

# Rare brain blood vessel disease carries higher risks in females

September 10 2012

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Women and girls are at increased risk of adverse outcomes after surgical treatment for moyamoya disease, an uncommon but serious disease of the brain blood vessels, reports a study in the September issue of *Neurosurgery*, official journal of the Congress of Neurological Surgeons. The journal is published by Lippincott Williams & Wilkins, a part of Wolters Kluwer Health.

Although the postoperative risks are increased, [patients](#) of both sexes with moyamoya disease achieve significant improvement after surgery. The study was performed by Dr. Gary K. Steinberg and colleagues of Stanford University.

## Higher Rates and Risks of Moyamoya in Women and Girls

The researchers analyzed the characteristics and outcomes of 430 patients undergoing surgical treatment (revascularization) for moyamoya disease between 1991 and 2010. All procedures were performed at Stanford by Dr. Steinberg.

Moyamoya disease is an uncommon condition in which arteries at the base of the brain become blocked. The disease gets its unusual name from Japanese for "puff of smoke," which describes the common appearance of the vessels on x-rays. The cause is unknown, but genetic factors may be involved.

Moyamoya disease occurs most often in children and young adults. Although it is more common in females, the new study is one of the first to evaluate possible sex-related differences in patient characteristics and outcomes after treatment.

Consistent with previous studies, there were more female patients than males: more than 70 percent of the patients were women and girls. The mean age was 31 years, with children accounting for about one-third of the patients. Treatment required a total of 717 revascularization procedures, as most patients had arterial blockage on both sides of the brain. This type of "bilateral" disease was more common in females.

Females were more than twice as likely to have transient ischemic attacks (TIAs)—sometimes called "mini-strokes"—as a symptom of moyamoya disease before surgery. However, there was no sex-related difference in the rate of more serious strokes.

After surgical revascularization, both male and female patients had significant improvements in health and functioning after surgery, with similar outcomes between the sexes. However, over five years after successful surgery, women and [girls](#) were about twice as likely to experience some type of adverse event, including stroke or death: 11.4 versus 5.3 percent.

The new study is the largest series of patients treated for moyamoya disease in North America. "These data suggest that sex may play an underappreciated role in influencing the natural history and posttreatment course in patients with moyamoya disease," the researchers write. Their findings suggest that moyamoya disease may have a "more aggressive nature" in women.

Nevertheless, Dr. Steinberg and coauthors emphasize that most patients—women as well as men—have excellent results after

revascularization for moyamoya disease. Although adverse outcomes are more common in females, the overall risk of further problems is relatively low. The researchers call for further study to understand "the role of sex-specific influences on the pathophysiology of moyamoya disease."

Provided by Wolters Kluwer Health

Citation: Rare brain blood vessel disease carries higher risks in females (2012, September 10) retrieved 26 April 2024 from

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