

Genes play greater role in heart attacks than stroke: study

July 26 2011

People are significantly more likely to inherit a predisposition to heart attack than to stroke, according to research reported in *Circulation: Cardiovascular Genetics*, an American Heart Association journal.

The study results have implications for better understanding the genetics of stroke and suggest the need for separate risk assessment models for the two conditions.

"We found that the association between one of your parents having a [heart attack](#) and you having a heart attack was a lot stronger than the association between your parent having a stroke and you having a stroke," said senior author Peter M. Rothwell, M.D., Ph.D., professor of clinical neurology at Oxford University in England. "That suggests the susceptibility to stroke is less strongly inherited than the susceptibility to heart attack."

A second analysis, which included patients' siblings as well as parents, yielded the same result: Family history proved a stronger risk predictor for heart attack than for stroke.

Rothwell and his colleagues conducted the study to clarify and confirm evidence suggesting a great difference in [genetic predisposition](#) between heart attacks and strokes. "We had found previously that much of the [heritability](#) of stroke is related to the genetics of [high blood pressure](#), which doesn't seem to be the case for heart attack," Rothwell said. [Hypertension](#) appears to be closely related with stroke rather than heart

attack, which is why a family history of hypertension is related to a higher risk of stroke.

In the report published today, all patients were enrolled in the ongoing Oxford Vascular Study.

OXVASC, as the study is known, that began in 2002 to study strokes, heart attacks and other acute vascular events in a part of Oxfordshire County where more than 91,000 people are served by one hospital. Previous analyses in the same population conducted by lead author, Amitava Banerjee MPH PhD, have shown the particular importance of family history in mother-daughter transmission in both heart attacks and stroke. "Family history of heart attacks and family history of strokes have rarely been studied in the same population," Banerjee said.

The researchers used data from 906 patients (604 men) with acute heart ailments and 1,015 patients (484 men) who suffered acute cerebral events. Among the study's findings:

- In the heart patients, 30 percent had one parent who'd had a heart attack, 21 percent had at least one sibling who had suffered a heart attack. Seven percent had two or more siblings who had heart attacks and 5 percent had two parents with heart attack.
- Among the patients with a stroke or transient ischemic attacks (TIAs, often called a mini-strokes or warning strokes), 21 percent had one parent who had a stroke, and 2 percent had two parents with stroke.

Eight percent had at least one sibling with a stroke and 14 percent had at least two siblings with stroke.

- The risk of a sibling developing acute heart problems was similar for those with heart attack or stroke.
- The risk for an acute cardiac event was six times greater if both parents had suffered a heart attack and one-and-a-half times greater if one parent had a heart attack. In contrast, the likelihood of stroke did not change significantly with parents' stroke history.

The findings, if confirmed by additional studies, hold two significant implications, Rothwell said.

"First, the way physicians predict the odds of a healthy person suffering a heart attack or stroke needs refining," he said. "Currently, most risk models lump a patient's family history of stroke and heart attack together. We probably should model [family history](#) of stroke and heart attack separately in the future."

The new data also indicated that using the same criteria to predict both medical events overestimate the risk of stroke, he added. "The knowledge of genetic factors in stroke lags behind that in coronary artery disease," Rothwell said. The discovery that genes play a significantly smaller role in stroke could mean that genetic studies of [stroke](#) may not be critical to the field, he added.

Provided by American Heart Association

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