

REVIEW ON THE CORONAVIRUS DISEASE (COVID-19) PANDEMIC: ITS OUTBREAK AND CURRENT STATUS

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Abstract

The first incidence of the COVID-19 pandemic, which is spreading quickly, was found in Wuhan, Hubei Province, China, in December 2019. On March 11, 2020, the WHO proclaimed COVID-19 to be a pandemic due to the rapid increase in cases both in China and around the world. The disease, which mostly damages the lung parenchyma, is spread through respiratory droplets produced when infected individuals cough or sneeze. Patients with COVID-19 can experience a wide range of clinical symptoms, from asymptomatic infections to life-threatening disease. Although COVID-19 patients are most frequently affected by respiratory involvement, the virus can also harm other organ systems. The development of extra-pulmonary symptoms affecting the gastrointestinal, cardiovascular, hematological, renal, musculoskeletal, and endocrine systems is explained by the systemic inflammation caused by the disease in combination with multisystem expression of Angiotensin Converting Enzyme 2 (ACE2), a receptor that permits viral entry into cells. In this article, we've covered the wide body of literature on COVID-19 that covers a variety of clinical presentations according to the organ system affected as well as clinical presentations in certain populations like kids, pregnant women, and patients with impaired immune systems. Additionally, we briefly touched on the treatment of COVID-19. Understanding the various clinical manifestations can aid doctors in correctly diagnosing COVID-19 early on and implementing the necessary countermeasures to stop the disease's progress.

Keywords: COVID-19, Coronavirus, Outbreak, life-threatening, Angiotensin Converting Enzyme 2.

1. INTRODUCTION

In December 2019, the central Chinese city of Wuhan reported a number of pneumonia cases with no recognized etiology. End of December 2019 saw reports of individuals in Wuhan, China, who had viral pneumonia brought on by an unidentified microbiological pathogen. The responsible pathogen was later discovered to be a novel coronavirus, which has been given the working name 2019 novel coronavirus. (2019-nCoV). WHO designated the rapidly spreading coronavirus disease as COVID-19 on March 11th, 2020. More than 2,000 COVID-19 infections have been reported as of January 26, 2020, with the majority of these cases involving people who reside in or travel to Wuhan. Human-to-human transmission has also been established. The main symptoms of COVID-19 are fever, coughing, and shortness of breath. It is largely a respiratory disease that affects the lung parenchyma. Extra-pulmonary symptoms are frequently associated with delayed or incorrect diagnoses of COVID-19, which can be harmful to patients. Understanding the many clinical manifestations of COVID-19 is crucial for early diagnosis and treatment in order to reduce the morbidity and mortality brought on by the disease. This is because researchers across the world are still learning about COVID-19 and its effects on the human body. To summarise the pathogenesis and ongoing epidemic, epidemiological data, diagnosis, disease control strategies, and preventative measures in the current study, we carried out a thorough review that was publicly available.

2. Methodology

Electronic databases like EMBASE, Pubmed, and Google Scholar were used to conduct the literature search. To find more pertinent articles, it was manually searched the reference lists of the research that were retrieved. "COVID-19," "Prevention," "Pneumonia outbreak," and "Coronavirus" were among the terms and keywords chosen to conduct the literature search.

