7,000 metric tonnes of liquid oxygen per day indicates that the problem lies in uneven supply and logistical issues that have led to an oxygen crisis in some states. Labs are overrun and it's taking up to three days for test results to come back. This is making it harder for treating doctors to assess the progression of the disease. CT scans are also used by doctors to asses the condition of the patient but it's taking

days to get an appointment. anti-viral drug Remdesivir developed to treat Ebola has been given emergency-use approval in India and is being prescribed widely by doctors. Remdesivir is in such short supply that families of the patients who are being treated at home are rushing to procure it. They want to have the drug in case the patient is required to go to hospital and may need the drug. Another drug that is in huge demand is Tocilizumab normally used to treat arthritis but studies have shown that it can reduce the chances of people on going on ventilator. Doctors are prescribing the drug mostly to patients who are severely sick. But it has disappeared from the market. Cipla, the Indian company that imports and sells the drug, has been struggling to meet the rising demand.

THIRD WAVE

Reports are suggestive of children being at higher risk of acquiring infection since adults are being vaccinated on priority and no authorisation to vaccinate those under 18 years of age. According to IIT Kanpur the third wave is projected to head in October. The government needs to be well armored to combat it. **Institute for Health Metrics and Evaluation (IHME)** an independent global health research center at **University of Washington** suggests that universal mask coverage could prevent 70000 deaths and if vaccination target for every Indian above 18 is met on schedule another 85600 lives be saved by August 1. Dr. Nandhita, Consultant General Medicine at Apollo Telehealth, Hyderabad suggests that "Unity is strength. The fight against a pandemic will have to be collaboratively fought by all the people of the democracy. Effective participation from all the people will ensure that the pandemic can be curtailed and will not overburden the health care system which is working relentlessly to ensure the safe well being of all the affected people.

HOW HOMEOPATHY CAN HELP

Homeopathy, as a healing method, is based on the Hippocratic ´´Similia Similibus Curentur´´ therapeutic law. The physician relies on the wholeness of symptoms revealed during the entire evolution of the infection, and prescribes an ultra - high diluted succussed solution product which has been proven to heal similar conditions. This is a great advantage in this timing while Covid-19 disease is in rapid devemopment, because the diagnosis of the indicated ultra-high diluted succussed solution product is based on individual symptoms (if these are very characteristic) or on the totality of symptoms, and not in the pathology. In early stages of pathology medicines like Aconitum napellus, Arsenicum Album, Eupatorium perfoliatum, Gelsemium and Ipecacuana, in the later stages Bryonia or Phosphorus as the main drugs, and in the final stages Antimonium Tartaricum or Baptisia or Camphor Officinalis are suggested. Ayush department advocated the use of Arsenic Album 30 as prophylaxis against this virus. A dose of Senega 200C, once a week for the next several weeks could be used as a preventive against COVID-19. Pyrogenium aids in reducing body temperature. Pix liquida has shown significant results in persons complaining of bronchial irritation after having recovered from the disease.

CONCLUSION

The timely identification of a suitable treatment still remains a significant challenge and will still require time. Epidemiological research needs to be carried out to include homeopathic treatment and compare it to established treatment. In the meantime To prevent the spread of COVID-19 Clean your hands often. Use soap and water, or an alcohol-based hand rub. Maintain a safe distance from anyone who is coughing or sneezing. Wear a mask when physical distancing is not possible. Don't touch your eyes, nose or mouth. Cover your nose and mouth with your bent elbow or a tissue when you cough or sneeze. Stay home if you feel unwell. If you have a fever, cough and difficulty breathing, seek medical attention. Together we can fight this virus.

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