Stroke Predictors in People With HIV Differ by Stroke Type

Study finds the two types of stroke, ischemic and hemorrhagic, have different risk factors.

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Researchers analyzed the degree to which factors such as high blood pressure or old age predicted two types of stroke, ischemic and hemorrhagic, and found variations based on the stroke subtype.

Even well treated HIV is associated with perhaps a doubled risk of cardiovascular disease. A recent study found that HIV predicted a 2.7-fold higher risk of stroke.

Ischemic stroke, the most common subtype, is typically caused by a blood clot that obstructs or plugs a blood vessel in the brain and leads to cell death within minutes. In a hemorrhagic stroke, arteries bleed into the brain.

Publishing their findings in EClinicalMedicine, which is published by The Lancet, the authors of the new study analyzed data on 43,564 members of the Data Collection on Adverse Events of Anti-HIV Drugs (D:A:D) study. D:A:D is a large prospective observational cohort study that has followed more than 49,000 people with HIV in Australia, Europe and the United States.

The study was led by Camilla Ingrid Hatlebeg, MD, PhD, of the Centre of Excellence for Health, Immunity and Infections in the Department of Infectious Diseases at the University of Copenhagen Rigshospitalet, in Copenhagen.

The new analysis tracked the participants from the first documentation of their blood pressure, from January 1999 onward, or from the time they entered the D:A:D cohort. The follow-up concluded when an individual had a stroke, once six months had passed since their last study visit or January 2014.

The investigators defined high blood pressure as one systolic measurement of 140 or greater, one diastolic measurement of at least 90, or both.

During a cumulative 339,979 years of follow-up, the cohort members experienced 590 strokes, including 83 that were hemorrhagic, 296 that were ischemic and 211 that were of an unknown subtype. This translated to a diagnosis rate of 1.74 cases of stroke per 1,000 cumulative years of

follow-up.

Common factors that predicted both hemorrhagic and ischemic strokes included high blood pressure (associated with a 3.55-fold and 2.24-fold increased risk of each stroke type, respectively) and older age (for each additional five years of age, a respective 1.28-fold and 1.19-fold increased risk).

Factors that were stronger predictors of ischemic stroke compared with hemorrhagic stroke included male sex (1.62-fold higher risk of hemorrhagic stroke, 40% lower risk of ischemic stroke), previous cardiovascular events (4.03-fold and 1.44-fold higher risk, respectively) and smoking (1.90-fold and1.08-fold higher risk, respectively). Ischemic stroke's associations with previous cardiovascular events and smoking were not statistically significant, meaning they may have been driven by chance.

Factors that were stronger predictors of hemorrhagic stroke compared with ischemic stroke included high blood pressure, hepatitis C virus (HCV) coinfection (1.32-fold increased risk and 54% lower risk, respectively) and having an estimated glomerular filtration rate below 60, which indicates reduced kidney function (4.80-fold and 1.04-fold increased risk, respectively). Hemorrhagic stroke's association with HCV and ischemic stroke's association with reduced kidney function were not statistically significant. Having a CD4 count below 200 was associated with a 1.94-fold increased risk of hemorrhagic stroke.

"Risk factors for stroke may differ by subtype in [people living with HIV], emphasizing the importance of further research to increase the precision of stroke risk estimation," the study authors concluded.

To read the study abstract, click here.

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