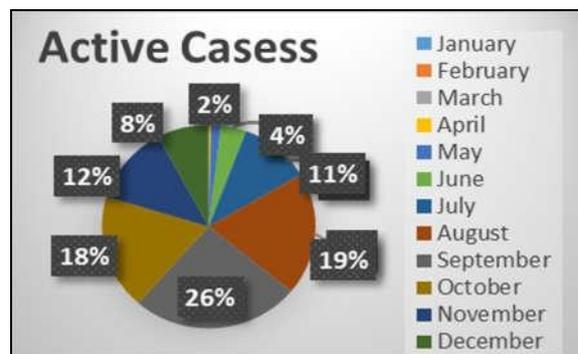
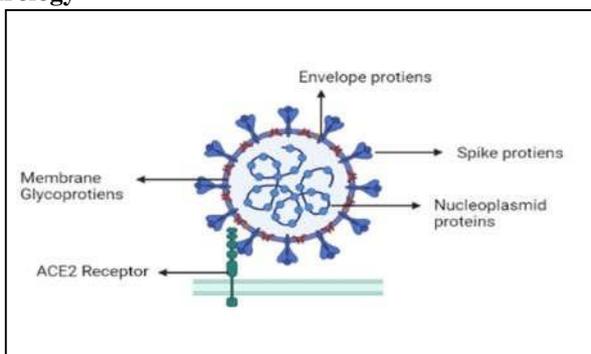
Novel corona viruses, "2019-nCoV," and "supportive care" were other search phrases. Studies involving humans and written in English were the only ones that the filters were configured to look for. All COVID-19-related literature has been sought out in an effort to find it. The search therefore had no time restriction. To determine relevance, the titles and abstracts of the retrieved studies were screened. Studies that addressed the following significant issues were included in the current assessment of the literature: aetiology, pathogenesis, mode of transmission, clinical diagnosis, special consideration for vulnerable populations, clinical management and treatment; and early supportive therapy and monitoring. We excluded studies that didn't address any of the aforementioned topics. Only full-text papers, interim WHO guidelines, and information from the Centers for Disease Control and Prevention were used to extract data. (CDC).

3. Etiology

A novel betacoronavirus (of the same family as SARS-CoV and MERS-CoV) that was the cause of the cluster of pneumonia cases in Wuhan was definitively discovered by next-generation sequencing (NGS) using cultured virus or samples from several pneumonia patients.

A virus with the crown form known as a coronavirus can be seen using electron microscopy imaging. Sequence data led to the development of genetic amplification assays, which will be utilised in the future to detect multiple cases by labs affiliated with the China Center for Disease Control (CCDC)

4. Virology



The name "coronavirus" comes from the Latin word corona, which meaning "halo," and refers to the spikes that resemble crowns on their surface. Animals, birds, and people can all contract viruses. The club-like spikes that protrude from the surface of the enveloped positive-sense RNA viruses known as corona viruses (Covid), an extraordinarily large RNA genome, and a unique reproductive strategy set them apart. Here is a brief summary of corona viruses that includes details about their toxicity, reproduction, and available preventative and therapeutic approaches. Additionally included are the highly dangerous Severe Acute Respiratory Syndrome Coronavirus (SARS-Covid) outbreaks as well as the recently identified Middle Eastern Respiratory Syndrome Coronavirus. (MERS-Covid).(1)(2)(3)The government decided to declare a state of emergency to address the outbreak as the number of cases increased daily. There were numerous limitations on movement and gathering.

4.1 Classification

The majority of viruses referred to be Coronaviruses reside in the Nidovirale order, which includes the Coronaviridae, Arteriviridae, Mesoniviridae, and Roniviridae families of viruses.

(Covid). The Coronaviridae family is made up of the Tecovirimat and Coronaviridae subfamilies. The remaining four genera that make up the Coronaviridae are alpha, beta, gamma, and delta corona viruses. While gamma can only infect avian species, the other two, alpha and beta, can infect both mammals and birds. Previously, these genera were employed to classify the viruses based on serology; however, phylogenetic clustering has since taken its place.(1)

The entire order of noroviruses consists of positive-sense RNA viruses that have an envelope but no segments. They all have extraordinarily large RNA viral genomes, some of the viruses having the largest RNA genomes yet found, with genome sizes of up to 33.5 kilo bases. (kb). Members of the nudiviral order also share the following traits: (1) a large replicase gene that comes before structural and accessory genes; (2) ribosomal frameshifting for the expression of numerous non-structural genetic components; (3) a number of unusual or unique enzyme reactions encrypted within the large replicase transcriptase polyprotein; and (4) expression of downstream genes through the synthesis of 3' nested subgenomic mRNAs.(1)(2)

4.2 Genomic Organization

Corona viruses have a non-translated, 30-kb positive-sense RNA genome. Due to its 5' cap structure and 3' poly (A) tail, the genome serves as an mRNA for the replicase polyproteins' translation. Near the 5' end of the genome, there is a leader sequence and a UTR with many stem loop structures that are required for RNA transcription and replication. Transcriptional regulatory sequences (TRSs), which are required for each of these genes to be expressed, are also present in each structural or auxiliary gene. Also present in the 3' UTR are the RNA structures required for viral RNA synthesis and replication. The coronavirus genome is organized as follows: The structural -3' UTR-poly (A) tail is interspersed with 5'-leader-UTR-replicase-S (Spike), E (Envelope), M (Membrane), and N (Nucleocapsid) auxiliary genes. (1)(4)(2)(5)

