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Permanent Effect of SARS-CoV-2 on the Heart: Post-Recovery

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ABSTRACT

COVID-19 is an infectious disease caused by the SARS-CoV-2 virus. Since December 2019, when the initial outbreak of COVID-19 occurred in China, a series of effective preventive control and medical treatment measures have been implemented. They have brought the pandemic under control to a certain extent. Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. A growing number of studies suggest many COVID-19 survivors experience some type of heart damage, even if they didn't have underlying heart disease and weren't sick enough to be hospitalized. Recent statistics estimate there being around 523.2 million cases of cardiovascular disease in the world, which represents the large population that this side effect or aftereffect potentially encompasses. According to research, there are structural changes in that take place when COVID enters a person's body. In this case, the effect on the heart is relatively unknown or unproven. However, scientists and doctors have reported a couple of observations. First, the weight of the heart increased slightly after patients recovered from COVID. Second, Signs of cardiac enlargement and right ventricular dilatation were also noted. Under microscopic attention, scattered individual cardiomyocyte necrosis was visible as well. This paper will outline the specific effects of COVID on the heart.

Introduction

According to research done by numerous medical professionals, there are several implications suggesting a correlation between an uprise in medical conditions, after contracting COVID-19. Due to the disease's complicated factors such as easy transmission, and various manifestations, the dispersion of the disease into the human body has led to unpleasant effects on the cardiovascular system. Studies highlight acute myocardial injuries, in addition to chronic damage to the cardiovascular system post recovery from COVID. This bears the question, how many complications have been identified, and to what degree are they affecting patients all over the world?

About COVID-19

The infamous SARS-CoV-2 virus is the infectious disease recognized as the coronavirus disease (COVID-19). A number of efficient preventive actions and medical regulations have been put in place by FDA since December 2019, the initial breakout of COVID-19. The breakout was noted to begin roughly around China, and they have helped to some extent manage the pandemic. Numerous studies indicate that many COVID-19 survivors have a degree of permanent damage and effects on the human body, especially a few weeks after recovery.

Statistics reveal that since the outbreak of this disease: one point fourteen, trillion dollars have been spent in response to covid 19 in just the US and more than twenty-three thousand papers have been published about COVID-19, establishing the significance and sheer abundance of knowledge and money that is invested into understanding the effects and actions that can be taken against this pathogen. In addition to the previous number, researchers estimate

there being around 523.2 million cases of cardiovascular disease in the world, which represents the large population that this side effect or aftereffect potentially encompasses, which will be covered shortly.

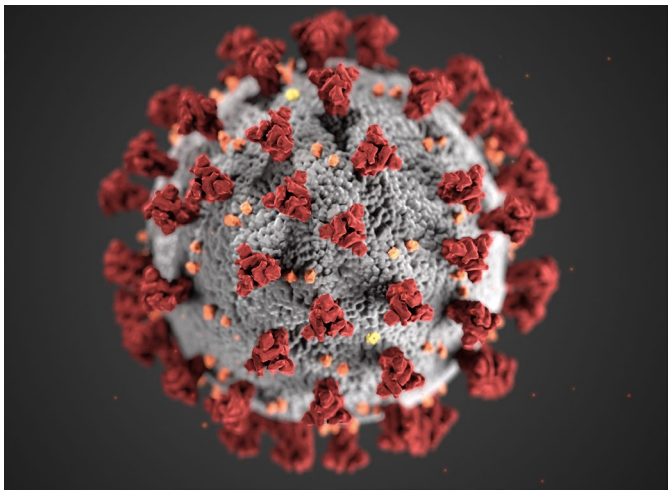

Figure 1. Suggested model of a COVID-19 pathogen

Information Linking COVID-19 To Cardiovascular Disease

Research linking COVID-19 to complications after recovery suggests that patients with preexisting cardiovascular disease or no cardiovascular disease at all are having heart complications after recovery. Researchers have hypothesized that the cardiac damage brought on by COVID-19 infection may have a significant role in the development of severe clinical manifestations for post-treatment COVID patients. In individuals with COVID-19, myocardial injury is suggested to be closely related to the prognosis of the disease as well. Structural changes from the spread of the pathogen affect the health of the heart. In this case, the effect on the heart is relatively unknown or unproven. However, scientists and doctors have reported a couple of observations. First, the weight of the heart increased slightly after patients recovered from COVID. Second, Signs of cardiac enlargement and right ventricular dilatation were also noted. Under microscopic attention, scattered individual cardiomyocyte necrosis was visible as well.

