Gene variant may predict sudden cardiac death risk for blacks

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(Medical Xpress) -- Researchers at Duke University Medical Center have pinpointed a common gene variant in blacks that may be associated with the development of life-threatening heart arrhythmias. The finding may help determine which patients are likely to benefit most from implantable cardio-defibrillators (ICDs).

"Blacks are disproportionally affected by heart failure, arrhythmias, and sudden cardiac death but are vastly underrepresented in the majority of clinical trials conducted to date," said Albert Y. Sun, MD, lead author of the study published in Circulation: Cardiovascular Genetics.

"Much debate surrounds the identification of patients for ICD implantation, which takes into account efficacy, cost, and complication rates."

Sun said ICDs can effectively reduce sudden cardiac death in heart failure patients, but current evidence to guide physicians when deciding which patients may derive the most benefit is limited to only a few clinical variables.

While treatment guidelines are in place, most patients who experience sudden cardiac death fall outside of the parameters for a primary prevention ICD, a device which is designed to automatically detect and correct life-threatening arrhythmias by delivering a jolt of electricity.

In the new study, researchers tested whether a gene variant previously

linked to sudden infant death syndrome and other heart rhythm conditions was associated with arrhythmias in blacks with heart failure and a diminished heart function called reduced ejection fraction.

"This is the largest genetic study to date of blacks with ICDs and it promises potential new diagnostic strategies to define patients who will most benefit from ICDs," said Geoffrey S. Pitt, MD, PhD, director of Duke's Ion Channel Research Unit and the study's principal investigator.

The study included patients from the Duke Electrophysiology Genetic and Genomic Studies (EPGEN) biorepository.

Researchers identified 112 blacks who received ICDs for primary prevention of sudden cardiac death and followed them for an average of two years. During that time, 23 of the patients had their ICD effectively activated, and 89 patients did not.

Patients with the gene variant, known as the Y1103 allele, were three times more likely to experience a potentially life-threatening ventricular arrhythmia that triggered the device into action. On average, patients with the gene variant also experienced their first arrhythmia sooner (609 days vs. 1057 days).

"These findings are significant because approximately 13 percent of people of African descent carry this variant," Sun said.

Researchers said the presence of this gene variant is currently tested for and included in clinical genetic testing for many of the inherited arrhythmia syndromes, such as long-QT syndrome.

Sun said if this finding is validated through additional research, those tests could be used to help determine a patient's risk of sudden cardiac death.

Provided by Duke University