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E-092

EFFECT OF STENT RETRIEVER THROMBECTOMY VS. COMBINED TECHNIQUE ON REVASCLARIZATION IN PATIENTS WITH LARGE VESSEL OCCLUSION STROKE: CASE-CONTROL STUDY

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Background and Purpose Stent-retriever (SR) thrombectomy remains the best proven treatment modality for anterior circulation large vessel occlusion strokes (LVOS). Three randomized clinical trials have reported similar safety and efficacy for contact aspiration (CA) and SR thrombectomy. The ASTER-2 trial compared combined technique (SR + CA) versus SR alone. The study failed to demonstrate differences in terms of final reperfusion and clinical outcomes across the two modalities. However, reperfusion was significantly better after the allocated treatment only with combined technique. We aim to determine whether the combined technique is superior to SR thrombectomy alone as first line strategy in a large single-center cohort where balloon-guide catheter was universally used.

Methods A prospectively maintained mechanical thrombectomy database from January 2018 to December 2019 was reviewed. Patients were included if they had anterior circulation LVO due to intracranial ICA or MCA-M1 segment and underwent SR thrombectomy or combined technique as first-line therapy. The cohort was divided into two groups matched for age, baseline NIHSS score, prior IV-tPA, site of occlusion, stroke etiology, use of general anesthesia and balloon guide catheter. The primary outcome was the achievement of first-pass effect (FPE) (mTICI2c-3). Secondary outcomes included modified FPE, number of passes, successful reperfusion (mTICI2b-3) without and after rescue techniques and functional independence (90-day mRS 0–2). Safety outcomes included the rates of parenchymal hematoma (PH) type 2 and 90-day mortality. A secondary analysis was performed for the interaction between different subgroups and thrombectomy modality on successful reperfusion.

Results A total of 244 patients (122 pairs) were eligible for the analysis. Patients with first-line combined technique had similar rates of FPE (56.6% vs. 51.6, $p=0.44$), successful reperfusion without (77% vs. 77.9%, $p=0.88$) and after (99.2% vs. 99.2%, $p=1.00$) rescue techniques and 90-day functional independence (46.6% vs. 54.4%, $p=0.30$) compared to SR thrombectomy. However, first-line combined technique had a significantly higher number of passes and longer reperfusion times compared to SR alone ($p=0.005$ and $p=0.01$, respectively). The rates of PH type 2 and 90-day mortality were comparable between both groups. There was no significant interaction between age, prior IV-tPA, site of occlusion and presence of favorable collaterals and the first-line treatment modality in terms of successful reperfusion.

Conclusions Our findings reinforce the findings of ASTER-2 in that the first-line thrombectomy with a combined technique did not result in increased rates of successful reperfusion or a better outcome. In contrast with ASTER-2, we did not see any advantage even prior to rescue devices.

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E-093

ENDOVASCULAR TREATMENT OF ACUTE CAROTID ATHEROSCLEROTIC TANDEM OCCLUSIONS: PREDICTORS OF CLINICAL OUTCOMES AS TECHNICAL ASPECTS AND LOCATION OF TANDEM OCCLUSIONS

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Objective We aimed to analyze angiographic and clinical outcomes according to the sequence of treatment (antegrade versus retrograde) in patients with acute ischemic stroke caused by tandem extracranial cervical carotid and intracranial large vessel occlusion.

Methods All eligible tandem occlusion patients from April 2012 to March 2019 undergoing carotid artery stenting (CAS) simultaneously with intracranial endovascular thrombectomy (EVT) were retrospectively reviewed. After dividing into 2

groups according to the treatment sequence for tandem lesions (antegrade, CAS first; retrograde, intracranial EVT first), baseline data, immediate angiographic results, and clinical outcome for eligible patients were analyzed and compared. In addition, the same analysis was performed after dividing into 3 groups based on the location of intracranial lesions (T-zone, M1, M2).

Results A total of 76 patients with a tandem occlusion (mean age, 71.7 ± 11.1) were treated with CAS and intracranial EVT. The rate of successful recanalization (TICI 2BC) was 83% (63/76), and favorable functional outcome was achieved in 49% (37/76). When comparing antegrade and retrograde methods, there were no differences in baseline data and angiographic or clinical outcomes. Favorable functional outcome was significantly higher in the M2 occlusion group ($P=0.011$). In multivariate analysis, baseline NIHSS <15 , age <80 , and M2 occlusion were revealed as independent predictors of favorable outcome.

