Study sheds light on genetic factors for intracranial aneurysm

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(Medical Xpress)—A large collaborative study that included researchers from the University of Cincinnati (UC) College of Medicine is reporting a new chromosomal region associated with intracranial aneurysm susceptibility, shedding new light on genetic risk factors for a life-threatening condition.

The research from the Familial Intracranial Aneurysm (FIA) project is being presented today, at the American Heart Association/American Stroke Association's International Stroke Conference 2014 in San Diego.

Joseph Broderick, MD, distinguished research professor at UC and director of the UC Neuroscience Institute, an institute of the UC College of Medicine and UC Health, is giving the oral presentation on behalf of an international collaborative research effort. Sponsored by the National Institute of Neurological Diseases and Stroke (NINDS), the study is examining genetic and environmental risk factors for intracranial aneurysm. This analysis involved collaboration with researchers in the Netherlands and Finland.

An intracranial aneurysm is a weak, bulging spot on the wall of a brain artery. The aneurysm may eventually rupture, allowing blood to escape into the area around the brain (subarachnoid hemorrhage). When that happens, advanced surgical treatment is often required. Treatment options include surgical clipping, coiling and bypass.

Unruptured brain aneurysms often have no symptoms. The Brain

Aneurysm Foundation estimates that 6 million Americans have an unruptured brain aneurysm that has gone undiagnosed. When an aneurysm does rupture, the foundation says, about 15 percent of the victims die before reaching a hospital. Ruptured brain aneurysms are fatal in about 30 to 40 percent of cases. Of those who survive, about 66 percent suffer some permanent neurological defect.

The researchers, by performing a genomewide association analysis in a discovery sample of Caucasian ancestry, identified evidence of association of intracranial aneurysms with a region of chromosome 7, one of 23 chromosome pairs in the human body. Additionally, they replicated evidence of association with IA in chromosome 9, which was reported previously to be associated with IA.

"The chromosome 7 region, while newly associated with intracranial aneurysm, was previously associated with ischemic stroke and large vessel ischemic stroke, suggesting a possible genetic and vascular link between these stroke subtypes and intracranial aneurysm," says Broderick.

"As for chromosome 9, we've reconfirmed that it's the location of the area most strongly associated with intracranial aneurysm." This region on chromosome 9 has also been linked to ischemic stroke related to large artery disease.

Broderick notes that it's important to gain a better and more complete understanding of the gene variations that lead to aneurysm.

"If we identify people who have a stronger family risk for aneurysm, we can make it very clear to them that they must avoid other risk factors such as smoking and high blood pressure," he says.

Also, he said, people with an elevated genetic risk factor might be

encouraged to undergo brain imaging to make sure no aneurysms are developing.

Provided by University of Cincinnati