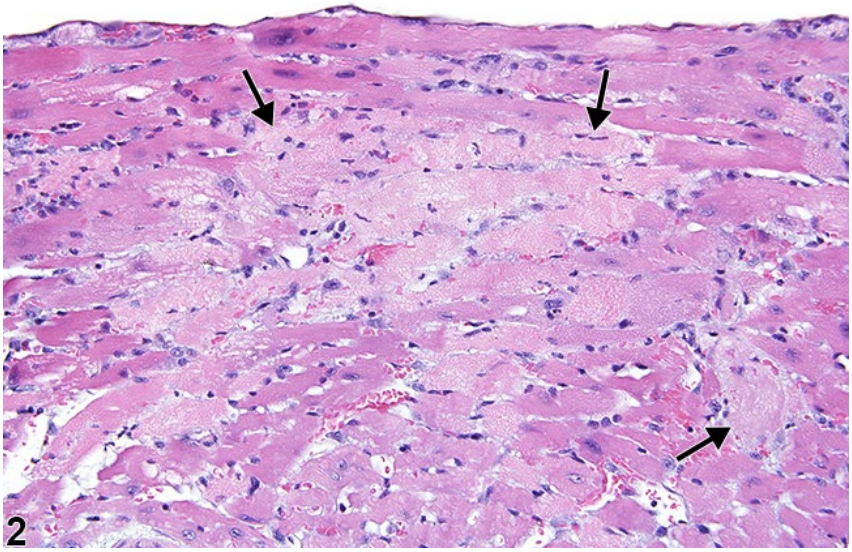

Figure 2. cardiomyocyte necrosis

Clinical Trials

Studies specifying individual patient cases were used to highlight any cardiac injury, and clinical manifestations, using biomarkers, mechanisms, and diagnostic techniques.

Fourteen records comprising a total of fourteen cases that report myocarditis/myopericarditis secondary to COVID-19 infection were identified. According to the results, there was a male predominance (58%), with the median age of the cases described being 50.4 years. Echocardiography was performed in 83% of cases reduced function was identified in 60%. Endotracheal intubation was performed in the majority of cases. Unfortunately, this study ended up with loosely related results regarding the effect on the heart, stating that "guidelines for diagnosis and management of COVID-19 myocarditis have not been established and our knowledge on management is rapidly changing" (Sawalha).

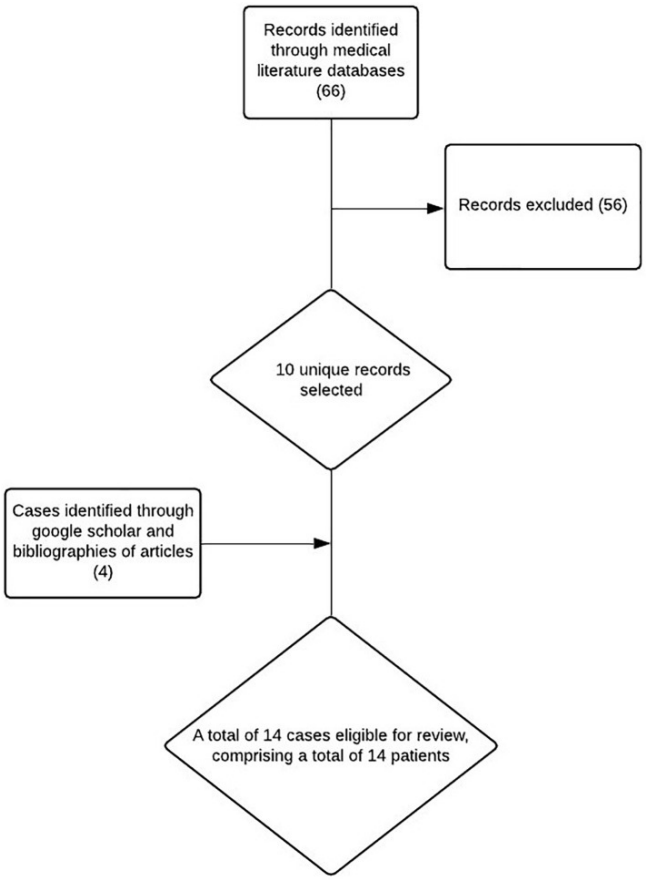

Figure 3. Clinical procedure COVID-19 Related Myocarditis Study

Conclusion

Cardiovascular system abnormalities brought on by COVID-19, people who already have cardiovascular illness should be given priority. It is important that COVID-19 patients receive quick treatment with relevant symptoms relating to the manifestation of cardiovascular disease in order to lower mortality. Although the necessity of screenings in order to detect cardiovascular damage should be instituted as a common practice post-recovery is still unclear, there is clearly some form of correlation between the manifestation of cardiovascular complications in the heart and COVID after recovery.

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