

First Wave of COVID-19 Increased Risk of Heart Attack, Stroke up to Three Years Later

NIH-funded study focused on original coronavirus strain affecting unvaccinated participants at the start of the pandemic.

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Infection from COVID-19 appeared to significantly increase the risk of heart attack, stroke, and death for up to three years among unvaccinated people early in the pandemic when the original SARS-CoV-2 virus strain emerged, according to a National Institutes of Health (NIH)-supported study. The findings, among people with or without heart disease, confirm previous research showing an associated higher risk of cardiovascular events after a COVID-19 infection but are the first to suggest the heightened risk might last up to three years following initial infection, at least among people infected in the first wave of the pandemic.

Compared to people with no COVID-19 history, the study found those who developed COVID-19 early in the pandemic had double the risk for cardiovascular events, while those with severe cases had nearly four times the risk. The findings were published in the journal [Arteriosclerosis, Thrombosis, and Vascular Biology](#).

“This study sheds new light on the potential long-term cardiovascular effects of COVID-19, a still-looming public health threat,” said David Goff, MD, PhD, director for the Division of Cardiovascular Sciences at NIH’s National Heart, Lung, and Blood Institute (NHLBI), which largely funded the study. “These results, especially if confirmed by longer term follow-up, support efforts to identify effective heart disease prevention strategies for patients who’ve had severe COVID-19. But more studies are needed to demonstrate effectiveness.”

The study is also the first to show that increased risk of heart attack and stroke in patients with severe COVID-19 may have a genetic component involving blood type. Researchers found that hospitalization for COVID-19 more than doubled the risk of heart attack or stroke among patients with A, B, or AB blood types, but not in patients with O types, which seemed to be associated with a lower risk of severe COVID-19.

Scientists studied data from 10,000 people enrolled in the UK Biobank, a large biomedical database of European patients. Patients were ages 40 to 69 at the time of enrollment and included

8,000 who had tested positive for the COVID-19 virus and 2,000 who were hospitalized with severe COVID-19 between Feb. 1, 2020, and December 31, 2020. None of the patients had been vaccinated, as vaccines were not available during that period.

The researchers compared the two COVID-19 subgroups to a group of nearly 218,000 people who did not have the condition. They then tracked the patients from the time of their COVID-19 diagnosis until the development of either heart attack, stroke, or death, up to nearly three years.

Accounting for patients who had pre-existing heart disease – about 11% in both groups – the researchers found that the risk of heart attack, stroke, and death was twice as high among all the COVID-19 patients and four times as high among those who had severe cases that required hospitalization, compared to those who had never been infected. The data further show that, within each of the three follow-up years, the risk of having a major cardiovascular event was still significantly elevated compared to the controls – in some cases, the researchers said, almost as high or even higher than having a known cardiovascular risk factor, such as type 2 diabetes.

“Given that more than 1 billion people worldwide have already experienced COVID-19 infection, the implications for global heart health are significant,” said study leader Hooman Allayee, PhD, a professor of population and public health sciences at the University of Southern California Keck School of Medicine in Los Angeles. “The question now is whether or not severe COVID-19 should be considered another risk factor for cardiovascular disease, much like type 2 diabetes or peripheral artery disease, where treatment focused on cardiovascular disease prevention may be valuable.”

Allayee notes that the findings apply mainly to people who were infected early in the pandemic. It is unclear whether the risk of cardiovascular disease is persistent or may be persistent for people who have had severe COVID-19 more recently (from 2021 to the present).

Scientists state that the study was limited due to inclusion of patients from only the UK Biobank, a group that is mostly white. Whether the results will differ in a population with more racial and ethnic diversity is unclear and awaits further study. As the study participants were unvaccinated, future studies will be needed to determine whether vaccines influence cardiovascular risk. Studies on the connection between blood type and COVID-19 infection are also needed as the mechanism for the gene-virus interaction remains unclear.

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