

# People of East Asian descent have more vessels reclog after endovascular treatment

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Among people who received endovascular therapy to mechanically remove a clot in their large brain artery, those who had a rare genetic variant found primarily in people of East Asian descent (Japanese, Chinese and Korean) were more likely to have the vessel reclog during or shortly after the procedure, according to a small study published today

in *Stroke: Vascular and Interventional Neurology*.

"In the field of acute stroke, [genetic testing](#) has not been considered important. However, since our study found that a specific genetic variant substantially affects the outcome of endovascular therapy, physicians involved in acute stroke medicine, especially in East Asian countries and in western countries where many East Asian descendants are living, need to know these findings," said senior study author Masafumi Ihara, M.D., Ph.D., FAHA, director of neurology at the National Cerebral and Cardiovascular Center in Osaka, Japan.

When blood clots block a large artery supplying blood to the brain, a [severe stroke](#) with the potential for serious disability may occur. According to the American Heart Association/American Stroke Association, clot-caused (ischemic) strokes account for 87% of all strokes in the United States.

The genetic variant studied, called *RNF213* p.R4810K, is present in 1 in 50 people of East Asian descent and in 80%-90% of people with the genetic disorder moyamoya disease. Moyamoya is a rare, progressive disorder caused by blocked arteries at the base of the brain that can result in a stroke or other [neurological symptoms](#), such as motor or sensory impairment, headache or vertigo. Since moyamoya disease is diagnosed by conventional brain angiography or [magnetic resonance angiography](#) (MRA) and symptoms are varied and stroke-related, many people may not know they have moyamoya disease before they have a stroke. In addition to endovascular therapy, bypass surgery is also a treatment option to increase [cerebral blood flow](#). Medically, antiplatelets are used to suppress clot formation in constricted or narrowed arteries.

The researchers analyzed the outcomes of 277 East Asian adults (46.2% women, median age of 76 years) who received endovascular therapy for an ischemic stroke at the National Cerebral and Cardiovascular Center in

Osaka, Japan, between 2011 and 2021. All of the patients had an acute anterior-circulation large vessel occlusion, a stroke in which a clot blocks one of the large arteries responsible for supplying blood to the forebrain (the forebrain is the largest of three parts of the brain and includes the cerebrum, thalamus, hypothalamus, [pituitary gland](#), limbic system, and the olfactory bulb; it is responsible for processing complex brain and [physical activities](#), numerous sensory functions and voluntary motor activities).

Several types of endovascular procedures are available to restore blood flow to the artery, such as removing the blood clots through a stent retriever device or suction device, or opening the clogged vessel by inflating a balloon in the area and installing a stent to hold the blood vessel open. The type of procedure performed was determined by the medical team and was unrelated to whether the patient had the genetic variant.

Researchers compared 10 patients found to carry the *RNF213* p.R4810K variant to 267 patients without the variant on several short-term outcome measures. The results were adjusted for the age of the patients.

While people with the genetic variant were just as likely as non-carriers to initially have success with reestablishing blood flow to at least half of the brain tissue that had been deprived of blood during the stroke, outcomes revealed:

- People with the genetic variant were far more likely (70%) than non-carriers (5.6%) to have the treated artery become re-blocked before the procedure was complete, called instant reocclusion.
- People with the genetic variant were far more likely (60%) than non-carriers (0.4%) to have the treated artery become re-blocked within two weeks of an initially successful endovascular procedure, called early reocclusion.

"We did not imagine this genotype would affect the outcome of endovascular therapy so substantially," Ihara said. "Information on the genotype will be useful for people who receive endovascular therapy (hopefully before the procedure) because individuals who are of East Asian descent and have the genetic variant need to be more strictly monitored than usual for reocclusion during and after endovascular treatment."

The number of people found to have the genetic variant was too small to determine which clot-removal devices or medicines may be better at preventing reocclusion. The researchers are initiating a larger, multi-center study to answer these questions, and to examine the long-term outcome of [variant](#) carriers following endovascular therapy. "It's important to note, however, that genotyping is currently only available in a research setting, for participants in a clinical trial such as ours," Ihara said.

Results from this study involving an East Asian population may not be generalized to other people with different genetic backgrounds.

"However, additional genetic variants may affect the outcome of endovascular therapy in different ethnic populations, which needs further investigation," Ihara said.

In addition to [stroke](#), the *RNF213* p.R4810K gene has previously been associated with [high blood pressure](#), pulmonary high blood pressure, heart attack and the narrowing of abdominal [blood](#) vessels.

**More information:** People of East Asian descent have more vessels reclog after endovascular treatment, *Stroke* (2022). [DOI: 10.1161/SVIN.122.000396](#)

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