

# Stroke treatment may backfire when kidneys don't work well

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Stroke and chronic kidney disease are both difficult to handle in their own rights, but having a stroke when your kidneys are already poor is more than just double the trouble. A new study led by Kazunori Toyoda at the National Cerebral and Cardiovascular Center (NCVC) in Japan shows that excessive blood pressure reduction for acute intracerebral hemorrhage can have dire consequences when kidney function is low.

The study was published in the scientific journal *Neurology*.

Intracerebral hemorrhage is a disease for which [effective treatment](#) is expected to be established. Abnormally [high blood pressure](#) is usually observed in the acute phase of intracerebral hemorrhage. Previous clinical studies have shown that intense blood pressure reduction in acute intracerebral hemorrhage patients can improve the clinical outcome. However, excessive blood pressure reduction can damage the kidneys, especially in people who already have [chronic kidney disease](#). "Without a clear understanding of how kidney function affects the overall outcome when controlling blood pressure in these situations, doctors cannot make the best decisions for immediate stroke treatment," senior co-author Masatoshi Koga explains.

Kidney function is typically assessed using the estimated [glomerular filtration rate](#) (eGFR), which evaluates how well your kidneys are filtering out toxins from the blood. To determine if kidney function can affect the outcome after intracerebral hemorrhage, the researchers looked at data from an NIH-funded clinical trial, the Antihypertensive Treatment of Acute Cerebral Hemorrhage II (ATACH-2), led by Professor Adnan I. Qureshi, a co-author of this article. In ATACH-2, patients within 4.5 hours of onset of intracerebral hemorrhage were randomly assigned to the intensive antihypertensive group ([systolic blood pressure](#) 110-139 mmHg) or the standard antihypertensive group (140-179 mmHg) and maintained in the target blood pressure range for 24 hours. The primary endpoint of the study was the rate of death or severe functional disability at 3 months.

In the current study, researchers divided patients into three categories based on their eGFR at the time of admission, which correspond to normal function, mild loss of function, and decreased kidney function.

The researchers found that the rate of death or disability after stroke was

almost 50% in patients with decreased kidney function, compared with about 32% in patients with normal kidney function. They next looked at what happened when patients were treated with an intensive blood pressure-lowering regimen. They found that compared with the standard treatment, the effect of this intense treatment changed depending on the eGFR levels at admission. Among patients with decreased kidney function, the odds of death or disability were higher in patients treated with intensive blood pressure-lowering compared with those with standard blood pressure control. In contrast, the treatment effect (intensive vs. standard) was similar among the other two groups.

First author Mayumi Fukuda-Doi thinks that these findings have important implications. "Although intense lowering of blood pressure can reduce the risk of hematoma expansion and prevent [brain damage](#) after stroke, we found that it can harm those with eGFR values less than 60, who have decreased [kidney function](#)," she says. "Detailed mechanisms of the effects of excessively lowering of blood pressure in acute [intracerebral hemorrhage](#) patients, as well as the appropriate target blood pressure for those with kidney dysfunction, need to be studied. At present, renal function should be considered when deciding the optimal [blood pressure](#) range for each patient."

**More information:** Mayumi Fukuda-Doi et al, Impact of Renal Impairment on Intensive Blood-Pressure-Lowering Therapy and Outcomes in Intracerebral Hemorrhage: Results From ATACH-2, *Neurology* (2021). [DOI: 10.1212/WNL.00000000000012442](https://doi.org/10.1212/WNL.00000000000012442)

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