"COVID-19 the uncertain to human kind: assessment, prevention and therapeutic management".

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Abstract:

Coronavirus disease (COVID-19) aninfectious disease that transmits very fast from an infectious individual while coughing, sneezing, speaking, breathing etc. Globally, 240,260,449 cases of COVID-19 including 4,890,424 deaths.During the middle month of March 2021, around 144,829 were identified in India.WHO defines three types of COVID-19**i.e**: Critical COVID-19, severe COVID-19 and non-severe COVID-19. UN survey shows that female may be at higher risk because they lack information and resources.Both children and adolescents may experience prolonged clinical symptoms, but the frequency and characteristics of these conditions are still under investigation. COVID-19 (Coronavirus) has affected our day-to-day life and is slowing down the global economy. However, proper guidelines provided by WHO, NICE, MoHFW and other relevant sources to be followed so that it will help to improve the health condition of the nation. Further, it will reduce the morbidity and mortality rate and thus enhance the economy.

Introduction:

Coronavirus disease (COVID-19) is an "infectious disease that is caused by the SARS-CoV-2 virus". WHO first learned about this virus on the 31st Dec, 2019 that was followed by reports of multiple cases of 'viral pneumonia' in Wuhan, China. The virus transmits very fast from an infectious individual whilecoughing, sneezing, speaking, breathing etc. The particledroplets might rangefrom larger to smaller aerosols (WHO,2020). 425 confirmed cases of NCIP has provided evidence on he method of transmission (Young etal, 2020). Globally, 240,260,449 cases of COVID-19 including 4,890,424 deaths(WHO, 2021). Indiaexperienced a big surge of COVID-19 cases and deathslike several other parts of the world. India is the 3rd leading country based on USA and Brazil's identified cases as shown in April 2021. During the middle month of March 2021, the second wave started, and slowly on April the highest number of cases around 144,829was identified in India (Worldometer, 2021)."Maharashtra, Kerala, Karnataka, Andhra Pradesh, Tamil Nadu, Andhra Pradesh, Delhi, Uttar Pradesh, and West Bengalare the foremost affected states"(Kara, S K., etal. 2021)

Definitions on types of COVID-19 (WHO)

• The Critical COVID-19 – is define by the criteria for "acute respiratory distress syndrome (ARDS), sepsis, septic shock, or other conditions that would normally require the provision of life-sustaining therapies such as mechanical ventilation (invasive or noninvasive) or vasopressor therapy".

• The Severe COVID-19 –" O_2 saturation <90% on room air with RR>30breaths/min in adults and children > 5years old; \geq 60 breaths/min in children < 2 months old, \geq 50 breaths/min in children 2-11months, and \geq 40 breaths/min in children 1-5years old. The signs of severe respiratory distress viz; accessory muscle use, inability to complete full sentences, and, in children, very severe chest wall indrawing, grunting, central cyanosis, and or presence of any general danger signs".

• **The non- severe COVID-19** –may be defined as "absence of any criteria for severe or critical COVID-19". (WHO, 2021)

Gender with more risk of contracting **COVID-19:** "In India there were approximately 30 million people who have been infected by coronavirus. This virus can infect any gender and age group. But, some female may be at higher risk because they lack information and resources. They are the front line caregivers and workers in the health and service sectors. In country like ours, women make up a significant proportion of more than 80% of nurses and midwives. However, when it comes to role of decision making in health sector, they are not involve. Women also get less payment when compare to male gender. Approx. 13% members of the national COVID-19 task force are women" (UN., 2020).

The impact of COVID-19 in women's employment in our country: "More women have lost their jobs during this pandemic period. The Centre for Sustainable Employment at AzimPremji University, India revealed that about 47% of women lost their jobs during the first lockdown in 2020. UN Women data shows that more girls left their school during this pandemic. About 65% parents were surveyed and told that they were reluctant to send their girl child back to school resorting to child marriages and save expenses. This in future if continues can create an entire generation of young women without education and employment opportunities" (UN,2020).Pooled estimates for frequent clinical symptoms were "fever (78% [95% CI, 74-82]), cough (60% [95% CI, 57-63]), and fatigue (31% [95%CI, 26-36]); and they follows for laboratory findings were as in lymphocyte (1.02 [95% CI, 0.92-1.12]), CRP (19.64 [95% CI, 13.96-25.32]), and platelet count (175.2 [95% CI, 165.2-185.2]); they were follows for imaging findings as in bilateral pneumonia (64% [95% CI, 56-72]), and ground glass opacity (60% [95% CI, 48subgroup analysis, 7])". Also, in the bilateral pneumonia with 18% and fatigue with 15% had the highest difference in values between the groups (Amanollahi., 2021).

