Impact of Myocardial Infraction in Covid19 Patients

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Abstract

Many patient with coronavirus disease 2019 (covid19) have underlying cardiovascular (cv) disease of develop acute cardiac injury during the course of illness. Coronavirus disease is serious illness caused by severe acute respiratory syndrome coronavirus2 (SARS-coV-2). The symptoms of the disease ranges from asymptomatic to to mild respiratory symptoms and even potentially life threating cardiovascular and pulmonary complications. As we all know, acute myocardial infraction is a kind of disease that induces myocardial ischemia necrosis and leads to high mortality.

Introduction

As early as December 2019, cases of unusual pneumonia presented and diagnosed in Wuhan, China. A novel SARS -coV-2 virus was identified as the cause of new corona disease 2019 (COVID19).
The virus continued to spread worldwide and became a pandemic on March 11, 2020.

The scientific study provide an update on epidemiology, clinical characteristics and outcomes of patients with AMI during covid19 pandemic, with a special focus on its collateral impact on AMI. With SARS-coV-2infection still not under control, understanding and addressing the relationship between covid19 and AMI.
Several mechanism associated with covid19 may be involved in AMI.

1. AMI can be triggered in patient with covid19 by proinflammatory state which may promote the destabilization of coronary atherosclerotic plaque; this may lead to highly thrombogenic core to blood.

2. Another potential mechanism is mismatch between reduced oxygen supply and increased oxygen demand

3. In particular the endothelial and micro vascular injuries induced by SARS-coV-2 may further enhanced inflammation, resulting coronary vasospasm, thrombosis, and myocardial perfusion defects.

The result reveals the direct impact of SARS-coV-2 infection on the pathophysiology of AMI and prognosis. The association is the strongest in case of venous thromboembolic disease, but the risk of myocardial infraction (MI) is approximately double in the 7 days after COVId19 diagnosis. Covid19 has affect the cardiovascular system leading to myocardial damage via angiotensin converting enzyme, ACE2 Receptor, SARS-cov-2 and immune response, Mechanism of cardiac damage in covid19. Cytokine release syndrome, direct myocardial cell injury, acute coronary syndrome.

Therefore, we aim to perform a review of all cases of Ami published in literature to identify the measure risk factor and suggest possible changes in clinical care that can help to improve the outcomes of patients..

The case reports of AMI was collected from various occurring in covid19 positive patient using “acute myocardial infraction, COVID19”, and SARS-coV-2”,
The scientific study were included they had reported associated cardiovascular disease in COVID19 patients, assessed level of cardiac biomarkers in covid19 patients. Case series, and studies investigating pathological features of the heart tissue, were assessed in the qualitative analysis. The study have shown that time delay in PPCI has negative impact on the clinical outcomes of STEMI patients

Discussion

Several theories have hypothesized that patient with covid19 may have higher risk of thrombosis and thrombotic events for complication, and smoking, hypertension and diabetes may further worsen their prognosis. The infection can cause a rise in several cytokines and D- dimer level which leads to an elevated prothrombin time .it can also

cause endothelial damage, which predisposes the patients to a hypercoagulable state.

Schoenhagen et al; Also suggested that these changes may cause plaques to weaken and ruptured, and thus cause coronary thrombosis.

Gondino et al; suggested that the indication for such therapies should beevaluated based on the patient clinical findings and also the severity of their disease

Monzino,I.R.C.C.S &. Milan, Italy et al; Provide and appropriate guidance based on evidence onhow to maintain optimal AMI management ,even when the healthcare system are underextreme strain.

Alexander fardman,Doron Zhager,Katia Orvin,Daniel Oren et a; Describes the STEMI patients admitted during the the first wave of corona and compare the higher rate of in hospital adverseeffect, with parallel period.

Nomesh Kumar et al; Given high mortality rate and check for signs of cardiac dysfunction and possible AMI while treating COVID19 patients with several comorbidities or previous history of AMI.

Basa Ray I,Almaddah NK,Adeboye A,et al; Gives the enhancing healthcare outcomes and alsoset the guidelines for better management of cardiovascular aspects of COVID19.

Yan lei,Yongxing Wang,Yun Song,Yue Cai et al; Physicians and nurses must work together totake effective measures to ensure the successful treatment and patient safety and survival from AMI a risk factor of Covid 19

Amir Tajbaksh et al; Provides aimed at providing current information on covid19and the cardiovascular system.

Tao Guo et al; The study performed on 187 patients and conclude that inflammationmay be the potential mechanism for myocardial injury.

Akbarshakh Akhmerov and Eduardo Marban et al; Lymphocytopenia, hyper inflammation and cardiac involvement are all prominent feature of disease and have prognostic value but despite of clinical trials, there no defective therapies are available at this time.

Michale Henein,Rafik Shenouda et al; Their study shows that covid19 is associated with significant decrease in STEMI patient treated by PPIC at the ICC Egypt.

Sebastian J.Reinstadler,Uta C.Hoppe et al; The information may contribute to minimize cardiac collateral damage during the rapidly spreading covid19 pandemic.

Sara Momtazmanesh ,Bharat dalvi et al; There is a wide spectrum of cardiac involvement in covid19 patients ,hence triage risk stratification tool can serve as guide for the timely recognition of high risk patients and mechanism targeted therapy

Mario Gramegna, MD,Lucca Baldetti,MD,Fabio Ciceri et al; Information provides about the clinical features of STEMI patients during covid19 pandemic.

Chor Cheung Frankie Tam,Michael Sze et al; Beside direct infectious complications, cardiology community has to acknowledge the direct effect of communicable disease on our patients and system of care.

Uwe Primessing,Burkert Pieske,Mohammad sherif et al; Data indicate that covid19 had relevant impact on non-infectious disease states, such as acute coronary syndromes.

Mohammad kermani-Alghoraishi MD et al; Infection with covid19 virus with increased thrombogenicity can play a role in the development of acute coronary syndrome, especially STEMI.

Tomasz J Guzik et al; The scientific study provide a comprehensive review of the clinical course of covid19,its comorbidities, and mechanistic consideration for future therapies.

Reinhold Kreutz et al; Acute cardiac injury as evidence by increased high sensitivity troponin levels has been reported in covid19 Patients and is possibly associated with the high inflammatory burden.

Katarzyna Wilk-Sledziewska et al; It leads to changes in the phenotype of cardiovascular patients ,which makes anew clinical challenges and possible therapeutic options.

Adriana albini et al- It has been claimed that both ARBS and ACE-IS could result potentially useful in the clinical course of SARS-coV-2 infected patients.

Conclusion

Given the high mortality rate, physician is encouraged to properly check for signs for dysfunction and possible AMI while treating COVID19 positive patients with several comorbidities or previous history of AMI.

Myocardial injury is significantly associated with fatal outcomes of Covid 19, aggressive treatment may be consider for patient at high risk of myocardial injury.

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