Improving mTICI 2b reperfusion to mTICI 2c/3 reperfusions: A retrospective observational study assessing technical feasibility, safety and clinical efficacy

Benjamin Friedrich¹, Christian Maegerlein¹, Felix Zibold², Silke Wunderlich³, Claus Zimmer¹, Johannes Kaesmacher¹

Department of Diagnostic and Interventional Neuroradiology, Klinikum rechts der Isar, Technical University Munich
Department of Diagnostic and Interventional Neuroradiology, Inselspital Bern
Department of Neurology, Klinikum rechts der Isar, Technical University Munich

Background: Recent studies suggested that modified Thrombolysis in Cerebral Infarction grade (mTICI) 3 reperfusions are associated with superior outcome than mTICI2b reperfusions, questioning if neurointerventionalists should generally strive to achieve mTICI3.

Methods: Retrospective analysis of successfully reperfused MCA occlusions (n=215) with available angiography runs between every maneuver. Final reperfusion success and reperfusion successes between all single maneuvers were evaluated applying the modified version of the TICI score (including TICI2c). Final TICI2c/3 reperfusions were dichotomized in ‘direct’ (reperfusion before final maneuver ≤ mTICI2a) or ‘secondary improved’ (mTICI2b was already achieved).

Results: Patients with mTICI2c reperfusion resembled the outcome of patients with mTICI 3 rather than mTICI2b reperfusions. Compared with mTICI2c/3-patients, mTICI2b-patients had fewer rates of neurologic improvement (33.3% vs 61.2%, p=0.001) and good functional outcome (48.7% vs. 61.1%, p=0.028). In 28 patients, mTICI2b reperfusion was improved to mTICI2c/3 without complications. Outcome of patients with ‘direct’ or ‘secondary improved’ mTICI2c/3 did not differ (p>0.5).

Conclusion: Improving mTICI2b reperfusions to mTICI2c/3 reperfusions is sometimes technically feasible and safe and is associated with a clinical benefit comparable to ‘direct’ mTICI2c/3 reperfusions. If confirmed, a more aggressive treatment approach in cases of already achieved mTICI2b may be justified, although proper patient selection is needed.