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A Review Paper on Pandemic Covid-19

Swarupa Chakole¹, Vaishnavi Jaiswal^{*2}¹Department of Community Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi, Wardha, Maharashtra, India²Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi, Wardha, Maharashtra, India

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ABSTRACT

Covid – 19 national disasters of India declared on 13 March 2020. The word Covid 19-means China originated virus in December 2019. Covid- 19 is emerging disease worldwide and perhaps a pandemic as declared by WHO on 11 March 2020, and came into existence from Wuhan China, Hubei province on 1 December 2019. Covid-19 which not only caused havoc but also lead to an economic crisis because of health care systems. Some advancement in health and its regulations. It has mainly affected elderly persons and immuno-compromised patients; pregnant women have not shown more chances of infection until now. Patients mainly present with cough, fever, shortness of breath. patient are categorized as suspected and confirmed cases, high risk and moderate risk. Here is a discussion on pathology, clinical aspects, gynaecological aspects, forensic aspects, diagnosis, management, prevention. Preventive measures include self-isolation, quarantine, wearing a mask, use of alcohol-based sanitizer and are discussed further. Its management has antiviral therapy, ventilators support. This has set an example of community spread. It is a concern of public health emergency. It has geared up hospitals for an increase in the number of beds, staff and an emergency.

*Corresponding Author

Name: Vaishnavi Jaiswal

Phone: 8717990001

Email: vaishnavijaiswal34@gmail.com

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INTRODUCTION

Covid -19 caused by coronaviridae from coronaviruses has alpha, beta, gamma, delta forms. Mostly infect animals except for gamma coronaviruses which affect birds—severe acute respiratory syndrome (SARS-COV-2) which is Covid-19 (Figure 1).

SARS is human affected by alpha and beta forms. Middle east respiratory syndrome Covid-19 (2012-2018). The novel coronavirus is a part of SARS -COV 2, which is caused by Covid – 19. Animal sources are bats and snake. Human source is a human transmission.

Epidemiology

Covid – 19 starts its spread from Wuhan China Hubei province on 1 December 2019, then on 31 December 2019 WHO China reported it to be pneumonia of unknown aetiology. 1 January 2020 Wuhan seafood market closed for anticipation. 7 January 2020 Chinese identified Novel Coronavirus. 9 Jan 2020 first death Wuhan China. 13 January it affected Thailand. 30 January first case was reported in Kerala India WHO declared public health of emergency concern. 11 February 2020 WHO named as Covid-19 (World Health Organization, 2020) 7 February 2020 WHO named Novel coronavirus. 11 March

2020 WHO declared as Novel coronavirus as a pandemic. Type of epidemic it has are single exposure, multiple exposures, propagated exposure. Associated comorbidities are CVS, DM, Chronic respiratory disease, HTN, Carcinoma (Lippi *et al.*, 2020).

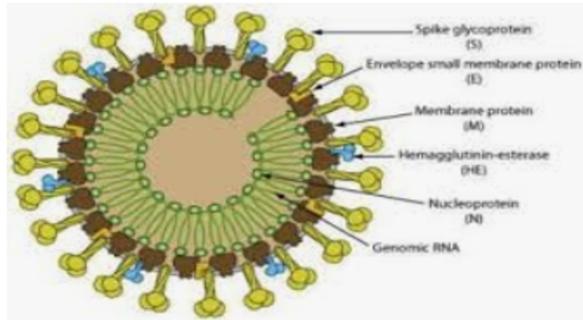


Figure 1: Diagrammatic Representation of Covid 19 Virus

Pathology

The causative agent for Novel coronavirus is SARS-COV-2. Source of infection is cases. The incubation period is 2 -14 days. Mode of transmission is droplets, contact with cases, fomites. Coronavirus is enveloped carrying petal or club-shaped or crown-like pepper glycoprotein spikes giving the appearance of solar Corona large 120 to 160 nm helical symmetry, linear, positive RNA (non-segmented genome) (Figure 2).

Spike like molecule attaches to airway epithelium, cell of lung have ACE 2 receptor interacts with receptor cause damage to airway epithelium .macrophage and dendritic damage cytokine release causes systemic dysfunction caused to age group more than 65 years, immunocompromised, males more than females.

Transcription process after entering into host cell virus particle uncoated genome enters cytoplasm attach to host cell ribosomes for translation. It has RNA dependent polymerase RdRp first protein which helps viral genome to transfer into new RNA copies using host cell matching. RdRp gene coding translation stops by stop codon known as a nested transcript (Wu *et al.*, 2019).