4.3 Virion Structure

Cryoelectronic tomography and cryoelectronic microscopy investigations recently conducted have demonstrated that coronavirus virions are spherical and have diameters of about 125 nm. The most distinguishing feature of coronaviruses is the protrusion of spikes resembling clubs from their surface. These spikes, which are a distinctive feature of the virion and give it the appearance of a solar corona, are whence "corona viruses" get their name. The envelope around the virion contains the nucleocapsid. Coronaviruses are characterized by helically symmetrical nucleocapsids, which are far more frequent in negative-sense RNA viruses than in positive-sense RNA viruses. (1)(4)(2)(5)

Coronavirus have four main structural proteins. Spike (S), Membrane (M), Envelope (E), and Nucleocapsid (N) are the four proteins that are all encoded at the 3' end of the viral genome. The 150 kDa S protein enters the ER via an N-terminal signal sequence and is heavily N-linked glycosylated. Most coronaviruses employ a protease related to the furin found in the host cell to split S into the two separate polypeptides S1 and S2.

4.4 Genomic Organization and Comparison between different variants of Covid-19

There have been a total of 5 versions identified since the pandemic scenario began. Omicron, Beta, Gamma, Delta, and Alpha are all recognised at this time. Studies indicate that the likelihood of COVID19 spreading is increased by the mutation in these variations.(6)

- 1) Alpha Variety (B.1.1.7): HCoV-229E, a human virus strain that affects the amino peptidase enzyme, and HCoV-NL63, a human virus strain that affects the angiotensin converting type 2 enzyme. The UK is where it was initially found.
- 2) Beta Version (B.1.351): SARS-Covid and MERS-Covid are both present in this variant. The main receptors for SARS-Covid and MERS-Covid, respectively, are angiotensin converting enzyme 2 and dipeptidyl peptidase. In addition, the non-SARS versions of the HCoV that influence sialic acid residue are HCoV-OC43 and HCoV-HKU1. In South Africa, it was discovered.
- 3) Gamma Variety (P.1): This variant, also known as an avian coronavirus, affects the chicken's respiratory and reproductive systems. It turned up in Brazil.
- 4) Delta (B.1.617.2): According to studies, due to its high rate of transmission, this variety is most harmful. It is also claimed that this type is the most lethal. It was discovered in India during second wave of COVID-19
- 5) Omicron: Although this variety has a high chance of spreading, it has a low death rate. Third wave of the COVID-19 exhibits this variation. (7)(8)

4.5 Mutation in Coronavirus

The mode of transmission, the severity, and the replication process can all be altered by mutation. RNA changes occur far more quickly than DNA changes do. Between the sequence and the consensus sequence of SARS-CoV2, 380 amino acid substitutions are possible where the proteins p6 and 8b, nsp7 and nsp13 show no difference. Approximately 27 amino acids in the S protein of the coronavirus had undergone mutation. The start of viral infections is carried by the S protein. S2 protein changes as a result, which facilitates viral entrance. As a result of these modifications, the viral

genome enters the host and the 6 helix bundle fuses. After then, the nucleoplasmids become uncoated and genomic. RNA starts to function as messenger RNA. Then, replication employs the replication-transcription complex is created as a result of the replication and transcription processes (RT Complex). The M protein is necessary for virion assembly. Understanding the function of the proteins that are crucial to COVID-19's pathophysiology can be gained through studying the SARS-Covid genomic sequence.(9)

5. Clinical evaluation

The signs and symptoms of COVID-19 range from mild rhinitis to septic shock, yet they are nevertheless extremely similar to those of previous respiratory epidemics like SARS and MERS. The previous epidemics had some reports of digestive issues, but COVID-19 did not have any. Examined patients exhibit unilateral or bilateral involvement consistent with viral pneumonia, while patients admitted to the intensive care unit showed bilateral numerous lobular and sub-segmental consolidation areas. Patients with comorbid conditions displayed a more severe clinical outcome than anticipated based on prior epidemics. The whole history of travel and contact, along with laboratory testing, are all factors in the diagnosis of COVID-19. The best option is serological screening, which may evaluate even silent infections; numerous serological assays are being conducted for SARS-CoV-2

