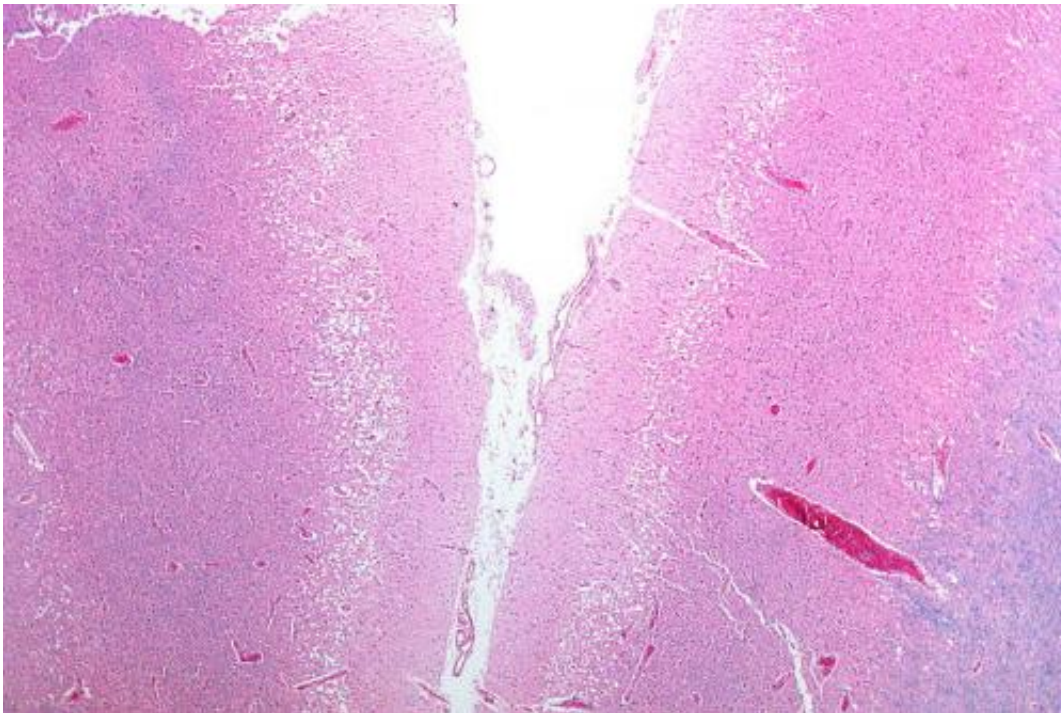


Retrieval of larger thrombi associated with improved neurological recovery after stroke

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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

Retrieval of larger thrombi during intra arterial treatment (IAT) is associated with improved neurological recovery after acute ischaemic stroke, according to a sub study of the MR CLEAN trial presented at ESC Congress today by Dr Anouchska Autar, PhD candidate at the Erasmus Medical Centre in Rotterdam, the Netherlands.

"Acute ischaemic strokes occur when a blood clot, also called a thrombus, embolises to the brain where it restricts the flow of blood," said Dr Autar. "MR CLEAN was the first trial to show the benefit of IAT to remove [blood clots](#) within six hours after a stroke. IAT, which was given against a background of standard care including intravenous [tissue plasminogen activator](#) if indicated, led to better restoration of blood flow and improved functional outcome when compared to no IAT."

Thrombi retrieved during the MR CLEAN trial were collected for the current sub study to investigate the relationship between the macroscopic appearance of [thrombi](#) retrieved during IAT, cause of stroke, and clinical outcome. Measures of macroscopic appearance included length, width, area and numbers of particles the thrombus had broken into. Neurological recovery was assessed using the National Institutes of Health Stroke Severity Scale (NIHSS).

The study included 35 collections of thrombi from 35 patients who had undergone IAT after an acute ischaemic stroke. Most of the patients had a severe stroke, of which 49% were of cardiac origin and 20% were due to atherosclerosis.

The researchers found that patients whose stroke was caused by atherosclerosis had significantly longer and larger thrombi ($p=0.0035$ and $p=0.045$, respectively) than those with stroke from other causes. "This could be because patients with atherosclerosis have more diseased arteries and this may influence thrombus size," said Dr Autar.

They also found that patients from whom longer and wider thrombi were retrieved had significantly improved neurological recovery at discharge after IAT compared to those with smaller thrombi ($p=0.03$ and $p=0.04$, respectively). "This finding is particularly important because it indicates that the larger the pieces that you retrieve, the better this is for your

patient," said Dr Autar.

Interestingly, an increased number of particles retrieved during IAT showed a trend towards a worse neurological recovery at discharge, although the association was not significant ($p=0.079$). Dr Autar said: "Together, this suggests that some emboli are more likely to disintegrate and the smaller particles may embolise and obstruct the microvasculature of the brain, leading to incomplete recovery."

She concluded: "Our study shows that retrieval of larger thrombi during IAT is associated with improved neurological recovery at discharge in [patients](#) with acute ischaemic [stroke](#). The findings indicate that a simple parameter such as thrombus size might influence the decision to give or refrain from additional thrombolysis. This needs to be verified of course in larger trials."

More information: Dr Autar will present the abstract 'Thrombectomy for acute ischemic stroke: retrieval of larger thrombi is associated with improved neurological recovery'

Berkhemer OA, Fransen PSS, Beumer D et al. A randomized trial of intraarterial treatment for acute ischemic stroke. N Engl J Med. 2015;372:11-20. [DOI: 10.1056/NEJMoa1411587](https://doi.org/10.1056/NEJMoa1411587)

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