

Genetics enhance sex's role as a stroke, heart attack risk factor

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Micrograph showing cortical pseudolaminar necrosis, a finding seen in strokes on medical imaging and at autopsy. H&E-LFB stain. Credit: Nephron/Wikipedia

Genetics enhances the role sex plays in determining risk for stroke and heart attack in healthy middle-aged adults (ages 40 to 60), according to preliminary research to be presented at the American Stroke Association's International Stroke Conference 2020—Feb. 19-21 in Los Angeles, a world premier meeting for researchers and clinicians

dedicated to the science of stroke and brain health.

Currently, the genetic risk score employed in this study is widely used in research, however, it is not yet used in the clinical care of patients. The findings support the possibility that genetic scores could be used to better assess the likelihood of [stroke](#) and [heart attack](#) and develop and implement preventive efforts for [middle-aged people](#) without obvious risks.

"The risk of heart attack or stroke increases rapidly during middle age," said Guido J. Falcone, M.D., Sc.D., M.P.H., lead author of the study and assistant professor of neurology at the Yale School of Medicine in New Haven, Connecticut. "Identifying healthy middle-aged adults at higher risk to have a stroke or heart attack is important because it opens the possibility of intervening early and avoiding many years of disability."

The researchers analyzed data from more than 300,000 people (59% women) enrolled in the UK Biobank, an open-access, UK-based resource that recruited half a million people in the United Kingdom (aged 40-69) between 2006 and 2010. All UK Biobank volunteers agreed to undergo medical testing, provide detailed health information and have their health followed in the future. None of the participants in this analysis had high blood pressure, diabetes or high cholesterol at the time they enrolled. No participants had a prior heart attack or stroke, and all were screened for the presence of 68 gene variants that are known to be associated with the risk of heart attack or stroke. This data generated a single score that allowed the categorization of each study participant as having low, intermediate or high genetic risk.

By age 60, there were 1,954 strokes and 3,792 heart attacks. Analyzing the influence of sex and genetics, researchers found:

- The proportion of people who had a heart attack or stroke was

approximately 1 in 800 by age 40, 1 in 220 by age 50, and 1 in 76 by age 60;

- Compared to people at low genetic risk, strokes and heart attacks increased 22% in those at intermediate risk and increased 52% among those at high genetic risk;
- Men were three times as likely as women to have a stroke or heart attack; and
- Compared to women at low genetic risk, men at high genetic risk were four times as likely to have a stroke or heart attack.

"We were very surprised by the results, especially the synergy between genetic burden and sex," Falcone said. "I am cautiously optimistic. We already know that treatment for [high blood pressure](#), high cholesterol and diabetes can help prevent [heart](#) attacks and strokes. People without these conditions who are at high genetic risk could also benefit from some type of early intervention, and the findings from our study may help us develop preventive measures for this population."

Results from this study, which included an almost entirely white, British population enrolled in the UK Biobank, may not be generalizable to other racial and [ethnic groups](#). "These results would apply to a specific group of Americans, and we would need to test all these things in other ethnic or racial groups, including Native Americans, African Americans, Hispanics and Asians," Falcone said.

Provided by American Heart Association

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