5.1 Laboratory testing for coronavirus disease

1. Isothermal Amplification Incorporated with CRISPR Technology: - Cas 12 and Cas 13 (CRISPR associated proteins) key factors of detection techniques based on need of PAM sequence and cleavage activity of sRNA. Cas 12 has ability but Cas 13 doesn't. Isothermal amplification methods for detection of SARS COV 2 have been modified to utilize RISPR technique, using both Cas 12 and Cas 13. When synthesizing primers for transcription of SARS Covid 2 RNA, CRISPR targeting sequence factored and identified.(10)

5.2. Nanomaterials based diagnosis of cov-19:

In this, RNA of virus removed byco-precipitation which promoted by magnetic nanoparticles followed by addition ofpolyamineesterificationvia (3-aminopropyl triethoxysilane).(11)

5.3. Diagnosis by radiography:

After RT-PCR as says lung ultra sound(IUS) x-ray of chest should be carried out because it makes easier to treat, it has commonly used for afterdetectionofCovid antigen .(11)CT and MRI supplementary diagnosis:-It gives assertion and idea about how much viral infection has been spread. By CT scan of bilateral pulmonary parenchymal image of lung illustrated. Lung engrossment with peripheral predominance observed in MERS and SARS. suppose RT-PCR negative and patient having symptoms Covid infectiondetectedby chest x-ray.(11)

5.4. RT-PCR:

At starting of pandemic, RT-PCR was available for diagnosis based up on detection of S&E gene in SARS cov2 (10). It is approved by WHO and FDA, along with this specific high-sensitivity enzymereceptorun blocking (SHERLOCK) assay, loop mediated isothermal amplification (LAMP), real time LAMP used (12). In real time PCR nasoparngeal swab having more potential of surety of result as compare with throat swab and also minimize chances of false positive result (13)(14).

5.5. CT and MRI supplementary diagnosis:

It gives assertion and idea about how much viral infection has been spread. By CT scan of bilateral pulmonary parenchymal image of lung illustrated. Lung engrossment with peripheral predominance observed in MERS and SARS. Suppose RT-PCR negative and patient having symptoms Covid infectiondetectedby chest x-ray.(11)

5.6. Serological diagnosis:

Based upon detection of antibodies responsible for S proteinsand also determine concentration of IgG and IgM antibodies required 10-15 min for result interpretation (12)(13)(14).

ELISA &Chemiluminescent Immunoassay (CLIA) – detection of antibodies against spike protein like IgM and IgG. also, concentration measured byfluorescenceproducing reactionwithAvidin-HorseradishPeroxidase enzyme(14).

5.7. Antigen based diagnosis:

In this reaction between antigen/anti body with specific biomarker (12).

6. Clinical management and treatment

Treatment is necessary to support key organ functions in severe COVID-19 patients. Contacting a healthcare physician right away is advised for anyone who believes they may have been exposed to COVID-19. In an Airborne Infection Isolation Room, medical staff should take care of patients. (AIIR). The medical practitioner must exercise precautions, including contact and airborne ones that include eye protection(31).

It's possible that patients with a moderate clinical presentation won't need to be admitted for treatment. Individuals with COVID-19 infection need to be closely monitored. Risk factors for acquiring a serious illness include ageing people,

those with pre-existing chronic illnesses like lung disease, heart failure, cancer, cerebrovascular disease, renal disease, diabetes, liver disease, and disorders that impair immunity, as well as pregnant women. Advanced organ support is provided along with supportive therapy for the complications, along with the establishment of prevention and control measures.