Conclusion Different endovascular sequences for tandem extracranial cervical carotid and intracranial large vessel occlusion do not affect angiographic or functional outcomes. Intracranial M2 occlusion, age, and baseline NIHSS were independent predictors of good clinical outcome at 3 months.

Stroke; Tandem occlusion; Carotid artery stenting; Endovascular treatment; Thrombectomy

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E-094

CORRELATION BETWEEN TOTAL THROMBUS LEUKOCYTE COUNT AND OUTCOME AT DISCHARGE POST MECHANICAL THROMBECTOMY

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Background Ischemic stroke is increasingly being realized to be an inflammatory disease. Post stroke peripheral leukocyte recruitment to the brain has been well studied in preclinical models of ischemic stroke. Limited studies have examined the intravascular inflammatory milieu in the brain during ischemia. Thrombi collected from ischemic stroke thrombectomy patients can be valuable resources for these studies. There are a handful of studies focusing on the role of inflammation in clot pathology. Small studies have demonstrated that higher thrombus leukocyte fraction and neutrophil to lymphocyte ratios are associated with technically challenging procedures and a trend to worse long term outcomes.

Methods We prospectively collected 44 thrombi obtained during mechanical thrombectomy in patients with LVO ischemic strokes. Data on demographics, clinical, procedural and clot composition were collected. These thrombi were paraffin embedded, sliced and stained with Hematoxylin and Eosin. Images were taken using a light microscope, 20 and 40x magnification. Image J was used to quantify the leukocytes using previously described methods. The median and maximum leukocyte count of the 5 analyzed images for each patient was used for analysis. Outcome was defined as location at discharge with discharge to home or rehab considered favorable. Fisher's exact and Mann-Whitney U tests were used for

comparison of categorical and continuous variables, respectively. Multivariate logistic regression was then performed. Pearson's correlation coefficient was used to assess the relationship of leukocytes to NIHSS and time from symptom onset to groin puncture.

Results Among 44 patients with large vessel occlusion, median age was 65.5 years [59–73 years], 15 (35%) were women, 84% had hypertension, 43% had atrial fibrillation, and 24% had hyperlipidemia. Median NIHSS was 18 [14–22] and median leukocyte count in the thrombi was 537 [397–794.5]. NIHSS on admission had a negative correlation with favorable discharge outcome as defined by discharge to home or rehab (OR=0.44, $p=0.021$). Total leukocyte count did not correlate with NIHSS at arrival ($r=-0.0086$; $P=0.9560$), number of passes, TICI score nor with time from last seen well to groin puncture ($r=0.1937$; $P=0.2134$). On multivariate analysis, there was a negative correlation between maximum thrombus leukocyte count and discharge outcome (OR=0.066, $p=0.048$) after accounting for age and NIHSS on admission.

Conclusion Leukocyte count in thrombi retrieved post mechanical thrombectomy shows a significant negative correlation with discharge outcome in patients with ischemic stroke. Our study focused on total leukocyte count and corroborates with previous studies which focused on leukocyte fraction. Further studies using flow cytometry and concomitant peripheral blood analysis along with long term outcome measures are necessary to better define this relationship and understand role of inflammation in LVO stroke.

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E-095

INTERDISCIPLINARY HYBRID SUITE FOR STROKE TREATMENT: INNOVATIVE OR INCONVENIENT?

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Background The efficacy of endovascular therapy (EVT) as the standard of care for acute ischemic stroke attributable to vessel occlusion improves when delivered quickly. Time metrics have been proposed in order to facilitate quality assurance and there are numerous strategies to streamline workflow. The concept of a combined CT-Angiography-surgical (hybrid) suite in close proximity to the emergency room has been proposed as an innovative and multidisciplinary opportunity to reduce the time required for diagnosis and treatment of neurovascular disease including stroke. We describe our interval times for the endovascular treatment of stroke from patient arrival in the emergency room (door) and imaging (CT) to initiation of treatment (arterial access) before and after two interventions: first, a multifaceted but intuitive quality improvement initiative and second, the opening of an interdisciplinary hybrid operating room composed of a sliding CT scanner, a robotic C-arm and both sterile and non-sterile functionality.