



DEBATE

The Future of Stroke Imaging: What to Expect?

Donald Frei¹

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Abstract

Imaging evaluation of the ischemic stroke patient who is a potential candidate for intervention is simple: 1. Select patients who would benefit from treatment. 2. Exclude patients who wouldn't benefit, either because treatment is futile because their stroke is complete or there is a high risk of developing symptomatic hemorrhage. For the patient who is a potential candidate for IV treatment, the standard exclusion criteria is hemorrhage or completed stroke in $> 1/3$ of the MCA territory as seen on a head CT. The primary aim of imaging in this circumstance is to decrease the risk of symptomatic intracranial hemorrhage. More recent trials looking at new IV therapies and expanding the treatment window are using more sophisticated imaging techniques to more accurately identify core infarct and ischemic penumbra. For the patient who is a potential candidate for thrombectomy, all of the positive thrombectomy trials published in 2015 utilized vascular imaging (CTA) to identify large vessel oc-

clusion (LVO). There was variability in identification of salvageable brain/ischemic penumbra. This ranged from the simplicity of an ASPECTS score to the complexity of collateral score, core infarct volume and quantification of the ischemic penumbra. There are options for the type of imaging used to screen the ischemic stroke patient. Both CT and MRI can identify LVO quite well. They both can identify core infarct size. MRI is more sensitive than CT for identifying core infarct, but can take more time. There are options for identification of the ischemic penumbra. The quality of collateral circulation determines the rapidity of core infarct growth. Mismatch algorithms are available by all CT and MR manufacturers and there are now automated agnostic systems that can give us this data. There are no developments in AI to detect LVO. What imaging is just enough to give us the go ahead to treat? How much is too much? So many options, so little time.

¹Director - Neurointerventional Surgery - Swedish Medical Center, Radiology Imaging Associates/RIA Neurovascular, Denver, Colorado, USA

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