6.1 Early supportive therapy and monitoring

Treatment of patients with a suspected or documented COVID-19 entails providing proper infection control and supportive care. Clinical recommendations for COVID-19 were published by the CDC and WHO. For patients who have a severe acute respiratory infection (SARI), respiratory distress, shock, or hypoxemia, add-on oxygen therapy must be initiated right away. Only when there is no sign of shock can patients with SARI receive conservative fluid treatment. SARI management requires the initiation of empiric antibiotic therapy. Antimicrobials must be given to sepsis patients one hour after initial evaluations. Unless there are other indications, the WHO and CDC advise against using glucocorticoids in patients with COVID-19 pneumonia (32). Clinical deterioration of patients with SARI is closely monitored, but rapidly progressing respiratory failure and sepsis necessitate immediate supportive care interventions, including quick use of sedatives and neuromuscular blockade, hemodynamic management, nutritional support, maintenance of blood glucose levels, prompt assessment and treatment of nosocomial pneumonia, and prophylaxis against deep vein thrombosis (DVT) and gastrointestinal (GI) bleeding (33).

These individuals typically succumb to secondary problems, such as sepsis or multiorgan system failure, in addition to their primary sickness.

6.2 Convalescent plasma therapy

Principle behind convalescent plasma therapy, admittance of readymade anti bodies which has active against covid-19. It has taken by those volunteers who already suffering from covid infection. Starting period of coronapandemic there was no option of vaccines, particular drugs against infection so that time plasma therapy was best way to protect from covid-19 infection. 3 approaches related to therapy. Plasma 1) must be contain specification bodies against SARSCOV2. 2) must have sufficient concentration of antibodies 3) able to transfuse prophylactically. History of the plasma therapy started and awarded by Nobel prize in physiology or medicine for therapy for diphtheria .by giving plasma therapy within 3 days there was reduction of 41% risk of death .(15)

6.3 Antiviral therapy

In the management of antiviral therapy, some factors should be considered like clinical studies, evaluation of safety, efficacy, selection criteria, guidelines. Clinical trial was conducted for lopinavir-ritonavir regimen on 99 patients (400mg/100mg twice in day for 14 days). final outcome had come after treatment no viral load was detected. Another study huetai carried-out treatment on 24 asymptomatic patients and concluded no death had been occurred and no need of ventilation. Broad spectrum antiviral drug lifesaver which has bind to the non-catalytic site of SARS-covid -2 RdRp and exert effect. Some protease inhibitors like disulfiram and darunavir used against HIV-1 & HCV infection and also has activity against covid19 infections. Remdesivir having activity by incorporation into nascent viral RNA chains in early RNA (16).

6.4 Herbal therapy

A Cochrane systemic review observed that herbal medicine combination of herbal drugs with western drugs has affinity against SARS COV 19 .it is also declared by national health commission of china (17).

6.5 Vaccine therapy

S protein and ACE responsible for the covid 19 progression. And it has also key factor for the preparation of vaccines Live-attenuated and Inactivated vaccines: -vaccines developed by the Sinovac concluded that is well tolerated and having high capacity to resist infection. under the preclinical study 3 live attended vaccines has been developed by Sinopharm and Wuhan research institute.

m-RNA and DNA vaccines:- BioNTech developed mRNA vaccines having capacity to Restricted Binding Domain of the S protein. vaccine encapsulated in lipid nanoparticles shows higher expression along with DNA vaccine leads to T-cell production & higher immunogenicity potential (7).

Adenoviral vector vaccines: - In adenovirus, E1 and E3 genes cut out and restore by gene of interest. These vaccines having more therapeutic potential, cheapest, thermal stable benefits (8)

VLP-based vaccines: - VLP vaccine can be made by yeast, bacteria, prokaryotic eukaryotic using upstream as well as downstream process. In SARS Covid 1 it possesses expression on the M and E proteins (9).

6.6 Yoga therapy

Dharmasena, Bunagana, Andromache Shava asana helps to improve immune genicity also Soyabean, Ujjayi, Harshika & Bhandari her bshelps to protection and treatment of covid 19 (18).

