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Endovascular Therapies Do Not Improve Outcomes in Acute Stroke

Clinical Question

Does adding endovascular procedures to intravenous tissue plasminogen activator (t-PA) improve outcomes for patients with stroke?

Bottom Line

Endovascular therapies (local delivery of t-PA, extracting the thrombus, or stenting) do not improve outcomes when added to intravenous t-PA alone. (Level of Evidence = 1b)

Synopsis

Intravenous t-PA provides modest benefit if given to exactly the right patients (if you believe the results of the National Institute of Neurological Disorders and Stroke study; other studies in Europe found less or no benefit). One potential way to increase the benefit is to add endovascular procedures, such as local delivery of t-PA, placing a stent, or removing or aspirating the clot. This was an open-label trial, which can create a bias in favor of the intervention. Patients ($n = 656$) were randomized in a 1:2 ratio to intravenous t-PA alone, or intravenous t-PA plus the endovascular therapy of the physician's choosing. The median age of patients was 69 years, the median National Institutes of Health Stroke Scale score was 17, and approximately one-third had atrial fibrillation. The investigators planned to recruit 900 patients, but stopped recruitment before they reached that number because

there was no benefit, and adding another 250 patients would not change that fact. There was no difference in the proportion of patients with a Rankin score of 2 or less (slight disability or better outcome), no difference in mortality or symptomatic intracerebral bleeds (asymptomatic bleeds were more common in the endovascular therapy group), and no difference in the rates of recurrence. One in six patients had a complication related to the endovascular procedure. There was no difference regarding subgroups defined by stroke severity, sex, or age. Two other trials reaffirmed the ineffectiveness of this approach. One found no benefit in a similarly designed trial with 362 patients (*N Engl J Med.* 2013;368(10):904-913), and another found that a penumbral imaging pattern did not identify patients who are more likely to benefit (*N Engl J Med.* 2013;368(10):914-923).

Reference

Broderick JP, Palesch YY, Demchuk AM, et al.; Interventional Management of Stroke (IMS) III Investigators. *Endovascular therapy after intravenous t-PA versus t-PA alone for stroke* [published correction appears in *N Engl J Med.* 2013;368(13):1265]. *N Engl J Med.* 2013;368(10):893-903.

Study design: Randomized controlled trial (nonblinded)

Funding source: Industry + government

Allocation: Concealed

Setting: Inpatient (any location)

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