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E-007 CHARACTERIZATION OF LIPOCALIN-2 IN ISCHEMIC STROKE BY DISTAL AND PROXIMAL INTRALUMINAL SAMPLING FROM MECHANICAL THROMBECTOMY

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Introduction Lipocalin-2(LCN2) is a protein involved in many cellular processes, including the regulation of iron homeostasis, promotion of protective mechanisms in renal ischemia, and astrocyte activation in ischemic stroke. In some ischemic stroke models, LCN2 has been described as a 'help me' signal, leading to the activation of microglia, astrocytes, and drive towards cellular phenotypes favorable of recovery. While some models suggest pro-recovery effects of LCN2, other models illustrate LCN2 as having a critical role in neuroinflammation and reperfusion injury. The possibility of disease state-dependent influence of LCN2 activity in ischemic stroke has been recognized, but has yet to be further characterized.

Methods Human plasma samples from thrombectomy patients were processed in the Blood and Clot Thrombectomy Registry and Collaboration (BACTRAC clinicaltrials.gov NCT03153683), and underwent Proximity Extension Assay (PEA) via Olink (Olink Proteomics, Boston, MA). For each protein, intracranial expression distal to the stroke thrombus was compared to the same subject's systemic arterial blood as an internal control. The percent change of protein expression was calculated as follows: *(intracranial distal values- systemic proximal values)*.Comorbidities and sex difference were analyzed using appropriate one-way comparisons and regression.

Results 25 adult patients (>18 yrs) were included in this initial analysis, of which 15 (60%) were female. Median age was 64 (24–91). 16 patients (64%) had hypertension, 15 patients (60%) had BMI >25, 10 patients (40%) had a history of smoking, 6 patients (24%) had previous stroke, 4 patients (16%) had hyperlipidemia, and 1 patient (4%) had previous MI. Mean infarct time was 513 ± 246 minutes and mean infarct volume was 58.17 ± 82.28 cc. Of 184 proteins, only 27 demonstrated an increase percent change between intracranial and systemic blood. LCN2 demonstrated a 14% increase change between intracranial and systemic blood, one of the greatest percent increases among measured proteins. The percent change of LCN2 was significantly increased in those with hypertension ($p=0.024$) and decreased in those with type-two diabetes ($p=0.04$).

Conclusions Changes of LCN2 intracranially during stroke were most significant in patients with hypertension and/or diabetes. For the first time, these data provide insight into the human molecular pathology of stroke regarding this protein and its signaling cascade. Future studies will focus on the role of proteins as they relate to radiographic, functional and other clinical outcomes. Proteomic findings coupled with advanced database analysis will elucidate complex cell signaling and biomolecular interactions that occur in the blood at the site of infarct.

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E-008 A NOVEL LIQUID EMBOLIC MATERIAL USING A HYDROPHILIC POLYMER COMPOSITE ACTIVATED BY THE CA2+ IN THE BLOOD: ANGIOGRAPHICAL EVALUATION USING A RABBIT MODEL

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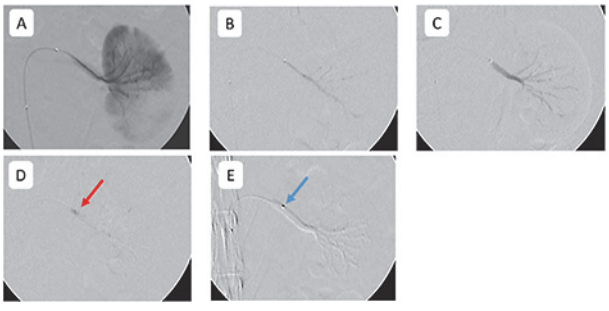
Introduction Liquid embolic material (LEM) plays an essential role in the treatment of hemorrhagic stroke caused by arteriovenous malformation or dural arteriovenous fistula. However, currently available non-adhesive LEMs has the problem of catheter entrapment, and also known to have a cytotoxic effect due to the organic solvents such as Dimethyl Sulfoxide (DMSO). The New Generation Liquid Embolic Material (NGLEM) is a clear liquid that immediately forms a solid hydrogel cast upon exposure to Ca2+ in the bloodstream, and organic solvents are not required. The performance of this new liquid embolic material was evaluated using an *in vivo* experimental model using rabbit.

Methods Under general anesthesia, a renal artery of New Zealand rabbit (4.5–5.0 kg) was catheterized under fluoroscopy using a microcatheter, and NGLEM (Aqua Embolic System) was injected into the artery. Following factors were assessed; 1) the amount of LEM required for the complete occlusion, 2) injection speed, 3) duration of the injection, 4) radiopacity during the deployment and 5) incidence of catheter entrapment after the injection.

Results 10 renal arteries in 10 rabbits were treated, and all arteries were completely occluded without technical complication. The injected materials immediately formed LEM cast in all vessels followed by the reflux over the microcatheter. All catheters were withdrawn without any sign of catheter entrapment. The NGLEM mixed with tantalum based (10 animals) contrasts medium showed sufficient radiopacity under fluoroscopy. With the injection speed of 0.02 ml/sec, the average volume required was 0.68 ml. Average time for the complete



Abstract E-008 Figure 1 A left Renal artery of rabbit was embolized with Aqua Embolic System. A) A control angiogram was performed. **B) and C)** The material injected from the catheter filling the distal branches. **D)** a reflux of the material (red arrow) was seen. **E)** At the end of the procedure, the tip of the catheter was embedded in the cast of embolic material (blue arrow), which was removed without any resistance