Sr. No.	Drug	Category	Mechanism of action	Pharmacokinetics	Use	Adverse effects
1.	Ivermectin (stomectrol, mectzan)(19)	Antiviral	Inhibit nuclear import of viral protein(20)	Oral dose- 2mgPlasmaconc.- 150µg/lit Vic-3.1- 3.5kg ⁻¹ PPB-93.2% (21)	Yellow fever, dengue, Covid 19(19)	Encephalopathies, Mazzite Reactions, lymphadenopat Hy, arthralgia, tachycardia, Hypotension (10)
2.	Favipiravir (22)	Antiviral	Serves as a substrate for Independent Unpolymerized (RdRp), termination of viral protein synthesis (24)	Bioavailability (~94%), 54% protein binding, low volume of distribution 10-20 L, renale lamination, drug smeta bolized By the CYP2C8 system (24)	Hemorrhagic fever (23)	Hyperuricemia QT prolongation, diarrhoea (24)
3.	Dexamethasone(Amitrole-poly-Dex, Decamine, Poly-Dex.)(34)	Synthetic steroid (25)	Dose dependent action, Both genomic (for low dosages) and nongenomic (for high doses of dexamethasone) processes (25)	6mg/day by oral, 4mg/day IV, Vd-1 L/kg, bioavailability of oral 81% (35)	NSAIDs	Hyperglycemia, Psychosis, Avascular necrosis Higher risk of secondary infections
4.	Lopinavir (Kaltura) (36)	Antiviral	In hibit SARS-CoV3C-like protease enzyme(6)	Maximum effective concentration (EC50) of 26.63µm. meta bolized by the hepatic CYP3A enzyme (26)	Prevention of HIV infection, prevention of SARS-CoV-2(36)	QT prolongation ,Hepatotoxicity, Head ache stomach Upset, Trouble sleeping. (36)
5.	Hydroxychloroquine (Plaquenil) (37)	Antiviral	Of endocytic pathway SARS COV-19, inhibition of cytokine Strome(27)		Antimalarial drug, immunomodulatory properties, anti prolifera tive (28)	gastrointestinal dermatological, neurological, retinal, and cardiac side effects(28)

7. POSTRECOVERY

According to the National institute for health& care excellence as symptoms considered post-recovery as "long Covid" develop after recovery from Covid-19 illness (38). Long Covid persists are 3-4 weeks as acute symptoms;above 12 weeks as chronic(39) . Several terminologies were used to describe long Covid in several research articles as synonyms: The terms "long covid-19," "post-acute covid-19," "persistent covid-19 symptoms," "chronic covid-19," "post covid-19 manifestation," "long term covid-19 consequences," "post covid-19 syndrome," and "ongoing covid-19" (also called as "long-haulers") are used to describe this condition. The most common designation is PASC or post-acute sequelae of SAR's CoV-2 infection(29). The questions for the Eligibility Criteria study were formulated using the PICO model-primary aim of this survey was for people to know & assessment of long-term effects of covid symptoms categorized into mild, medium, and severe.Also measures to be taken to overcome symptoms management & follow-up studies.Data collected from this studywas conducted until February 15, 2021(30). Continued long-term symptoms develop in PASC patient scenarios (40). In this period, Covid may again reactivate pathogensto adhere to new body areas and produce unique, persistent symptoms.Preceding the coronaviruses pandemic, SAR converted into PASC with several symptoms like long-lasting lethargy, weakness, sleep disturbance, myalgia, psychological distress & many more symptoms listed below :-

ONGOING/LONG TERM LIST OF SYMPTOMS: Difficult breathing;tired/fatigue-58%;post-exertional malaise-7%;brain fog;cough-19%;chest(or)stomach pain-16%;headache-44%;heart palpitation-11%;joint pain19%;pins& needle feeling; diarrhoea; sleep problem-11%;fever-11%;dizziness on standing3%;rash; mood changes; smell; taste hair loss of 25%;Sweating, ageusia, anosmia, Polynesia, joint discomfort, and dyspnoea all accounted for 24% of the population. , nausea (16%), chest pains (165), memory loss (16%), tinnitus (15%), anxiety (13%), depression (12%), digestive disorder (12%), weight loss (12%), cutaneous signs (12%), resting heart rate tachycardia (11%), palpitations (11%), pain (11%), decreased pulmonary capacity (10%), chills (7%) psychiatric illness (6%), red eyes (6%), discontinuous flushing (5%), diabetes (D.M.) (4%), sputum (3%) limb oedema (35%), dizziness (3%), stroke (3%), and throat pain (3%). 2%; OCD-2%;new hypertension-1%; myocarditis-1%;renal failure-1%;PTSD-1%;arrythmia-0.4%;paranoia-0 (41).

