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## RESEARCH ARTICLE

### COVID 19 WITH CARDIO VASCULAR DISEASES – GRAVE THE SITUATION

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#### ABSTRACT

COVID 19 infection is spreading all over the world like a wildfire. It is an acute respiratory tract illness that was first identified in Wuhan, China. Non-communicable diseases are already a public health problem in most of the countries. Among them, cardiovascular diseases (CVD) are one of the leading cause of mortality. Patients with comorbid cardiovascular diseases are more susceptible to COVID 19 infection. All the comorbidities increases the chance of complications like acute cardiac injury, heart failure, shock, arrhythmias and cardiac arrest. The awareness of symptoms, regular medications, help of telemedicine and preparedness of emergency services for exiting morbidity plays an important role in reducing morbidity and mortality, thereby improving the situation.

#### INTRODUCTION

COVID 19 infection is an unexpected pandemic in the world. While most of the organizations were working on non-communicable diseases and global warming, suddenly the outbreak of COVID 19 infection occurred and spread like a fire all over the world. In December 2019, few cases of pneumonia of unknown origin were reported in Wuhan, China (Zhu et al., 2019). Initially, cases were linked to the seafood wholesale market in Wuhan, China but subsequent reports did not relate them with the exposure to this market. On 7 January 2020, Novel Corona virus (COVID 19) was identified as the causative agent of these infections (World Health Organization, 2020). This virus belonged to the same family that caused Severe Acute Respiratory Syndrome (SARS-CoV) in China and Middle East Acute Respiratory Syndrome (MEARS-CoV) in Saudi Arabia in 2012. (Li et al., 2020). The main mode of transmission of COVID19 is by fomite droplets of infected person to healthy person. (Lauer, 2020) The respiratory system is mainly involved in this infection and presents as fever, fatigue, dry cough, myalgias, anorexia, and dyspnea. The spectrum of infection ranges from mild, severe and critical: a) mild illness is seen in 81% patients and includes no pneumonia or mild pneumonia b) severe illness (14%) includes respiratory failure, pulmonary infiltrates >50% within 24 to 48 hours, and PaO<sub>2</sub>/FiO<sub>2</sub> <300 and c) critically ill (5%) includes septic shock, and/or multiple organ dysfunction or failure (Wu, 2020).

All the above definitions are for a normal healthy person but situation is different for older person already suffering from the other chronic co-morbidities. It can increase the severity of the underlying disease and cause interstitial pneumonia with severe respiratory failure and ultimately, death (Srinivas, 2020) Apart from pneumonia, COVID 19 infection can damage other organs like heart, liver, kidney, and immune system of the body. Patient can have an untimely death due to shock, heart failure, arrhythmias, renal failure and multi-organ failure (Huang et al., 2020; Woelfel, 2020). Non-communicable diseases are already a public health problem in India. Fast changing lifestyle, urbanization, industrialization, and socio-economic development is responsible for the growing numbers of cases with non-communicable diseases (Mahal, 2009). Currently, cardiovascular diseases, diabetes mellitus, chronic obstructive lungs diseases and cancer are the leading cause of death. According to World Health Organization, cardiovascular diseases cause 35% death among non-communicable diseases of which coronary artery diseases are the most common (Fuster, 2005). Patients with pre-morbid cardiovascular diseases (CVD) are more susceptible to COVID 19 infection. According to National Health Commission of China, among the patients who had untimely death due to COVID 19 infection, 35% patients were hypertensive and 17% had history of coronary artery disease (Zheng 2020). Similar findings were seen in the MERS-CoV outbreaks and SARS pandemic. During SARS pandemic, pre-existing co-morbid conditions with the SARS infection worsened the situation especially in the elderly patients. It increased the chance of mortality by 8% in the SARS patients (Chan, 2003).

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During MERS-CoV outbreak, hypertension and cardiovascular diseases were seen in one third of the infected patients (Badawi, 2016). The exact mechanism of action of virus is still unclear. Proposed hypothesis related to the severity and complications associated with COVID 19 and CVD in the elderly patients is low Angiotensin Converting Enzyme (ACE) 2 levels and higher Angiotensin II signaling pro-inflammatory pathway. The SERS-CoV-2 virus binds to the ACE 2 leading to low level of ACE 2 and increase the level of angiotensin II. It reduces ACE 2 cell surface expression while up-regulating angiotensin II signaling in the lungs, causing acute lung injury (AlGhatrif, 2020). The cardiovascular system mostly gets affected by a) “Cytokine storm” due to interaction of viral particles with the host immune system b) viral invasion of the myocardium and c) hypoxia due to Acute Respiratory Distress Syndrome (ARDS). (Kunal, 2020) The common comorbidities reported in COVID 19 patients with CVD are hypertension, coronary artery diseases, hypercholesterolemia, and arrhythmias. All the comorbidities increase the complications in these patients. The common complications are acute cardiac injury, heart failure, shock, arrhythmias and cardiac arrest. (Kunal, 2020) Most of the current evidences showed that the treatment of COVID 19 with anti-retroviral drugs interferes with the cardiac drugs, cardiac insufficiency, and arrhythmias, worsening the patient’s situations and ultimately, poor prognosis.

As the situation of COVID 19 pandemic is worsening rapidly, everyday thousands of patients are getting newly infected. Precautions are the best method. The awareness of symptoms of COVID 19 infection and the cardiovascular diseases is important. Government is playing very important role in advocacy of the rule and regulation required for the protective measures. Mass media use for the spread of messages for the high-risk patients is must. High-risk patients like elderly with cardiovascular disease, hypertensive, and diabetes should take proper care of health. Those who are suffering from CVD should take regular medications. Healthy diet, yoga and mild to moderate exercises should be regularly done. Fruits and vegetables should be consumed only after thorough washing. Low intake of salt should be done. Unnecessary visits to the hospital should be avoided. If possible, telecommunication consultation with doctors should be done. Telemedicine plays an important role in current situation minimizing physical contact. In country like India where population is huge, every individual should follow the social distancing or physical distancing to break the spread of COVID 19 infection and flatten the curve. Unnecessary travelling should be avoided. The hand hygiene should be maintained. Regular hand washing should be done with soap and water or alcohol based sanitizer. The health care workers should be trained for any emergency related to CVD in COVID 19 infection. The web-based training for the healthcare workers should be done on the regular basis to minimize the mortality. Immediate action is required to treat cardiac emergency. In populated country like India, the transport facilities should be adequate as the COVID 19 infection is highly contagious. The COVID 19 pandemic is a war against virus for the human survival and its end is nowhere near. Vaccination is the best way to prevent it. But it is difficult to formulate vaccine due to infection with different strains in different region. Hence, it will take time to develop vaccine. Till the time we have a potent vaccine, primary and secondary preventions for the CVD is the best method to reduce the mortality in the population.

With the good preventive and pro-active strategies we can reduce the morbidity and mortality of these patients.

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