Family ties: Early cardiac events pose major and different risks in close relatives

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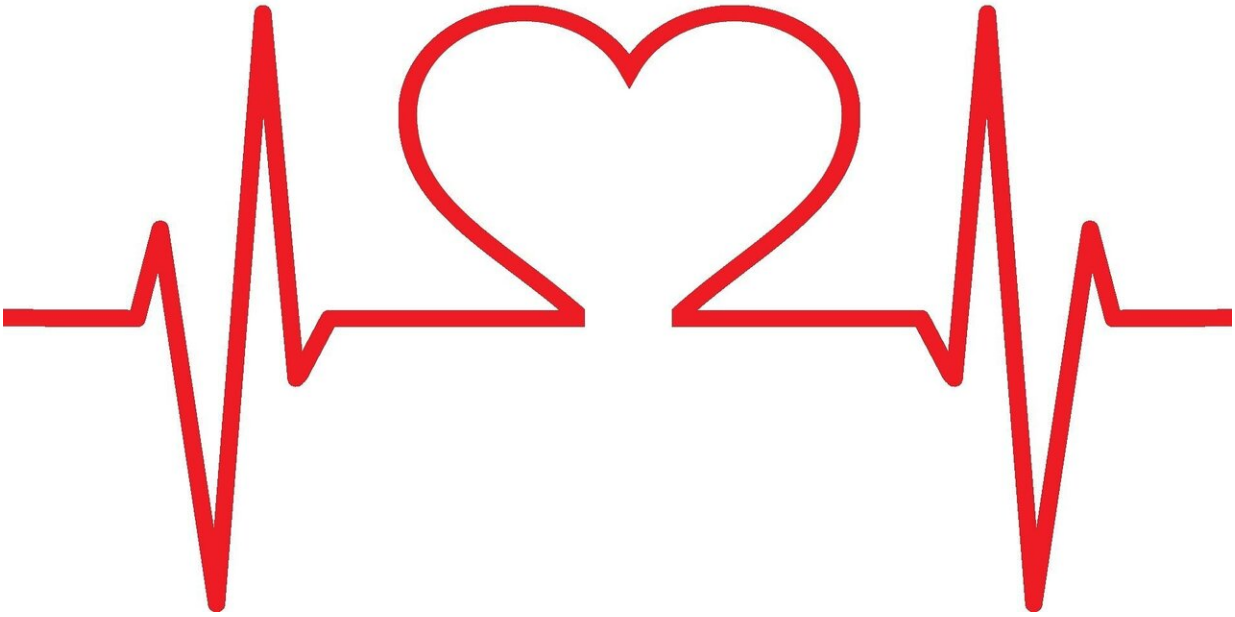

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Family history of early cardiac events in first degree relatives such as a parent or sibling is a major risk factor, especially for premature events. Currently, data on risks in close relatives of patients with a family history of premature heart attacks, chronic stable angina or peripheral vascular disease are sparse.

Researchers from Florida Atlantic University's Schmidt College of

Medicine in collaboration with an international team of leading scientists in Italy, the United Kingdom and Poland, assembled a consecutive series of 230 patients with premature onset of heart attacks, strokes, angina or peripheral artery disease and a comparison group of apparently healthy men and women during a 24-month period. The comparison group had no family or personal history of cardiovascular disease (CVD) and had normal electrocardiograms (ECGs), cholesterol, triglycerides, blood pressures and glucose. Researchers defined a premature event as occurring in men 60 years or younger and in women 65 years or younger.

"Our data indicate that early cardiac events pose major and different risks in close relatives," said Charles H. Hennekens, M.D., Dr.PH. senior author, the First Sir Richard Doll Professor and senior academic advisor in FAU's Schmidt College of Medicine. "Further, since families share more than genes, not surprisingly, these data are compatible with a role for both genetic and environmental factors."

The data, published in the *International Journal of Cardiology*, also suggest that first degree relatives of patients with premature heart attacks compared with those presenting with a first episode of chronic stable angina or peripheral vascular disease have a shorter survival time. Patients with heart attacks and chronic stable angina reported significantly higher frequencies of attacks in their first degree relatives than patients with peripheral vascular disease. In contrast, patients with chronic stable angina and peripheral vascular disease reported significantly higher frequencies of chronic stable angina and peripheral vascular disease, respectively, in their first degree relatives compared to patients with heart attacks.

"Family history of early onset events is a major and independent risk factor. Thus, patients with a positive parental or sibling history of premature cardiac events require even more aggressive therapeutic

lifestyle changes as well as adjunctive drug therapies of proven benefit," said Hennekens. "In the United States, Europe and worldwide, most guidelines recommend risk scores for initial clinical assessments, which do not include family history of early events."

Hennekens formerly served as the first John Snow and the first Braunwald professor of medicine at Harvard Medical School. His groundbreaking scientific findings have significantly improved the ability to treat as well as prevent CVD, and for more than a decade, he was ranked as the third most widely cited medical researcher in the world by Science Watch.

Hennekens has collaborated for several decades with Felicita Andreotti, M.D., Ph.D., first author and a professor at Catholic University Cardiovascular Medicine in Rome; and brought the data when she served as visiting professor at FAU's Schmidt College of Medicine. Their collaborations have included the major role of therapeutic lifestyle changes, especially overweight and obesity and physical inactivity as well as statins, PCSK9 inhibitors, aspirin, converting enzyme inhibitors and angiotensin receptor blockers.

In this study, Hennekens and Andreotti collaborated with Janet Robishaw, Ph.D., co-author and senior associate dean for research and chair of the Department of Biomedical Sciences in FAU's Schmidt College of Medicine. Andreotti had conducted the study at the Hammersmith Hospital and London Chest Hospital in the United Kingdom.

"Recent advances in human genome sequencing as well as basic and population genetics may help identify specific genotypes that predispose to atherosclerosis, thrombosis, or both," said Robishaw, a world renowned functional and translational genomics researcher with 30 years of sustained federal funding from the National Institutes of Health who

trained under Nobel Laureate Alfred G. Gilman, Ph.D. "Further studies also are needed to identify and quantify the functional role of candidate and marker genes for cardiovascular phenotypes and risk factors, as well as to better understand plausible independent contributions as well as interactions between nature and nurture concerning family history as a major and independent risk factor in cardiovascular disease, especially of premature onset."

According to the U.S. Centers for Disease Control and Prevention, for many decades, heart disease has been the leading killer among American men and women, causing approximately 600,000 deaths each year of which about 25 percent present with sudden cardiac death.

More information: Felicita Andreotti et al, Family history in first degree relatives of patients with premature cardiovascular disease, *International Journal of Cardiology* (2021). DOI: 10.1016/j.ijcard.2021.03.026

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