

A Review Article on Novel Coronavirus Disease (2019 – Ncov)

¹polam Rajasekhar Reddy, ²konala Raja Prabhu Sujith, ²maddi Praneetha
1,2 Department of Pharmacy practice A.M. Reddy memorial college of pharmacy, Narsaraopet – 522601,
Guntur district, Andhra Pradesh.

Date Of Submission: 01-06-2021

Date Of Acceptance: 14-06-2021

ABSTRACT:

The 2019 novel corona virus is an ongoing outbreak of public health of international emergence. Although the mortality rate is less compared to SARS COV and MERS COV. On 12th December 2019, Wuhan the capital city of Hubei province, china reported 27 cases of new viral pneumonia of unknown cause and named as Novel corona virus (2019- nCoV) by world health organization on 12th January 2020. The mode of transmission is mainly by the air droplets generating from infected person coughing and sneezing or close contacts with infected droplets. currently there have been around 28,441,986 reported cases and 3,38,013 of deaths of corona virus disease in India to date of 3rd June 2021, the incubation period ranges from 10- 14 days and the infection turns to pneumonia after first week of infection. The clinical features include mainly fever, Headache, myalgia, shortness of breath, cough, sore throat, fatigue. The Nucleic acid amplification test and Reverse transcriptase polymerase chain reaction(RTPCR) are the currently using diagnostic tests along with monitoring of CRP, D- Dimer, serum Ferritins, CT scan. Most of the cases are asymptomatic and ranging from pneumonia to acute respiratory distress syndrome and shock. The elderly patients with co morbid conditions need to be monitored closely. Antibiotics, anti virals, anti cholinergics, anti pyretics are used for symptomatic relief, diet rich in nutrients and proteins are strongly recommended. Isolation of suspected cases and mild illness cases and maintain proper hygiene condition are preventive measures of COVID- 19 virus. In this article we provide information regarding the epidemiology, etiology, clinical presentation, diagnosis and management of novel corona virus disease.

KEY WORDS: Novel corona virus, SARS COV, acute respiratory distress syndrome, epidemiology, viral pneumonia, clinical features, RTPCR test.

I. INTRODUCTION:

On 12th December 2019, Wuhan, Hubei province, china many of the patients are presented with viral pneumonia. At starting Wuhan municipal health commission(WMHC) reported 27 cases of pneumonia and it reaches 80,000 new cases with more than 4000 deaths of 29th February 2020. Some of the epidemiological studies has shown pneumonia cases of unknown cause and some studies has shown the history of exposure to the wildlife animals like poultry, snake, bats and other farm animals of wildlife market in Wuhan. On 12th January 2020 WHO named the virus as 2019 nCoV and declared it as public health international emergency. On 30th January 2020 India has reported the first case of COVID - 19 virus presented with flu like symptoms, fever and shortness of breath. The government of India did an immediate investigations to characterize and control the disease, including isolation of people suspected to have the disease who are close monitors of contacts, epidemiological and clinical data collection from the patients suffering from virus for the development of diagnostic and treatment procedures. Previously the Severe acute respiratory disease corona virus (SARS- CoV) appeared in 2002 in china and Middle east respiratory syndrome corona virus (MERS- CoV) appeared in 2012 in Saudi Arabia are the virus belongs to novel corona virus. But the mortality rate was less compared to present COVID- 19.

EPIDIMIOLOGY:

The severe acute respiratory syndrome corona virus 2(CoV- 2) is effecting the world with 172,440,486 reported cases and 3,706,987 deaths of 3rd June, 2021. In India as of 3rd June, 2021 28,441,986 of reported cases of corona virus and 338,013 of deaths reported in the country. The cases are increased drastically in 2021 compared to 2020 due to lack of epidemiological information such as risk factors, complications, co- morbidities, mode of transmission, clinical presentation the

different testing methods and clinical outcomes. Mainly the infection is transmitted from person to person through droplets of symptomatic patients through coughing and sneezing and by asymptomatic patients before the onset of symptoms. The extended national wide lock down is not sufficient to fight against COVID- 19. Out of total cases half of the total cases are reported from Maharashtra, Delhi followed by Karnataka and Kerala.

