



Emergence of long hauler COVID-19 and cardiac health

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DESCRIPTION

Infection with COVID-19 has been linked to cardiac involvement. But in a sizable, nationally representative population, the association between post-recovery COVID-19 and the emergence of *de novo* heart failure has not been studied. Using information from the National COVID Cohort Collaborative Study, we looked at the post-recovery outcomes for 587,330 patients who were hospitalized in the US. Hospitalized COVID-19 patients tended to be older, more frequently male, and less frequently white. A total of 10,979 incident heart failure events occurred over a median follow-up of 367 days. After correction, hospitalization for COVID-19 was linked to a 45% increased risk of incident heart failure, with stronger associations among patients who were younger, white, or had pre-existing cardiovascular disease. In conclusion, hospitalization for COVID-19 is linked to a higher risk of developing heart failure.

The severe acute respiratory syndrome coronavirus 2 that causes the coronavirus disease 2019 has resulted in an unprecedented level of morbidity and mortality as well as a number of long-term complications, such as cardiac and respiratory disorders, and an elevated risk of premature death in those who survive. Almost 87% of patients hospitalized for COVID-19 reported persistent post-discharge symptoms, including dyspnea and fatigue, despite the fact that many of them had no obvious lung damage. Patients with chronic symptoms after recovering from COVID-19 infection have been dubbed the "long-hauler" phenomenon. Nevertheless, despite their significant clinical implications, the pathophysiology and etiology underlying these symptoms are poorly understood. Heart failure and COVID-19 share the same central pathophysiological mechanism of inflammation, so there may be a link between the two. This is supported

by the fact that 60 patients with no history of HF were later admitted for acute HF out of 3080 consecutive patients with COVID-19 infection who presented to the emergency department.

Further research from the US Department of Veterans Affairs national healthcare system revealed a higher risk of incident cardiovascular diseases, including heart failure, for military veterans who had recovered from COVID-19. The results of this study show that incident heart failure has a significant burden among COVID-19 survivors, but the generalizability of this association to the general population is constrained by the demographic composition of the veterans, who were primarily older males. In this study, which is extensive, population-based, and nationally representative, we look at the relationship between COVID-19 recovery and incident HF. At the time of our analysis, the N3C enclave contained electronic health records for over 12 million different patients' inpatient and outpatient encounters. We only included study participants who had been hospitalized.

There were 355,673 distinct patients with a COVID-19 first diagnosis date that occurred during inpatient hospitalization. Of these, 257,075 made it through discharge and had no prior HF history. A total of 2,560,320 distinct patients who were hospitalized during the same time frame but did not have a COVID-19 diagnosis were found. To shorten computer processing times, a random sample of 384,048 distinct patients free of COVID-19 infection was chosen. 330,255 of these made it to discharge day and had no prior history of HF. The 587,330 unique patients in our study population who were hospitalized with COVID-19 were mostly older men and less frequently white people.