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Perspective

The Impact of COVID-19 on the Cardiac Health

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DESCRIPTION

The COVID-19 pandemic, caused by the novel coronavirus SARS-CoV-2, has had a profound impact on global health and well-being. While primarily known for its respiratory symptoms, COVID-19 has also been associated with significant implications for cardiovascular health. The virus has revealed a complex interplay between COVID-19 infection and the cardiovascular system, leading to various cardiovascular complications and exacerbating pre-existing heart conditions. Understanding the impact of COVID-19 on heart health is crucial for healthcare professionals and individuals alike.

Mechanisms of cardiac involvement

SARS-CoV-2 enters cells *via* attaching to the highly expressed Angiotensin-Converting Enzyme 2 (ACE2) receptors in the respiratory system. However, cardiac tissues also have ACE2 receptors, which makes direct viral invasion and consequent myocardial harm possible. Additionally, the systemic inflammatory response brought on by the virus may cause a cytokine storm, which can worsen cardiovascular health by encouraging thrombosis, endothelial dysfunction and inflammation.

Myocardial injury and acute coronary syndromes

Patients with COVID-19, particularly those with advanced disease, frequently exhibit increased cardiac biomarkers that indicate myocardial damage. Chest pain, Electrocardiogram (ECG) ST-segment abnormalities or even acute coronary crises may be the result of this. Myocardial injury can be caused by a variety of processes, including as direct viral invasion, microvascular dysfunction or an imbalance between oxygen supply and demand.

Arrhythmias and cardiac arrhythmogenicity

Atrial fibrillation, ventricular arrhythmias and conduction abnormalities are just a few of the heart rhythm disorders that COVID-19 can cause. Electrolyte abnormalities, pharmacological side effects or cardiac inflammation can all cause these arrhythmias to develop. Additionally, several COVID-19 therapies, such as hydroxychloroquine or some antiviral medications may have pro arrhythmic potential and should be closely monitored in patients who are susceptible to them.

Heart failure and cardiomyopathy

Heart failure may occur in severe COVID-19 instances as a result of direct myocardial damage or the deterioration of pre-existing cardiac diseases. Cardiomyopathies can occur as a result of inflammatory processes, myocarditis and systemic effects of the virus on other organs.

Thrombotic complications

COVID-19 is associated with an increased risk of blood clot formation, a condition known as thrombosis. These blood clots can affect the heart by blocking blood flow to the coronary arteries, leading to a heart attack or by causing pulmonary embolism, where a clot travels to the lungs. Blood clots can also affect other blood vessels, increasing the risk of stroke.

Long-term effects

Some people who have recovered from COVID-19 nevertheless have unresolved cardiovascular issues and symptoms. These include lower exercise tolerance, chronic weariness, shortness of breath and chest pain. A disease called long COVID or Post-Acute Sequelae of SARS-CoV-2 infection (PASC) can also have an impact on the heart, resulting in protracted symptoms and dysfunction.

CONCLUSION

Beyond respiratory symptoms, COVID-19 has a significant negative effect on the cardiovascular system. Patients with COVID-19 have experienced myocardial damage, arrhythmias, heart failure and thrombotic problems both during the acute infection and after recovery. For COVID-19 survivors to be managed and provided with long-term care effectively, it is essential to comprehend these cardiac effects. To fully address the cardiac effects of COVID-19 and enhance patient outcomes, multidisciplinary approaches and clinical monitoring are needed.

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