Clinical Manifestation

Covid 19 is life-threatening as it spreads by secondary transmission rate is high, and death is due to an ARDS which causes hypoxia and which causes by bilateral pneumonia. Hypertension is the most important comorbid condition associated with Covid 19 as if the patient takes ACE inhibitor than as Covid-19 has high susceptibility for ACE 2 receptor. So HTN will have more chance.

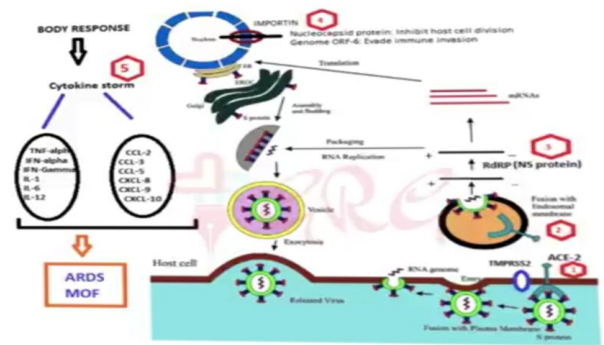


Figure 2: Pathological Representation

The suspected cause is defined as a patient with acute respiratory infection with cough fever shortness of breath, and rhinorrhea may present or absent. Or In 14 days before the onset of symptoms has met any of the epidemiological criteria. Epidemiological criteria include. Close contact with confirmed or probable case.Travel to impact zone. Worked attended a health care facility where the infection is being treated.

Confirmed case: Lab diagnosis, irrespective of clinical state.

Clinical features: Fever, cough, shortness of breath, sore throat, rhinorrhea, diarrhea.first 7 days is URTI .8 or 9 days Xray or CT (Zhou *et al.*, 2020).

Radiological appearance showing ground-glass appearance (Figure 3).

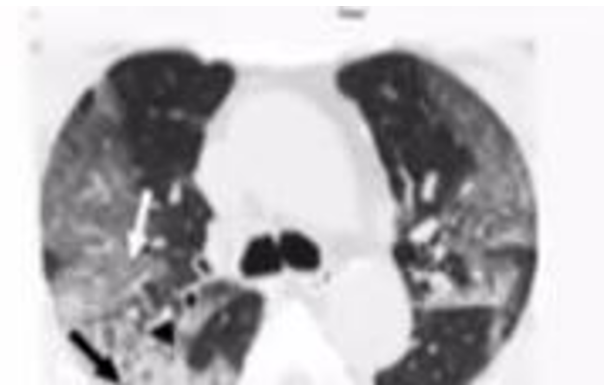


Figure 3: CT Scan Image

Laboratory Diagnosis

For testing, a doctor should use PPE kit, gloves, nitril latex-free. Specimen collection URT nasopharyngeal and oropharyngeal. LRT BAL and tracheal aspirate. Nasopharyngeal swabs are taken by tilting hard and insert swab stick With synthetic fibre with plastic shaft.sent for RRTP real-time pcr. The nodal officer at the field level is district collector (Han *et al.*, 2020), (Figure 4).

Treatment



Figure 4: National Institute of Virology, Pune



Figure 5: ECMO

Lopinavir and ritonavir are given for. All positive lab patients. Hypoxia, low BP, organ dysfunction.

1. Rapid sequence intubation.
2. Pre oxygen with 100 % f_{iO_2} for 5 min with bag n mask ventilation.
3. Reduce synchrony between patient and ventilation otherwise cause barotrauma.
4. Neuromuscular blockade for 24 hrs
5. Prone position
6. Positive end expiration pressure should be maintained 3 to 5cm of h_2O .
7. Plateau airway pressure more than 30 cm of h_2O to maintain oxygen saturation. SpO_2 88 to 93%. pO_2 55 to 80 mmhg
8. Low volume ventilation for Covid 19 is tidal volume 6ml / kg.
9. ECMO extracorporeal membrane oxygenate. We remove deoxygenated blood from the patient, and oxygenated blood is given (Figure 5).
10. Stop treatment when 2 consecutive PCR reports negative at least 24 hrs apart with clinicoradiological improvement.)
11. Quarantine of 14 days is enough (Lagier *et al.*, 2020).

Complication

Non cardiogenic pulmonary oedema due to which lung compliance is less.

Obstetrics and Gynecology Role

1. There is no transmission by vertical transmission for which sample taken are amniotic fluid, cord blood, neonatal throat swabs, breast milk swabs from infected mothers.