ETIOLOGY:

2019 novel corona virus belongs to the family of coronaviridae of subgenus sarbecovirus and genus of Betacoronavirus. Corona virus is a single standard positive sense RNA genome of 26-32 Kb in length. It is 88% identical to bat derived SARS like corona virus and 79% and 50% identical to SARS CoV and MERS CoV. There are 6 human corona virus species identified till now which cause infections in animals and leads to serious cardio vascular, enteric and respiratory diseases. In humans mainly Corona virus cause severe respiratory and Gastrointestinal symptoms.

CLINICAL PRESENTATION:

On rapid mutations and recombination the corona virus lead to novel corona virus and spread from animals to humans. This was occurred in case of SARS CoV and MERS CoV. Patients infected with COVID-19 are both symptomatic and asymptomatic. In some cases the clinical features are varied, ranging from asymptomatic state to acute respiratory distress syndrome and multiple organ dysfunction. In infected patients the common clinical features which include fever, shortness of breath, myalgia, cough, headache, sore throat, fatigue, chills or rigors(not in all). In some patients with severe infection, by the end of first week the infection turns to pneumonia requires the admission to ICU requiring mechanical ventilation although the symptoms not decreased leads to the respiratory and multiple organ failure and finally leads to death. Adverse outcomes and death rates are more in geriatrics due to increase in age and other co morbid conditions. Although the virus effects the neonates, Infants and children's but the recovery rate is more than the adults. As compared to the SARS CoV and MERS CoV the complications and mortality rate was lower. Major complications in the hospitalized or patients on mechanical support include include mainly acute respiratory distress syndrome, acute cardiac injury, arrhythmias, acute kidney injury and shock. The

virus takes incubation period of 10- 14 days. The virus enters the body through the air droplets or close contact of the infected person and spread through the blood stream mainly to respiratory, Gastrointestinal and heart and mainly to the tissues and binds to angiotensin converting enzyme- 2 the receptor of SARS CoV- 2. This process occurs after 10- 14 days of the onset of virus in to the body.

DIAGNOSIS:

The patients need to be diagnosed whether they have fever, sore throat, myalgia, Headache, body pains, body pains, breathlessness, cough or close contact with the suspect or history of travel to the local transmission area. Specific molecular tests on respiratory samples like throat swab, nasopharyngeal swab, sputum are the more frequent specific diagnostic tests. Although the virus can also detected in stool and blood stream in severe cases. At now, the nucleic acid Amplification test where sample is taken from nasopharyngeal region and polymerase chain reaction where sample was taken from Oropharyngeal region are currently using tests for COVID- 19. Other laboratory investigations which are usually non specific i.e WBC count is usually normal. There may be leucopenia, leucocytosis, Neutrophilia and Thrombocytopenia in some cases and Lymphopenia in severe cases. The CRP and ESR rates are generally elevated with no change in procalcitonin levels. Decline in hemoglobin count, elevated serum creatinine, Blood urea nitrogen, Creatinine kinase are seen in some patients. Some patients may develop Hyper coagulable state the coagulation factor D- Dimer and Ferritin may appear abnormal. Prolonged protrombin time indicates the activation of coagulation. Elevated Lactate dehydrogenase and Hepatic transaminase levels and Hypoalbuminemia indicates the presence of myocardial, hepatic and renal injury which may be fatal in some patients. CT imaging can vary from person to person by disease stage at the time of scanning (normal in early state), Age, underlying or co morbid conditions. The CT chest scan shows imaging changes in severity to COVID- 19, in some patients the findings include bilateral pulmonary parenchymal ground glass and consolidative pulmonary opacities and in some patients the findings include multiple patchy or large patches of consolidations in both lungs with Honey comb shaped interlobular septal thickening.

