Metanalysis has suggested that baseline NLR is a promising predictor of ischemic stroke clinical outcomes. This study aims to evaluate the relationship between baseline NLR in patients with large vessel occlusion (LVO) and their imaging selection for endovascular treatment (ET).

Materials and Methods We reviewed our prospective stroke intervention database from Nov 2015 to June 2019 for patients that underwent ET for LVO with an admission NLR. Patients were excluded from the study if they received corticosteroids or had any history of infectious/systemic disease prior to the development of stroke symptoms. We studied patient demographics, vascular risk factors, NIHSS on admission, data from imaging (NCCT ASPECT, CTP rCBF <30%, Tmax >6s and mismatch ratio), and 90 days outcome measured by mRS. Statistical analysis was performed with SPSS version 17, univariate analysis was conducted between age, NLR, NIHSS, data from imaging and mRS using a correlation coefficient.

Results Seventy-eight met our inclusion criteria (mean age, 67 ± 19; 39% women, mean NIHSS, 17 ± 6), 95% (n=74) were due to anterior circulation LVO while only 5%(n=4) were due to posterior circulation LVO occlusion. There was a significant positive correlation between NLR and rCBF<30% representing the volume of infarction core (p=0.046), also there was a significant negative correlation between ASPECT score and rCBF<30% (p=0.035). No correlation was observed between NIHSS and ASPECT (p=0.94) or NIHSS and rCBF< 30% (p=0.83), however, there was a trend toward significance correlating NIHSS and Tmax>6s representing the volume of ischemic tissue (p=0.09). Predictably, NLR was not correlating with 90-days mRS (p=0.703) as all patients in our cohort underwent ET, nevertheless, there was a significant correlation between age and 90-days mRS (p=0.001).

Conclusions NLR is an inexpensive and readily available biomarker that correlates with CTP predicted core infarction volume in LVO ischemic stroke. However, in CTP selected patients with relatively small core infarct volumes, NLR may not predict 90-day mRS as endovascular treatment salvages ischemic tissue, minimizes final infarct volume, and suggests follow-up NLR may be more valuable predictor of clinical outcome.

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E-076 OUTCOMES OF LARGE VESSEL OCCLUSION THROMBECTOMY IN PATIENTS WITH CT PERFUSION DEFINED LARGE CORE STROKE

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Introduction The benefit of endovascular thrombectomy (ET) is well established in patients with small anterior circulation infarctions and large penumbra. However, this benefit is not proven in patients with a baseline large core infarction. This subpopulation was excluded from major thrombectomy clinical trials. The purpose of this study was to report the outcome of patients with large baseline core based on CTP who underwent stroke thrombectomy at 4 large stroke centers.

Methods Prospectively collected large vessel occlusion databases were queried to identify patients with large baseline infarct cores (CBF greater than 30% $\geq$ 50 mL; based on Computed Tomography Perfusion [CTP] processed by RAPID Software [iSchemaView]). All patients treated with thrombectomy were included in the study. Modified Rankin Scale (mRS) was used for evaluation of clinical outcomes at baseline and 90 days. Demographic information, baseline clinical data, radiological features (infarct core size, penumbra and collaterals) and follow-up were collected.

Results A total of 75 patients were included in the study. Mean age was 65 ±14.9 years and 45.3% were male. Median infarct core was 75.5 mL (IQR 39) and median ASPECTS was 7 (range 3–10). Close to half (50.7%) of patients received IV tPa. Only 8.3% of patients had good collaterals. Mean time to groin puncture was 373±384 minutes and 88% of patients achieved TICI 2b or higher. Rates of good outcome (mRS 0–2) and acceptable outcome (mRS 0–3) were 28.4% and 35.5% respectively. Rate of Parenchymal Hematoma type 2 was 10.6%. The rate of good outcome was significantly higher in patients treated <6h (44.2% vs. 17.4%, P=0.023).

Conclusions Acute stroke thrombectomy may be beneficial in some patients with large core based on CTP especially those who present early (<6 hours from last seen well) and it should not be withhold solely based on the estimated core infarct volume on CTP.

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E-077 PROTEIN EXPRESSION OF INTRA-ARTERIAL BLOOD DISTAL AND PROXIMAL TO THROMBUS DURING MECHANICAL THROMBECTOMY

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Introduction Since 2015, mechanical thrombectomy is the standard treatment for emergent large vessel occlusion ischemic stroke. The Blood and Clot Thrombectomy Registry and Collaboration (BACTRAC) protocol (clinicaltrials.gov NCT03153683) utilizes thrombectomy to isolate intracranial (i.e. distal to thrombus) arterial blood, systemic arterial blood, and the thrombus itself. We set out to investigate how the protein expression of a patient's intracranial blood during ischemic stroke compares to the protein expression of their systemic arterial blood in order to better understand and treat stroke.

Methods Intracranial and systemic plasma samples from n=25 subjects were randomized and sent for cardiometabolic and inflammatory proteomic analyses at Olink Proteomics (Olink Proteomics, Boston, MA). Olink provides a Normalized Protein eXpression (NPX), a unit that is in log2 scale which allows for individual protein analysis across a sample set. The intracranial versus systemic fold change in NPX was calculated by subtracting the systemic NPX (NPX_s) from the intracranial NPX (NPX_i). In order to determine which proteins had the most significant changes, a series of 184 paired t-tests were performed, one for each of the 92 cardiometabolic and 92 inflammatory proteins. Data analysis was performed using SAS software version 9.4 (SAS Institute Inc., Cary, N.C.).

