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Endovascular Therapy vs Intravenous Thrombolysis for Acute Large-Vessel Stroke

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Comparison of Final Infarct Volumes in Patients Who Received Endovascular Therapy or Intravenous Thrombolysis for Acute Intracranial Large-Vessel Occlusions

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JAMA Neurol. 2013;70:831-836

Study Summary

This retrospective cohort study aimed to compare the efficacy of intra-arterial therapy (IAT) and medical treatment in reducing final infarct volume (FIV) in patients with intracranial large-vessel occlusions (ILVOs), because previous research has not addressed this issue. A secondary objective was to identify a National Institutes of Health Stroke Scale (NIHSS) cutoff score that would select patients most likely to benefit from IAT.

Between 2009 and 2011 at 2 large-volume stroke centers, adults with anterior circulation ILVOs presenting within 360 minutes from symptom onset received IAT, intravenous tissue plasminogen activator therapy (IVT), or no reperfusion therapy (NRT). The 3 groups had similar baseline characteristics. The analysis excluded patients with isolated extracranial occlusions, leaving 203 consecutive evaluable patients with ILVOs.

Compared with the IVT and NRT groups, the IAT group had a significantly smaller median infarct volume (42 cm^3 vs 109 cm^3 [*P*=.001] and 110 cm^3 [*P*<.01], respectively) and a higher magnitude of infarct volume reduction in more proximal occlusions. For internal carotid artery terminus occlusions, infarct volume reduction was 75 cm^3 for IAT vs 190 cm^3 for IVT and NRT combined (*P*<.001). For the M1 segment of the middle cerebral artery, it was 39 vs 109 cm^3 (*P*=.004), and for the M2 segment, it was 33 vs 59 cm^3 (*P*=.04).

The greatest benefit from IAT was in patients with an NIHSS score of 14 or higher at presentation. In these patients, IAT significantly reduced FIV (46 cm^3) compared with IVT or NRT (149 cm^3; *P*<.001). For patients with an NIHSS score of 8-13, there was no significant reduction in FIV with IAT (22 cm^3 with IAT vs 44 cm^3 with IVT or NRT; *P*=.40).

Viewpoint

Limitations of this study include the lack of 90-day clinical outcomes in the NRT and IVT groups and lack of a uniform algorithm for patient selection for IAT and for the selection of the reperfusion devices used.

Nonetheless, these findings suggest a greater reduction of FIV with endovascular reperfusion therapy compared with either IVT or NRT, particularly in patients with an NIHSS score of at least 14 and in those with more proximal occlusions. Use of this threshold score, which may reflect patients with larger areas of tissue at risk, appeared to predict improved radiologic and clinical outcomes in the investigators' study population. A randomized controlled trial comparing the benefits of mechanical IAT with those of

medical therapy should be performed, preferably selecting patients according to this NIHSS threshold score and clot location.

Abstract

Cite this article: Laurie L. Barclay. Endovascular Therapy vs Intravenous Thrombolysis for Acute Large-Vessel Stroke. *Medscape*. Oct 31, 2013.