

Chances of good outcome after stroke reduced by delays in restoring blood flow

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Micrograph showing cortical pseudolaminar necrosis, a finding seen in strokes on medical imaging and at autopsy. H&E-LFB stain. Credit: Nephron/Wikipedia

Delays in restoring blood flow after a stroke were associated with decreased benefits of intra-arterial clot-busting treatment and reduced chances for a good outcome, according to an article published online by *JAMA Neurology*.

Time is an important predictor of clinical outcome and the effect of treatment for patients after a stroke.

Diederik W.J. Dippel, M.D., Ph.D., of the Erasmus MC University Medical Center Rotterdam, the Netherlands, and coauthors examined the influence of time from stroke onset to the start of treatment and from stroke onset to reperfusion (the restoration of [blood flow](#) to the brain) on the effect of intra-arterial treatment (IAT). IAT involves inserting a catheter in an artery at the level of blockage to deliver clot-busting medication, performing mechanical excision of the clot or both.

The [randomized clinical trial](#) compared IAT (mostly with retrievable stents) vs. no IAT in 500 patients, of which 233 were assigned to the intervention. The time to the start of treatment was defined as the time from onset of stroke symptoms to groin puncture (TOG) for placement of a catheter in the groin. The time from the onset of treatment to reperfusion (TOR) was defined as the time to reopening vessel blockage or the end of the procedure in cases where reperfusion was not achieved. All patients received usual treatment, which included intravenous treatment (IVT) with clot-busting medication if it was indicated.

Among the 500 patients, the median TOG was 260 minutes (4 hours, 20 minutes) and the median TOR was 340 minutes (5 hours, 40 minutes). Of the 233 patients assigned to the intervention, 17 (7.3 percent) did not reach the intervention room; 25 (10.7 percent) started treatment within three hours after stroke onset; 96 patients (41.2 percent) started treatment between three and 4.5 hours after stroke onset; and 95 patients (40.8 percent) started treatment more than 4.5 hours after stroke onset, including 19 patients (8.2 percent) for whom treatment started more than six hours after stroke onset.

The authors found an association between TOR and the effect of treatment but did not observe a statistically significant association

between TOG and the effect of treatment. The authors suggest the chances for a good outcome were reduced by 6 percent for every hour of reperfusion delay.

"This study highlights the critical importance of reducing delays in time to IAT for patients with acute ischemic stroke. The absolute treatment effect and its decrease over time are larger than those reported for intravenous [treatment](#). ... Most important, our findings imply that [patients](#) with [acute ischemic stroke](#) should undergo immediate diagnostic workup and IAT in case of intracranial arterial vessel occlusion," the study concludes.

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