Study reveals underlying genetic risks for type of heart attack largely affecting younger women

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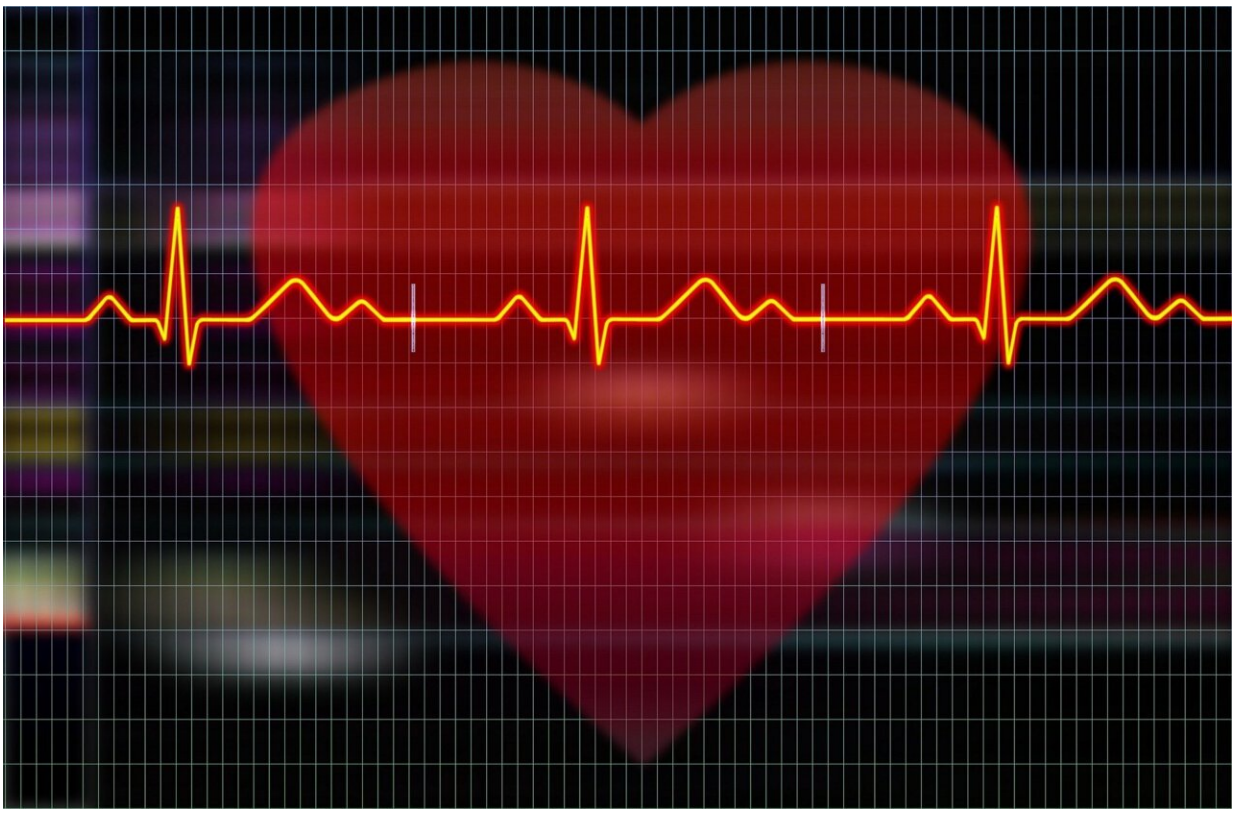

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Research led by the National Institute for Health and Care Research (NIHR) Leicester Biomedical Research Center (BRC) and Universite

Paris Cite, and supported by worldwide partners in Canada, the U.S. and Australia, has identified new genes that are associated with an increased risk of a type of heart attack primarily affecting young to middle-aged women. The results are published in *Nature Genetics* today, May 29, 2023.

SCAD—or Spontaneous Coronary Artery Dissection—is when a bruise or bleed occurs in the wall of a coronary artery, cutting off the blood to part of the heart. This leads to a heart attack. Unlike other types of heart attack, SCAD is most common in women under the age of 60 and is a leading cause of heart attacks around the time of pregnancy. Furthermore, people who have had a SCAD tend to be generally healthy and SCAD can sometimes happen more than once.

To date, little is known about why a SCAD happens, often striking out of the blue, meaning that it is currently impossible to prevent.

The researchers present a genome-wide association meta-analysis involving a total of 1,917 cases of SCAD and 9,292 controls from European ancestry. They found 16 genes that increased the risk of a SCAD. The identified genes are involved in processes that determine how the cells and connective tissue hold together, and also how the blood clots when bleeding occurs in tissues.

Interestingly, the researchers found that, while many genes linked to a higher risk of SCAD are shared with risk genes for conventional coronary artery disease (CAD), they have an opposite effect. This means patients with a SCAD have some genetic protection from the risk of CAD, and is further evidence that these diseases are very different. The only shared risk factor appeared to be genetically elevated blood pressure.

Dr. David Adlam, Associate Professor of Acute and Interventional

Cardiology at the University of Leicester, and lead author of the study, said, "This research confirms that there are multiple genes involved in determining the risk of a person having a SCAD. These genes give us the first key insight into the underlying causes of this disease and provide new lines of enquiry, which we hope will guide future new treatment approaches."

More information: David Adlam, Genome-wide association meta-analysis of spontaneous coronary artery dissection identifies risk variants and genes related to artery integrity and tissue-mediated coagulation, *Nature Genetics* (2023). DOI: 10.1038/s41588-023-01410-1. www.nature.com/articles/s41588-023-01410-1

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