Futile recanalization

“Futile recanalization” refers to the situation in medical interventions—often in stroke treatment—where blood flow to a blocked blood vessel is successfully restored (recanalization), but the patient does not show significant functional recovery or improvement. This can occur if the brain tissue has already been irreversibly damaged, even though blood flow has been restored, making the intervention ultimately ineffective in improving the patient’s outcome.

In ischemic stroke, for instance, time is critical, as delayed recanalization increases the risk of futile outcomes. Futile recanalization emphasizes the importance of timely intervention and careful patient selection to ensure that the benefits of recanalization outweigh the risks and costs associated with the procedure.

Matsukawa et al. aimed to develop and validate a prediction score for futile recanalization (FR) for large vessel occlusion (LVO) presenting low Alberta Stroke Program Early Computed Tomography Score (ASPECTS) for patients who underwent endovascular thrombectomy (EVT).

Methods: Patients with anterior circulation LVO with low ASPECTS (<6) who underwent successful EVT (modified treatment in cerebral ischemia score ≥2b) from Stroke Thrombectomy and Aneurysm Registry were retrospectively analyzed. FR was defined as 90-day modified Rankin Scale (mRS) scores ≥4 despite successful EVT. Multivariable logistic regression was used to identify independent predictors of FR, and they were used to create a clinical score. The performance of the score was assessed by receiver operating characteristic curve analyses.

Results: Of 219 patients, 170 and 49 patients were randomly assigned to the training and validation cohort, respectively. Independent predictors of FR identified in the training cohort were used to construct the SNAP score: site of occlusion (middle cerebral artery = 0, internal carotid artery = 1), National Institutes of Health Stroke Scale score at admission (≤10 = 0, 10 to 19 = 1, ≥20 = 2), age (<75 = 0, ≥75 = 2), and prestroke mRS score (0-3). Receiver operating characteristic curve analyses of the SNAP score in the training and validation cohorts showed areas under the curve of 0.79 (95% CI 0.72-0.86) and 0.79 (95% CI 0.65-0.92) for predicting FR, respectively. A SNAP score ≥5 had a positive predictive value of 92.1% [95% CI 78.8%-97.3%] for FR.

Conclusion: The SNAP score may be useful in predicting FR after EVT in low-ASPECTS patients with LVO. It can provide patients, family members, and physicians with reliable outcome expectations among patients with acute ischemic stroke with large infarcts [1)].

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Matsukawa H, Chen H, Elawady SS, Cunningham C, Uchida K, Sowlat MM, Maier I, Jabbour P, Kim JT, Wolfe SQ, Rai A, Starke RM, Psychogios MN, Samaniego EA, Arthur A, Yoshimura S, Cuellar H, Grossberg JA, Alawieh A, Romano DG, Tanweer O, Mascitelli J, Fragata I, Polifka A, Osbun J, Crosa R, Matouk C, Park MS, Levitt MR, Brinjikji W, Moss M, Williamson R Jr, Navia P, Kan P, De Leacy R, Chowdhry S, Ezzeldin M, Spiotta AM; Stroke Thrombectomy and Aneurysm Registry (STAR) Collaborators. Predicting Futile Recanalization After Endovascular Thrombectomy for Patients With Stroke With Large Cores: The SNAP Score. Neurosurgery. 2024 Oct 11. doi: 10.1227/neu.0000000000003220. Epub ahead of print. PMID: 39471074.