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ABSTRACT N. PO20

IMPACT OF ENDOVASCULAR TREATMENT ON FUNCTIONAL OUTCOME IN ISCHEMIC STROKE: A REAL-WORLD RETROSPECTIVE STUDY.

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Background and Aim
Ischemic stroke (IS) remains a significant cause of death and disability worldwide. Over recent decades, management has evolved from supportive care to active reperfusion strategies, including intravenous thrombolysis (IVT) with recombinant tissue plasminogen activator (rt-PA) and mechanical thrombectomy (MT). While IVT is the first-line treatment, its limited efficacy in large vessel occlusion (LVO), narrow therapeutic window, and bleeding risk have driven the development of endovascular approaches.
This study evaluated clinical and procedural predictors of functional outcomes at discharge and 90 days in patients with LVO IS treated with MT, with or without IVT, in a real--world setting.
Methods
We conducted a retrospective, single-center study at the Stroke Unit of Perugia Hospital, Italy, including all patients with anterior or posterior circulation LVO strokes treated with MT between January 2021 and December 2023. Demographics, vascular risk factors, stroke severity (National Institutes of Health Stroke Scale, NIHSS), neuroimaging findings, procedural variables, and outcomes were collected. Poor functional outcome was defined as modified Rankin Scale (mRS) ≥3 at discharge and at 90 days. Procedural success was defined as a modified Thrombolysis in Cerebral Infarction (mTICI) score of 2b–3. Patients with mRS ≤2 were compared to those with mRS ≥3 at both timepoints.
Results
A total of 127 patients were included. The cohort had a mean age of 71.7 (± 12.3) years; 73% had hypertension, 41.6% dyslipidemia, and 37.3% atrial fibrillation. 23 (18%) patients reached a mRS ≤ 2 while 104 (82%) a mRS ≥ 3 at discharge. At 90-day follow-up, 41 (32%) patients vs 86 (68%) had a mRS ≤ 2 and ≥ 3, respectively. In-hospital mortality was 17.3%, with three additional deaths occurring by the 3--month follow-up (19.4%). Patients with poor outcomes were significantly older, more often affected by systemic hypertension, had higher NIHSS scores on admission, and had an IS due to a tandem occlusion (respectively, p=0.02, 0.01, 0.007, 0.003).
At univariate analysis, at discharge, older age (OR 1.04, 95% CI 1.00-1.08, p=0.03), systemic hypertension (OR 3.19, 95% CI 1.24-8.24, p=0.02), higher NIHSS scores on admission (OR 1.26, 95% CI 1.11-1.47, p=0.001), tandem occlusion (OR 4.50, 95% CI 1.65-14.50, p=0.006), stenting (OR 11, 95% CI 2.16-201.24, p=0.02), general anesthesia (OR 5.44, 95% CI 2.03-14.78, p=0.001); IVT (OR 0.29, 95% CI 0.08-0.85, p=0.04), local anesthesia (OR 0.22, 95% CI 0.08-0.6, p=0.003), mTICI (OR 0.44, 95% CI 0.19-0.75, p=0.02).
At univariate analysis, at 90-days follow-up, higher NIHSS scores on admission (OR 1.19, 95% CI 1.07-1.34, p=0.002), tandem occlusion (OR 2.40, 95% CI 1.12-5.32, p=0.03), stenting (OR 10.67, 95% CI 2.97-68.39, p=0.002), groin-to-recanalization time (OR 1.01, 95% CI 1.00-1.03, p=0.01), general anesthesia (OR 4.05, 95% CI 1.71-9.92, p=0.002); IVT (OR 0.36, 95% CI 0.15-0.82, p=0.02), local anesthesia (OR 0.28, 95% CI 0.11-0.66, p=0.004), mTICI (OR 0.51, 95% CI 0.31-0.74, p=0.002)
At multivariate analysis, poor functional outcome at discharge was associated with baseline NIHSS (OR 1.25, 95% CI 1.07-1.51, p=0.01), general anesthesia (OR 7.11, 95% CI 1.72-33.55, p=0.01) and stenting procedure (OR 10.01, 95% CI 1.35-223.19, p=0.05). At 90-day follow-up, poor functional outcome was significantly associated with higher baseline NIHSS (OR 1.22, 95% CI 1.05-1.44, p=0.02), stenting procedure (OR 5.63, 95% CI 1.20-41.73, p=0.05) and groin-to-recanalization time (OR 1.01, 95% CI 1-1.03, p=0.05). IVT prior to MT was inversely associated with 90--day poor outcome (OR 0.26, 95% CI 0.06-0.92, p=0.05).
Discussion
This study highlights the complex interplay of clinical and procedural factors influencing outcomes after MT. While randomized trials demonstrate MT efficacy in selected patients, real-world application reveals additional challenges. Stroke severity at admission remained a strong predictor of poor outcome, while general anesthesia, stenting, and tandem occlusion were linked to worse prognosis.
Longer groin-to-recanalization times correlated with unfavorable results, emphasizing the importance of minimizing procedural delays. The type of sedation plays a role in this context. General anesthesia may increase time to reperfusion and cause perioperative hypotension, negatively affecting neurological recovery. Local or conscious sedation may reduce delays and allow for intraoperative neurological assessment. Strategies favoring local sedation, guided by a multidisciplinary consensus, could improve outcomes by aligning procedural efficiency with patient safety.
Despite its limitations, IVT before MT was independently associated with favorable outcomes, supporting its continued use in eligible patients. These findings reinforce the value of

a combined therapeutic approach in acute IS care.

Conclusion

Predictors of poor functional outcome in IS patients treated with MT include higher stroke severity, use of general anesthesia, need for stenting, and longer procedural times. Bridging IVT appears to improve recovery. Although randomized trials support MT, individualized selection remains essential in real-world settings. Prospective multicenter studies are warranted to validate these findings and refine protocols for optimal stroke care.

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