

# Traumatic brain injury linked with tenfold increase in stroke risk

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If you suffer traumatic brain injury, your risk of having a stroke within three months may increase tenfold, according to a new study reported in *Stroke: Journal of the American Heart Association*.

"It's reasonable to assume that cerebrovascular damage in the head caused by a traumatic brain injury can trigger either a [hemorrhagic stroke](#) [when a blood vessel bursts inside the brain] or an [ischemic stroke](#) [when an artery in the brain is blocked]," said Heng-Ching Lin, Ph.D., senior study author and professor at the School of Health Care Administration, College of Medicine, Taipei Medical University in Taiwan. "However, until now, no research had been done showing a correlation between traumatic brain injury and stroke."

It is the first study that pinpoints traumatic brain injury as a potential [risk](#) factor for subsequent stroke.

Traumatic brain injury occurs when an external force such as a bump, blow or jolt to the head disrupts the normal function of the brain. Causes include falls, [vehicle accidents](#), and violence.

In the United States alone, approximately 1 in 53 individuals sustain a traumatic brain injury each year, according to 2004 statistics from the [Centers for Disease Control and Prevention](#).

Worldwide, traumatic brain injuries are a major cause of [physical impairment](#), social disruption and death.

Using records from a nationwide Taiwanese database, researchers investigated the risk of stroke in traumatic brain injury patients during a five-year period. The records included 23,199 adult traumatic brain injury patients who received ambulatory or hospital care between 2001 and 2003. The comparison group comprised 69,597 non-traumatic brain injury patients. The average age of all patients was 42 and 54 percent were male.

During the three months after injury, 2.91 percent of traumatic brain injury patients suffered a stroke compared with only 0.30 percent of those with non-traumatic brain injury — a tenfold difference.

Stroke risk in patients with traumatic brain injury decreased gradually over time, researchers said:

- After one year, the risk was about 4.6 times greater for patients who suffered a traumatic brain injury than for those who had not.
- After five years, the risk was 2.3 times greater for traumatic brain injury patients.

Stroke risk among traumatic brain injury patients with skull bone fractures was more pronounced than in traumatic brain injury patients without fractures, researchers said.

During the first three months, those with skull bone fractures were 20 times more likely to have a stroke than patients without skull bone fractures. The risk decreased over time.

Furthermore, the risk of subarachnoid hemorrhage (bleeding in the area between the brain and the thin tissues that cover the brain) and intracerebral hemorrhage (bleeding in the brain caused by the rupture of

a blood vessel) increased significantly in patients with traumatic brain injury versus non-traumatic brain injury patients.

After considering age and gender, patients with traumatic brain injury were more likely to have hypertension, diabetes, coronary heart disease, atrial fibrillation and heart failure than non-traumatic brain injury patients.

Early neuroimaging examinations — such as MRI — and intensive medical monitoring, support and intervention should be required following a traumatic [brain injury](#), especially during the first few months and years, Lin said. Moreover, better health education initiatives could increase public awareness about the factors that cause strokes and the signs and symptoms of stroke in patients with traumatic brain injuries.

"Stroke is the most serious and disabling neurological disorder worldwide," said Lin. "Our study leads the way in identifying stroke as an additional neurological problem that may arise following [traumatic brain injury](#)."

Provided by American Heart Association

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