MANAGEMENT:

Conformed and suspected cases need to be isolated in the hospital or isolation centre or in a protected area. Supportive therapy like sufficient fluid and calorie intake along with medicines for symptomatic relief should be given.

The infected or suspected person should be isolated in order to prevent the transmission of disease to close contacts. Mild symptoms should be treated at home by taking adequate rest and by frequent monitoring of Heart rate, pulse oxygen saturation, respiratory rate. Patients with co morbid conditions like Hypertension and Diabetes mellitus need to monitor frequently. Patient also should be monitored for CBP, CRP, Liver function tests, Creatinine, Blood urea nitrogen, D- Dimer, Ferritin and CT scan. In patients with severe respiratory infections, respiratory distress, hypoxemia oxygen therapy is the choice of therapy. Respiratory support should be given to the patients who are having hypoxic respiratory failure and acute respiratory distress syndrome. ECMO should be recommended for patients with refractory hypoxemia, hemodynamic instability, chronic obstructive pulmonary disease and pulmonary edema.

Some antibiotics, like third and fourth generation Cephalosporin antibiotics, Tetracycline and anti viral treatment like alpha interferon, ritonavir, lopinavir should be used. However the use of corticosteroids may associated with elevated blood sugar levels, increased risk of avascular necrosis and delayed clearance of viral RNA from blood. Systemic use of Glucocorticoids like methyl prednisolone can be used in appropriate patients with severe illness not more than 60mg per days.

Symptomatic treatment for fever i.e more than 100⁰F, paracetamol or ibuprofen can be used, nutritive supportive treatment like food rich in protein such as eggs, lean meat, Dairy products and fish should be taken. To reduce the incidence of ulcers or Gastrointestinal bleeding due to stress or high intake of medicine, proton pump inhibitors and H₂ receptor antagonists should be recommended. Anti cholinergic drugs are highly recommended for patients with Dyspnoea, wheeze, Cough, respiratory distress syndrome due to increased secretions and to the airway muscles.

PREVENTION:

At present there is no specific treatment for COVID- 19 disease so prevention is important. Every individual should maintain the social distance keep the environment and surroundings

clean. The contaminated materials should be discarded thoroughly. Firstly isolate the person who are having mild illness in a proper protective area which is properly ventilated. Make an awareness on the virus regarding the condition, transmission, symptoms and severity of virus. Every person should cover there face by wearing a surgical mask. Patients should be asked to wash the hands properly for every 30 minutes and to wear a surgical mask when communicating. suspected or persons having contact with infected person need to take streaming and adequate intake of hot water. It is recommended to take food in high amount of nutritive and protein diet, maintaining daily life style activities, performing respiratory exercises for expansion of lungs and regular physical activities. There is highest risk of transmission of COVID- 19 disease to health care workers they need to be vaccinated and to follow all precautionary measures.

II. CONCLUSION:

Vaccination process is performing through the India but it is not sufficient for the country with a population of 130 crores. Recent epidemiological studies shown that only 5% of population are vaccinated through out the india. Even though the mortality rate is less compared to the recovery rate, half of the population need be vaccinated. The COVID- 19 disease is still an ongoing outbreak several studies on the etiological contact, clinical features, transmission process are undergoing. Maximum of the cases are treating in isolation centers and protective areas by following the proper guidelines. Maintaining social distance, wearing a surgical mask, washing hands with sanitizer thoroughly, performing regular physical activities, taking food rich in nutritive and protein diet and making awareness among people are the important physical barriers to stop the spread of virus.

REFERENCES:

- [1]. Zhangkai J. cheng, Jing Shan. 2019 . Novel corona virus: where we are and what we know. *Infection*, 2020, 48:155- 163.
- [2]. Tanu Singhal. A Review of Coronavirus Disease- 2019 (COVID- 19). *The journal of pediatrics*, april 2020, 87(4):281- 286.
- [3]. Wasim Yunus Khot, Milind Y Nadkar. The 2019 Novel Coronavirus Outbreak – A Global Threat. *Journal of The Association of Physicians of india*, march 2020, Vol 68: 67- 71.