Results 83 proteins with significantly different expression levels between intracranial and systemic blood were identified and all 83 exhibited lower expression in the intracranial blood. For the cardiometabolic panel, the 5 most significant fold changes were: prolyl endopeptidase (FAP) at -0.26 ($p<0.0001$), phospholipid transfer protein (PLTP) at -0.26 ($p=0.0005$), uromodulin (UMOD) at -0.14 ($p=0.002$), fetuin-B (FETUB) at -0.31 ($p=0.002$), and ficolin-2 (FCN2) at -0.46 ($p=0.005$). For the inflammatory panel, the 5 most significant fold changes were: C-C motif chemokine 19 (CCL19) at -0.51 ($p<0.0001$), C-C motif chemokine 20 (CCL20) at -0.40 ($p<0.0001$), fibroblast growth factor 21 (FGF21) at -0.37 ($p=0.0002$), transforming growth factor alpha (TGF-a) at -0.28 ($p=0.0002$), and C-C motif chemokine (CCL23) at -0.43 ($p=0.0003$).

Discussion We have, for the first time, evaluated proteomic changes in the intravascular space of a cerebral infarct in-progress in human subjects. Interestingly, for all significant proteins, expression levels were lower in the intracranial blood compared to systemic. The most significantly changed proteins may represent specific responses occurring at the time of ischemia. For example, changes in proteins such as SOD1 and FGF21 may play a neuroprotective role in response to ischemia. Chemokines such as CCL23 are related to the Th2 autoimmune response and may become important in the repurposing of FDA approved drugs for future therapeutic studies. Variations in proteases, ischemia timeline, patient co-morbidities, reperfusion injury, and basal levels of systemic protein expression may all contribute to the finding of lower intracranial protein expression. Future studies will focus on parsing out the influence of these potential factors as well as on relationships between proteomic changes and patient comorbidities, sex, infarct severity and functional recovery. Proteomic data reported here may provide a scientific springboard for identifying clinically relevant biomarkers, as well as targets for much-needed neuroprotective and neuroreparative pharmacotherapies.

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E-078 ASSESSMENT OF COMPUTED TOMOGRAPHY PERFUSION SOFTWARE IN MISDIAGNOSIS OF ACUTE ISCHEMIC STROKE PATIENT THROMBECTOMY ELIGIBILITY

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Introduction/Purpose Computed tomography perfusion (CTP) is a common imaging modality utilized to assess acute ischemic stroke (AIS) patient eligibility for mechanical thrombectomy. This assessment is done using an ischemic tissue ratio (penumbra to infarct) which is required to be greater than 1 for patients to be eligible for thrombectomy. Since various CTP software utilize different perfusion parameters and thresholds, there are known to be discrepancies in the amount of ischemic tissue quantified for each and therefore conflicting decisions regarding thrombectomy eligibility across software. This study aimed to assess the volumetric agreement of infarct between CTP and 24-hour follow-up fluid-attenuation inversion recovery (FLAIR) magnetic resonance imaging (MRI) along with the number of patients who would be misdiagnosed as ineligible for thrombectomy based on penumbra to infarct ratios by each CTP software.

Materials and Methods Eighty-one emergent large vessel occlusion AIS patients who underwent successful reperfusion (thrombolysis in cerebral infarction 2b/2c/3) were included in this study. Predicted infarct and penumbra volumes were quantified within RAPID, Sphere, and Vitrea CTP software and compared with infarct measurements from FLAIR MRI. The following CTP parameters and thresholds were used to quantify ischemic tissue through comparison with contralateral hemispheres: RAPID: infarct=30% reduction of cerebral blood flow (CBF), penumbra=6 second increase in time to reach maximal residue function; Sphere: infarct=25% reduction of CBF (and 5 second increase of time-to-peak (TTP)), penumbra=5 second increase in TTP; Vitrea: infarct=38% reduction in cerebral blood volume (and 5.3 second increase in TTP or 55% reduction in mean-transit-time), penumbra=5.3 second increase in TTP or 5.8 second increase in delay time or 58% reduction in CBF. Penumbra to infarct ratios were calculated utilizing each software.

Results Mean infarct differences, represented as 95% confidence intervals, between each software and FLAIR MRI are as follows: RAPID=6.96±4.93 mL, Sphere=-0.07±6.11 mL, Vitrea=4.13±4.73 mL. Mean absolute errors for each CTP software compared with FLAIR MRI are: RAPID=14.48 mL, Sphere=15.43 mL, Vitrea=11.44 mL. Mean penumbra to infarct ratios for each CTP software are: RAPID=70.93; Sphere=32.72; Vitrea=12.33. Total number of patients misdiagnosed as ineligible for thrombectomy (penumbra to infarct ratio less than 1 but successful reperfusion was conducted) for each software: RAPID=1.23% (1/81), Sphere=6.17% (5/81), Vitrea=25.93% (21/81).

Conclusions Sphere provided the most accurate results regarding the closest predicted CTP infarct volume to the true FLAIR MRI infarct volume, although with slightly higher error in its measurements compared to RAPID and Vitrea. Penumbra to infarct ratio analysis indicated RAPID and Sphere to provide the most accurate assessment regarding patient eligibility for thrombectomy. However, it appears sacrificing ischemic tissue measurement precision is required for more accurate inclusion