Medical Xpress

Stroke bleeds in the brain not decreasing, Framingham study finds

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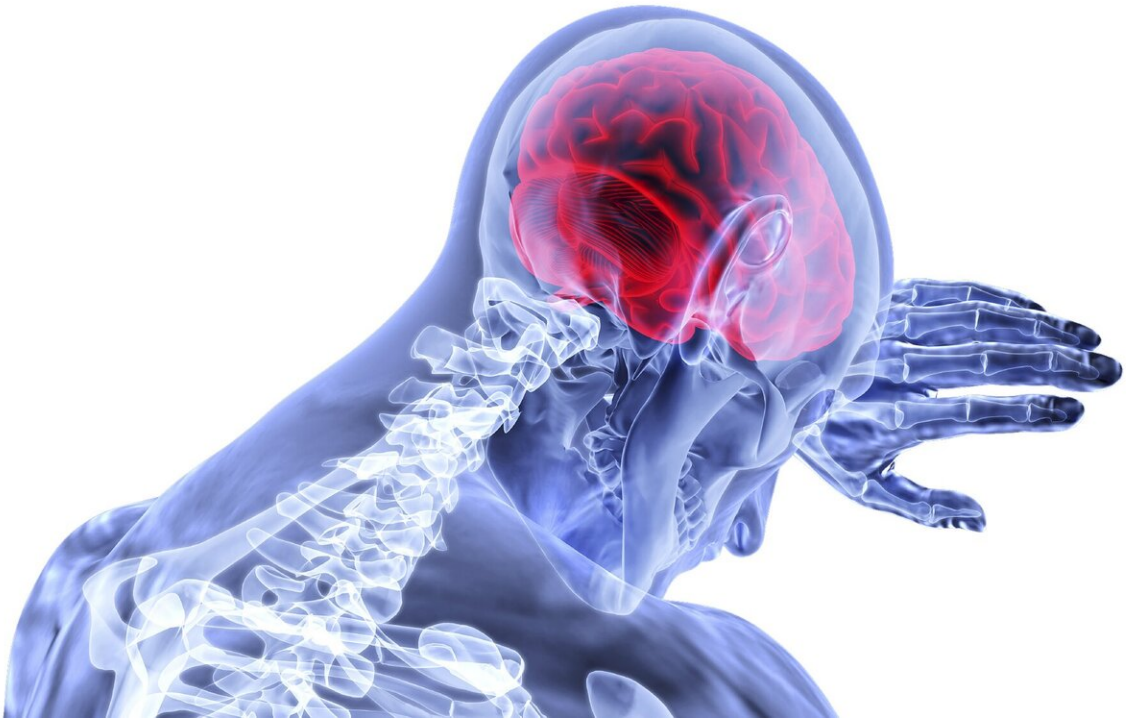

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Brain bleeds called intracerebral hemorrhages remained stable in incidence among all age groups over the past 30 years, but they increased in people 75 and older, according to a new analysis of the Framingham Heart Study. The findings are published in *JAMA Neurology*.

Use of anticoagulants also increased in senior adults threefold over the period, but authors cautioned against making too much of it.

"We are not advocating that people stop taking statins or anticoagulants," said report senior author Sudha Seshadri, MD, neurologist in the Long School of Medicine at The University of Texas Health Science Center at San Antonio. "Those therapies reduce the risk of ischemic strokes, which represent approximately nine of every 10 strokes, with intracerebral hemorrhages representing the other tenth."

Because of the increase in life expectancy and aging of the population, health care systems will likely see an increase in the number of patients with brain hemorrhages, said Dr. Seshadri, who is senior investigator of the Framingham Heart Study and at UT Health San Antonio directs the Glenn Biggs Institute for Alzheimer's and Neurodegenerative Diseases.

Imaging and medications

The report's lead author, Vasileios-Arsenios Lioutas, MD, a stroke neurologist at Beth Israel Deaconess Medical Center and Harvard Medical School, designed the study to assess trends in the incidence of intracerebral hemorrhages in 10,333 Framingham participants from 1948 to 2016. Of the participants, 129 experienced such a hemorrhage during study follow-up.

The years were divided into three periods: 1948-1986, 1987-1999 and 2000-2016.

"We wanted to account for changes in diagnostic approaches, and one of the main advancements was the CT scan, which started being used around 1980," Dr. Lioutas said. "Many things that could not previously be diagnosed as bleeds could be seen very easily after that time."

The late 1990s saw increased prescribing of blood thinners such as warfarin, which a series of trials showed to be effective at preventing clots arising from atrial fibrillation, a heart rhythm abnormality. In the 2000s, further preventative practices and additional medications were added.

"One of the possible explanations for why we saw more bleeds in older Framingham participants is that, by using these anticoagulant medications, we prevented adverse events that would potentially have killed them earlier in life," Dr. Lioutas said. "We prolonged their life expectancy and then, because we did, they were at risk to have a hemorrhage later in life."

"It's a bit of a balancing act," Dr. Seshadri said. "We want to be careful what message we send about this. Statins and anticoagulants have value in preventing life-altering or fatal events."

Hypertension's role

The study also examined risk factors for two types of brain hemorrhages . Lobar intracerebral hemorrhages occur closer to the surface of the brain, whereas deep intracerebral hemorrhages occur deeper within the brain matter and involve different structures.

Hypertension, previously thought to be more important as a risk factor in deep intracerebral hemorrhages, increased risk in both types, the study found.

Deep intracerebral hemorrhages are associated with changes in the very small vessels of the brain that are the consequence of longtime exposure to hypertension, Dr. Lioutas said.

Lobar hemorrhages also feature changes in small vessels, but the vessels

are near the brain surface. Deposits of amyloid protein—best known for being linked to Alzheimer's disease—are believed to be a culprit in these hemorrhages.

"As was the case in previous research, we saw that these lines of distinction are not so clear," Dr. Lioutas said. "Especially in lobar hemorrhage, we saw that many people also had hypertension, so we now believe hypertension plays a role in both deep and lobar intracerebral hemorrhages."

The study shows that while clinical advances have been successful in decreasing stroke rates in developed countries, the decline is mostly for clot-related strokes and not in hemorrhagic strokes.

"We saw an increase in intracerebral hemorrhages in the older Framingham population, in a demographic group that is growing larger year by year in America and worldwide," Dr. Seshadri said. "We should find new means of prevention of these strokes, and at the same time health care systems should be ready to treat more hemorrhages in the future."

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