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COVID-19 and Incidence of Cardiac Arrhythmias

In the early phase of the COVID-19 pandemic, it was observed that patients with SARS-CoV-2 seem to have a higher rate of cardiac arrhythmias. Hospitals from China reported this to be 17% in hospitalised patients and as high as 44% in those placed in intensive care units. Similar reports were shared from Italy and New York as well.

To study this effect, 700 patients admitted to the Hospital of the University of Pennsylvania between March 6, 2020, and May 19, 2020, were observed for nine weeks. The study also assessed if cardiac arrhythmias in COVID-19 patients were associated with higher mortality.

The study participants were assessed using clinical records of comorbidities, demographic information, patient profile at the time of hospital admission, lab reports, and history of any procedures done such as implantation of pacemakers or implantable cardioverter-defibrillator (ICD).

Each patient's hospital admission outcome was recorded, for example whether the patient died stayed hospitalised, or got discharged on the last day of the study.

Patient data was analysed using a variety of statistical analysis techniques to compare patients in intensive care and non-intensive care units, rate of incidence of cardiac arrests and arrhythmias, and the association between type of arrhythmia and mortality.

Of the 700 COVID-19 patients in the study (mean age of 50±18 years, almost half of them were men and two-thirds African American), only 11% were admitted to intensive care units. They were also relatively older with a higher rate of comorbidities and poorer oxygen saturation levels

Over the course of the study, 4% (n=30) patients died, 8% (n=57) remained hospitalised, and 88% (n=613) were discharged.

In terms of cardiac events, there were a total of nine cases of cardiac arrest, 53 cases of cardiac arrhythmic events, 25 cases of atrial fibrillation, nine cases of bradyarrhythmia, and 10 cases of NSVT. The unadjusted analysis showed patients admitted to intensive care units having a 10-times higher probability of developing arrhythmia. There was no association noted between demographic or comorbidity attributes and incidence of arrhythmia.

The observations made in the study suggest that the incidence of cardiac arrests and arrhythmias in patients with COVID-19 is directly proportional to a patient's disease severity and not to infection with the virus. For example, the 11% cardiac arrest rate in the study cohort is the same as 13% across New York. 90% of the non-ICU study participants did not have a cardiac arrest. Study participants with more complicated systemic illnesses had a higher probability of experiencing cardiac arrhythmias.

COVID-19 patients present with complications of thrombosis due to infection of endothelial cells resulting in cytokine release syndrome and failures of arterial and venous microvasculature. This exponentially increases the risk for patients with a history of atrial fibrillation and needs to be managed with appropriate anticoagulation therapy.

The study concluded that the incidence of cardiac arrests and arrhythmias was higher in very ill patients admitted to intensive care than solely as a consequence of COVID-19 infection.

Source: JAMA
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