Journal of Cardiology Cases xxx (xxxx)

Contents lists available at ScienceDirect

Journal of Cardiology Cases

journal homepage: www.elsevier.com/locate/jccase

Letter to the Editor

Exploring the link between COVID-19 and coronary spasm

Keywords:
Coronary spasm
COVID-19
Ischemia
Heart diseases

Dear Editor,

A comprehensive literature review was undertaken to investigate the link between COVID-19 and coronary spasms. Azuma et al. reported that a 65-year-old male exhibited multivessel coronary spasm, potentially linked to COVID-19 [1]. Diagnosis was achieved using acetylcholine coronary angiogram and cardiac magnetic resonance imaging. The exact cause of myocardial injury by COVID-19 is uncertain. Evaluating cardiac damage and diagnosing via multimodality imaging, particularly cardiac magnetic resonance, is crucial due to the diverse pathologies related to the virus [1].

Hajikhani et al. reported that patients with coronary artery disease (CAD) were more susceptible to severe COVID-19 complications [2]. A systematic review and meta-analysis of 109 studies published between 2019 and 2021 investigated this impact. The prevalence of CAD among COVID-19 patients was 12.4 % in 10 countries. Fever was the most common symptom (47 %), with 36.5 % also having hypertension. The coexistence of COVID-19 and CAD, particularly in men and the elderly, increases risks and complications, necessitating careful patient examination for timely diagnosis and treatment [2].

Papageorgiou et al. addressed the fact that COVID-19 patients often faced cardiovascular complications, including heart failure, myocarditis, and acute coronary syndrome [3]. A male patient with severe COVID-19 pneumonia developed ST-segment elevation myocardial infarction (STEMI) due to spontaneous coronary artery dissection (SCAD). The literature review suggests a potential correlation between SCAD and COVID-19. Endothelial dysfunction, thrombotic complications, and vascular tone disturbances, either from direct viral injury or cytokine storm, could lead to SCAD. Early angiographic evaluation is recommended for STEMI cases to avoid thrombolysis-related adverse events [3].

Kounis et al. investigated how COVID-19 leads to cardiovascular complications via mechanisms such as coronary spasm, microthrombi formation, and cytokine storm [4]. The virus invades endothelial cells via angiotensin-converting enzyme 2 receptors, triggering prothrombotic effects and impairing the kinin-kallikrein system's counterbalancing effects. This results in various cardiac conditions, including arrhythmias, heart failure, and myocarditis. Understanding how COVID-19 affects the cardiovascular system, particularly in vulnerable groups such as children and athletes, is crucial [4].

Tolu-Akinnawo et al. addressed why COVID-19, primarily a respiratory disease, was linked with acute cardiovascular complications [5]. A study of 97 articles highlighted mechanisms such as cytokine-induced inflammation and direct cardiac damage. Patients with hypertension and diabetes are at increased risk of complications and severe disease. Common complications include myocardial infarction and arrhythmias, with other conditions such as myocarditis and Takotsubo syndrome also reported. The study emphasizes vigilance in patients with cardiovascular risk factors [5].

The literature review reveals a strong link between COVID-19 and coronary spasms. COVID-19 patients, especially those with pre-existing coronary artery disease, are at higher risk of severe complications. The virus can cause various cardiovascular conditions, including myocarditis, heart failure, and arrhythmias. It is crucial to understand how COVID-19 affects the cardiovascular system, particularly in vulnerable groups. The pandemic has also impacted hospital admissions for acute myocardial infarction, leading to increased mortality and morbidity.

Declaration of competing interest and funding

The author has no conflict of interest.
This work has no funding.

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15 March 2024
Available online xxxx

https://doi.org/10.1016/j.jccase.2024.05.001

Please cite this article as: Y. Takefuji, Exploring the link between COVID-19 and coronary spasm, Journal of Cardiology Cases, https://doi.org/10.1016/j.jccase.2024.05.001