According to NICE Guidelines 2021, the following signs and symptoms will help to identify people in the community area with the most severe illness of COVID-19:

- if there is a severe breathing difficulty with decreased O2 saturation level along with coughing up blood

- the blue lips or facefeeling cold and clammy with pale or mottled skin

collapse/fainting/syncope attack

- confusion and reduced urine output (NICE., 2021)

Severity of long COVID-19 :"Both children and adolescents may experience prolonged clinical symptoms, but the frequency and characteristics of these conditions are still under investigation" (Buonsenso., et al., 2021). Due to limited follow up and the absence of studies with control groups, the frequency, characteristics and prognosis of prolonged symptoms following SARS-CoV-2 infection still remain uncertain. The severity of disease also stillremain under investigation (WHO.COVID-19 in children.2021).

Prognosis: 80% of cases recovers without any hospital treatment, 15% become seriously ill and requires O2 and 5% become critically ill and need intensive care. There are complications that lead to death. They are "respiratory failure, acute respiratory distress syndrome (ARDS), sepsis and septic shock, thromboembolism, and/or multi-organ failure, including injury of the heart, liver or kidneys" (WHO., 2020).

Prevention: To prevent infection and to slow transmission of COVID-19 "vaccination is a must, maintaining distance least 1 meterapart and wear proper fitted mask. Prefer to be in open and well-ventilated area. Encourageregularhand wash with soap and water or with alcohol-based hand rub. Mouth-nose should be covered while coughing or sneezing and encourage to stay at home and self-isolate if not feeling well, until recover (WHO., 2020)

Management in the community: Care planning according to NICE Guidelines 2021

✤ Put treatment escalation plans in place after sensitively discussing treatment expectations and care goals with people with COVID-19, and their families.

♦ People with COVID-19 may deteriorate rapidly. If it is agreed then the next

step should be moved to secondary care i.e; ensure that they and their families understand how to access this with the urgency needed. If the next step is other community-based support (whether virtual wards, hospital at home services or palliative care), ensure that they and their families understand how to access these services, both in and out of hours. (NICE.,2021).

Therapeutics for COVID 19:

Sl.no.	Drugs	Remarks	
1	For recommendations on the hospital use of "casirivimab and imdevimab for COVID-19" (NICE Guidelines, 2021).	-	
2	Corticosteroids	"Corticosteroids have previously been strongly recommended in patients with severe and critical COVID-19 according to WHO 2021, Therapeutics and COVID-19 Living Guideline (WHO, 2021). Do not routinely use corticosteroids to treat COVID-19 in people who do not need supplemental oxygen, unless there is another medical indication to do so". (NICE Guidelines, 2021).	
3	Remdesivir	"Consider Remdesivir for up to 5 days for COVID-19 pneumonia in adults, and young people 12 years and over weighing 40 kg or more, in hospital and needing low-flow supplemental oxygen"(NICE, 2021).	
4	Tocilizumab	"WHO recommended treatment with IL-6receptor blockers (Tocilizumab and Sarilumab) for patients with severe or critical COVID-19 infection according to therapeutics and COVID-19 Living Guideline (WHO, 2021). The recommended dosage for tocilizumab is a single dose of 8 mg/kg by intravenous infusion. The total dose should not exceed 800 mg"(NICE, 2021).	
5	Sarilumab	"WHO recommended treatment with IL-6receptor blockers (Tocilizumab and Sarilumab) for patients with severe or critical COVID-19 infection according to therapeutics and COVID-19 Living Guideline (WHO, 2021).The recommended dosage for sarilumab is a single dose of 400 mg by intravenous infusion" (NICE, 2021).	
6	Low molecular weight heparins	-	
7	Vitamin D supplementation	-	
8	Antibiotics	Antibiotics should not be used for preventing or treating COVID- 19 unless there is clinical suspicion of additional bacterial co- infection(NICE, 2021).	
9	Azithromycin	Do not use azithromycin to treat COVID-19(NICE, 2021).	
10	Budesonide	People already on this drug for conditions other than COVID-19 should continue treatment if they test positive for COVID-19.	