2. Transmission more commonly occurs by close contact from mother to child.
3. Intranatal transmission is less possible as no transmission by genital fluids.
4. Advice for Covid 19 positive pregnant patients. Self isolation for 14 days. Separate themselves by using their clothes and utensil. Avoid contact with anyone. Stop going to crowded areas.
5. When the patient goes to labour that time foeta may have cardiac compromised so electric foetal monitoring is used
6. No indication of C section unless she has respiratory dysfunction.
7. Delayed cord clamping in positive patients. neonate tested for Covid 19, separated from mother for 14 days, breast milk can be given to neonate (Won *et al.*, 2020).

Forensic Medicine Role

A pathological or clinical autopsy can be done

1. Consent needs to be taken.
2. PPE kit nitril gloves avoid the risk of cuts puncture wounds face shield goggles (Figure 6).
3. Following PPE kit should be worn during the autopsy:
 - Double surgical gloves
 - Fluid resistant impermeable gown
 - Waterproof apron
 - Goggles or face shield and Disposable N95 mask.

Duties of Doctors



Figure 6: PPE Kit

1. The doctor should notify the public health authority
2. Do not reveal patient identity.
3. Should tell about quarantine
4. Inform public health authority for cases of Communicable diseases
5. The physician has to treat without any fear to get the infection.

Duties of Hospitals

1. Duty to report.
2. For timely referral
3. Proper isolation
4. Safety measures for health care
5. Create awareness.

Epidemic Disease Act

1. Titles and descriptions-whenever existing regulations of the central government is not enough to control the spread. State or central has to empower special regulations for diseases.
2. Not to allow any people or any vessel coming from abroad to stop an epidemic.
3. Quarantine for those who are exposed.
4. Punishment for violation Of regulations or order is punishable under act 188IPC.
5. Legal protection to implementing officer's acting underact.
6. Section 269 negligent act likely to spread infection of disease dangerous to life.

7. Section 270 malignant act likely to spread infection of disease dangerous to life (Loeffelholz and Tang, 2020).

Vaccine Research

1. Who said in February that it would take around 18 months to have a vaccine.
2. Early March 2020~30 vaccine candidate in development.
3. End June India's first coaxing covid-19 vaccine is developed by Hyderabad's firm Bharat Biotech and is allowed to conduct phase 1 and phase 2 human trials (Figure 7).



Figure 7: Covaxin

Prevention

1. Hand washing with soap or hand washes for a minimum of 20 second .
2. using alcohol(60-70%) based sanitizers.
3. Avoid touching of eyes, nose or mouth with unwashed hands.
4. Respiratory hygiene cover your mouth and nose with a tissue when cough sneeze and dispose of it or do it with sleeve.
5. Use of Surgical mask.
6. Self-isolation for diagnosed or suspected cases
7. Self-quarantine for recent travel history on contact with infected patients.
8. Social distancing by quarantine, travel restrictions to containment zone, close school temples shopping malls avoid crowds areas.
9. Avoid contact with sick persons.

10. Arogya setu application which creates awareness connects people to health system, risk assessment Case update, how many people get checked for disease from your location.
11. Toll-free
12. The disinfectant used in the walkthrough tunnel is 1% sodium hypochlorite (Ling *et al.*, 2020).

Category of patients

Category A

High risk includes patients with fever cough shortness of breath history of travel to the area has a recent transmission—any patient with respiratory illness or contact with any case of covid 19 in the last 14 days.

Category B

Patients moderate risk asymptomatic passengers coming from China Iraq Korea Germany elderly more than 60 years asthmatic HTN DM.

Action: Quarantine facility monitor for 14 days if any symptoms then do isolation.

Category C

Low-risk asymptomatic passengers are coming from Covid 19 affected country.

Action: Home quarantine IDSP 14 days monitor any symptoms call to the nation helpline.

Biomedical waste disposal

1. N 95 headcover shoe cover in a yellow bag
2. Goggle face shield apron nitril gloves. Red bag
3. Vail transport media plastic Vail pipette tip tubing Red bag

CONCLUSION

In view of covid 19, which has caused a colossal crisis all over the worldwide in terms of health, economy, mentally and financially. As a citizen, it's one responsibility to have screening, should follow measures for prevention, to support the health care system, for self-isolation. It has affected people globally as its secondary transmission is high, and the development of a vaccine is still in process. We discussed here the virus Pathology, clinical manifestation, diagnosis, management, prevention. Immunity booster is one of the safety measures all should follow. New advancement has evolved because of covid 19 in terms of management prevention and technology. India was the only country who was giving chloroquine tablet to other countries and has

increased its mask and PPE kits production day by day. Central and State regulation and new laws were acted in terms of covid 19.

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Conflict of Interest

The authors declare that there is no conflict of interest for this study.

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