

Chapter 7

The Clinical Practices and Post-Treatment Care for COVID-19 Patients With Heart Complications

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ABSTRACT

Heart complications are a major cause of mortality and morbidity in both developed and developing countries, and they pose a significant global concern from both medical and financial perspectives. The World Health Organization (WHO) has designated COVID-19 as the sixth international public health emergency. The worldwide spread of COVID-19 has brought about substantial challenges in various aspects including health, economy, environment, society, and mental health, resulting in significant disruption to the world's order. In this chapter, the authors discuss the correlation between COVID-19 and heart complications. There is a comprehensive discussion on the clinical practices and post-treatment care including cardiac complications and its effect by or due to COVID-19.

DOI: 10.4018/978-1-6684-6855-5.ch007

INTRODUCTION

COVID 19: On March 11, 2020, the World Health Organization (WHO) declared the coronavirus disease, which first emerged in China's Wuhan province, as a worldwide pandemic (Rawat et al., 2020). Covid-19 is declared as the sixth public health emergency of international concern by the WHO (Gumber, 2021). The global spread of Covid-19 has presented significant challenges in the areas of health, economy, environment, society and have psychological consequences, causing significant disruption to the world's order (Ganatra et al., 2020). With no effective drugs or vaccines available, the only means of combating the virus is through preventative measures such as social distancing, wearing masks, and maintaining proper hygiene (Van der Werf et al., 2021). The Covid Virus has an inner core made up of RNA and phosphorylated nucleocapsid protein, which is surrounded by layers of phospholipids and topped with spike glycoprotein trimmers (Gumber, 2021). COVID-19 is a systemic illness characterized by hyperinflammation and cytokine storm. The close association between COVID-19 and cardiovascular disease has been observed in many studies. Cardiovascular disease, such as hypertension, hyperlipidemia, and coronary heart disease, are the common comorbidity in patients with COVID-19. Those patients with cardiovascular comorbidity are at increased risk of morbidity and mortality. Those cardiovascular co-morbidities may be related to cardiac injury in COVID-19. Recent evidence also showed that COVID-19 can damage the heart directly. Consistently, our multivariable analyses showed that elevated troponin release is independently predicted all-cause death after adjusted for clinical confounding, including cardiac cardiovascular co-morbidity. Cardiovascular manifestations, such as myocarditis, heart failure, arrhythmia, may occur with COVID-19. More recently, there is increasing awareness of the cardiac injury in patients with COVID-19 disease (Fu et al., 2021).

Heart Complications: The heart, which is approximately the size of a closed fist and weighs between 250 and 350 grams, beats around 100,000 times per day and 2.5 billion times during an average lifetime. Comprised of two atria and two ventricles, the muscular heart receives returning venous blood in the upper atria and pumps blood into the lungs and arteries through the lower ventricles. Blood without oxygen enters the right atrium, moves into the right ventricle, and is then pushed to the lungs through the pulmonary arteries. Here, it gets rid of waste and receives oxygen. The oxygen-rich blood then travels back to the heart through the pulmonary veins and enters the left atrium. It then goes into the left ventricle, which contracts to send the blood out through the aorta and into the arterial system (Marieb et al., 2013; Tortora & Derrickson, 2014; Shaffer et al., 2014).

Heart Complications are the primary reason for mortality and illness in various developed and developing nations (Minino et al., 2002). They are a significant

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