- [4]. Taisheng Li, Hongzhou Lu and Wenhong Zhang. Clinical Observation and Management of COVID-19 Patients. *Emerging microbes and infections*, 2020, Vol 9: 687-690.
- [5]. Petra Zimmermann, MD, PhD, Nigel Curtis, FRCPCH, PhD. Coronavirus Infections in Children Including COVID – 19. *The Pediatric Infectious Disease Journal*, may 2020, Vol 39(5):355- 360.
- [6]. Ying- Hui Jin, Lin Cai, Zhen- Shun Cheng, Tong Deng, Hong Deng et al. A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). Jin et al. *Military Medical Research*, 2020, 7(4):1-23.
- [7]. MOIRA CHAN- YEUNG and RUI- HENG XU. SARS: Epidemiology. *Respirology*, 2003, Vol 3:S9- S11.
- [8]. The ARDS Definition Task Force. Acute Respiratory Distress Syndrome- The Berlin Definition. *JAMA*, June 2020, 2012- Vol 307(23): 2526 – 2533.
- [9]. Hongzhou Lu. Drug treatment option for the 2019- new corona virus (2019- nCoV). *Bioscience Trends*, 2020, 14(1):69- 71.
- [10]. Liying Dong, Shasha Hu, Jianjun Gao. Discovering drugs to treat coronavirus disease 2019 (COVID- 19). *Drug Discoveries and Therapeutics*, 2020, 14(1): 58- 60.
- [11]. Francesco Di Gennaro, Damiano Pizzol, Claudia Marotta et al. Coronavirus Diseases (COVID- 19) Current Status and Future Perspectives: A Narrative Review. *International Journal of Environmental Research and Public Health*, April 2020, Vol 17(2690) 1- 13.
- [12]. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020.
- [13]. Guidance W. Clinical management of severe acute respiratory infection when novel coronavirus (2019- nCoV) infection is suspected. WHO; 2020.
- [14]. Kim JY, Song JY, Yoon YK, Choi SH, Kim SR et al. Middle East respiratory syndrome infection control and prevention guideline for healthcare facilities. *Infect Chemother*, 2015, 47(4): 278- 302.
- [15]. Richnan DD, Whitley RJ, Hayden FG. *Clinical Virology*, 4th edition. Washington; ASM Press; 2016.
- [16]. World health organization. Situation reports. Available at: <https://WWW.Who/emergencies/diseases/novel-coronavirus-2019/situation-reports/>. Accessed 3rd june 2021.
- [17]. Zou L, Ruan F, Huang M et al. SARS- CoV- 2 viral load in upper respiratory specimens of infected patients. *N Engl J Med*. 2020.
- [18]. Jin YH, Cai L, Cheng ZS et al. A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus infected pneumonia. *Mil Med Res*. 2020; Vol 7(4): 342- 350.
- [19]. Zumla A, Chan JF, Azhar EL et al. Coronavirus – drug discovery and therapeutic options. *Nat Rev Drug Discovery*. 2016; 15:327- 347.
- [20]. Chu CM, Poon LL, Cheng VC. Initial viral load and the outcomes of SARS. *CMAJ*. 2004; 171:1349- 1352.
- [21]. Chan KH, Poon LLLM, Cheng VCC, Guan Y, Hung IFN, Kong J et al. Detection of SARS Coronavirus in patients with Suspected SARS. *Emerg Infect Dis* 2004; 10:294- 9.
- [22]. Chung M, Bernheim A, Mei X, Zhang N, Huang M, Zeng X et al. CT I maging Features of 2019 Novel coronavirus (2019- nCoV) *Radiology*, 2020:200230.
- [23]. Lee N, Allen Chan KC, Hui DS, Ng EKO, WU A, Chiu RWK et al. effects of early corticosteroid treatment on plasma SARS- associated Coronavirus RNA concentration in adult patients. *J Clin Virol Off Publ Pan Am Soc Clin Virol* 2004; 31:304- 9.