DYSFUNCTION OF LUNGS & PERSISTENT SYMPTOMS: The patient with mild to acute hospitalization with covid-19 has some abnormality ling functioning & some structural changes, and diffuse alveolar damage was reported up to 6 months. According to *Plantronics et al* detected through chest X-ray found some abnormality residual 70% in critical patients & DLCO for three months & few of them had respiratory symptoms persisting for above six months. Anomalies DLCO-47.2%;TLC-25%;FEV113.6%;FVC-9.1%;FEV1/FVC-4.5%;Small airway function-7.3%.

OLFACTORY DYSFUNCTION & NEUROLOGICAL SYMPTOMS: 36.4% neurological symptoms faced by covid-19 patient data given by Mao et al. Symptoms like stroke, hypoxia, and cognitive decay to the length of the stay in ICU patient, memory &psychotic symptoms & 39.1%-psychiatric morbidity. Anecdotal evidence suggests that both patients suffer long-term brain dysfunction due to a decreased olfactory/rectus gyurus metabolism. **FATIGUE:** Range of frequency 16-55% detected using the Calder fatigue scale. Diagnostic criteria: Feeling restlessness; inability to perform

activities like before. Management: Sufficient rest; more intake of fluids; Vitamin C GET (Graded Exercise Therapy) balance training; breathing & resistance strength training. Avoid Counter analgesics, and follow healthy diet problems with blood clots & vessels—blockage of blood vessels with tiny lumps, or clumps in heart muscle.

PROBLEM WITH MOOD: Disturbance in environmental & social distress, depression, anxiety, PTTS (42).

GIT: Increased rates of sore throat and liver damage caused by AS, ALT enzyme & enhance proliferation.

THE EFFECT OF RENAL INJURY: ACE2&TMPRSSs are present in the PCT of the kidney & allow viral entry causing inflammation & damage, leading to kidney injury. Hepatobiliary manifestation: Changes in LFT due to gradual increase in AST & ALT.

ENDOCRINOLOGIC MANIFESTATION: Hypoglycaemia; euglycaemic ketosis & diabetic ketoacidosis.

CUTANEOUS MANIFESTATION: Rashes, acral lesions, eruptions in children.

DYSATONOMIA: Palpitation, exercise intolerance, chest tightness, presyncope & syncope. **POTS MANAGEMENT:** Aerobics (structured), non-orthostatic exercise like swimming/cycling, more fluid intake (2-3L/day). Avoid using garments, coffee, alcohol, standing, duloxetine, and nor-tryptamine.

HEADACHE: Drastic increase in the frequency of headache & also cause migraine.

MANAGEMENT: Avoid noise and relaxation exercises in yoga.

COGNITIVE IMPAIRMENT: Loss of attention, concentration, and memory. Brain fog includes confusion, short-term memory loss of concentration in patients admitted to ICU, and ventilation. Sleep Disturbance: Quality of sleep measured using the Pittsburgh sleep quality index or insomnia severity index Management: Yoga, medication, listening to soothing music, avoiding phones, computers, caffeine, alcohol, smoking, and benzodiazepines. Neuromuscular disease: Caused due to hypercalcemia and hyperkalemia. Galilei sarre syndrome/Acute inflammatory demyelinating polyneuritis (AIDP): Cardiac arrhythmic; abnormal respiratory function. Management: plasma therapy, IV immunoglobulin, avoid-corticosteroids. Stroke: coagulation system at an activated and ischemic stroke and ICH intracerebral haemorrhage-rare Epilepsy: sometimes epilepsy is seen due to withdrawal effects of drugs. Dermatological- (allergies, rashes, hair loss) management of mental health: Don't be alone.) Be in community care.

OTHERS: Myocardial infarction, pneumothorax, arthritis, fungal infections like black and yellow fungus (43) (44) (45).

8. Conclusion

Worldwide, the corona virus (COVID-19) is dispersing at an alarming rate. The virus outbreak has put the global infrastructure for economic, medical, and public health at risk. The virus can have fatal effects on those who are elderly or immune compromised. Despite some promising treatment regimens, there is currently no known treatment for the virus and no vaccine has been developed. As a result, the infection can be managed with the right preventative measures. Additionally, efforts must be made to develop organized plans to stop similar zoonotic outbreaks in the future.

Conflict of interest :

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