11	Doxycycline	"Not use to treat COVID-19 in the community" according to WHO		
		therapeutics and COVID-19 &NICE, 2021).	Living Guideline (WHO, 2021	

Guidelines for the Management of Long term respiratory effects of COVID-19

According to MoHFW, Govt. of India, "the respiratory system bears the maximum brunt of the direct viral damage that may persist for several weeks following initial infection. There is a considerable variation in the terminology used to denote these long-term effects of COVID-19". "Post-COVID syndrome" is also known for persistent symptoms and signs that last beyond 12 weeks of illness. The first management for Post COVID respiratory sequelaepatients involves treatment of specific pathologic conditions such as "Post-COVID diffuse lung disease (PC-DLD), pulmonary embolism, pulmonary infection, or others. It also involves the management of respiratory symptoms".

a. The post-COVID diffuses lung disease (PC-DLD):"Post-COVID diffuses lung disease (PC-DLD may represent either a persistent inflammatory pathology or pulmonary fibrosis. An HRCT chest is helpful in characterizing the extent and type of such abnormalities. Experts with previous experience of managing fibrotic interstitial lung disease should handle lung fibrosis".

b. **The pulmonary embolism:**"Therapeutic anticoagulation for a minimum duration of 3months. Prophylactic anticoagulation is generally stopped at the time of discharge; however, it may be continued as per clinical requirement under careful supervision".

c. The pulmonary infection, or others: "Secondary bacterial pneumonia to be managed with oral/IV antibiotics according to standard guidelines. As there has been a rise of cases of pulmonary fungal infection, especially mucormycosis, careful attention should be paid to exclude these infections in patients with fever, sputum, and/or hemoptysis. The treatment of such infections be offered at experienced centers with the help of antifungal agents and/or surgical interventions, as indicated".

d. **Symptoms and general ill health management:**"General measures to be followed like nutritious diet, a regular schedule of

exercise appropriate for the age and physical status, a regular monitoring of O2 saturation at rest and on exercise. Domiciliary oxygen and pulmonary rehabilitation may be indicated in certain individuals. Patients with breathlessness, and or cough may benefit from breathing exercises. Certain pharmacological measures may be required to mange cough and breathlessness. The comorbid illnesses should be managed appropriately".

Cough management: Cough should be e. treated according to the underlying cause and appropriate evaluation for infections should be performed for productive cough. For dry cough it can be managed with simple antitussive agents such as dextromethorphan. If cough is associated with wheeze, inhaled bronchodilators (with or corticosteroids) without inhaled may be administered.Cough arising from gastroesophageal reflux and post-nasal drip can be treated using anti-reflux medications viz; H2recpetor blockers, proton pump inhibitors, etc.) and antihistamines agents (with or without antitussives, respectively. One can have a warm saline gargles or lozenges. This helps soothe the throat in case of upper airway related cough.

f. Breathlessness management: Domiciliary oxygen therapy can be given to a hypoxemic patients that helps in reducing breathlessness.

A structured pulmonary rehabilitation program helps in reducing breathlessness:

- Patients who cannot be enrolled in a structured pulmonary rehabilitation program should be advised to "maintain a good walking schedule in accordance with their age and physical status". Care should be taken to avoid overexertion and exercising to the extent of inducing hypoxemia.

- Certain breathing exercises may help reduce breathlessness.

- Patient should be advised to stop exercising, if they develop any i.e; "Nausea or vomiting, Breathlessness, Dizziness, Significant sweating, Chest tightness and Increased pain".

g) Domiciliary oxygen therapy:Generally required for patients with resting or exertional O2< 90%. It may be delivered from an oxygen

concentrator or oxygen cylinder and or via nasal prongs.

h) Pulmonary rehabilitation: "A structured pulmonary rehabilitation is advisable for patients with moderate / severe COVID-19, especially those who remain symptomatic after the acute episode. This should includeexercise training as well as inspiratory muscle exercises, preferably under supervision". Optimum sessions are of 30-45 minutes duration for at least 2-3 times per week and for at-least 8-12 weeks. If done at home, the use of videoconferencing may be useful for monitoring the sessions.

Conclusion:

"COVID-19 (Coronavirus) has affected our dayto-day life and is slowing down the global economy. This pandemic has affected thousands of peoples, who are either sick or are being killed due to the spread of this disease. The disease continues to spread across the world following a trajectory that is difficult to predict. So, following the guidelines provided by WHO, NICE, MoHFW and other relevant sources will help to improve the health condition. However, the health, humanitarian and socio-economic policies adopted by countries will determine the speed and strength of the recovery. Therefore, a coordinated global effort is required to support each other so as to reduce the morbidity and mortality rate".

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