

O-015

THE SAFETY AND EFFICACY OF CANGRELOR USE IN ENDOVASCULAR THROMBECTOMY COMPARED WITH GLYCOPROTEIN IIB/IIIA INHIBITORS

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Introduction Cangrelor, an intravenous P2Y₁₂-receptor inhibitor, is a reversible and short-acting antithrombotic medication that has been demonstrated to be non-inferior to traditional irreversible Glycoprotein IIB-IIIa inhibitors (GPI) such as eptifibatide. It has lower hemorrhagic risk and is used to prevent thrombotic complications in cardiologic interventions. However, its effectiveness in endovascular thrombectomy (EVT), which can require emergent platelet inhibition, is not well characterized. This study reviews our institution's experience with cangrelor in EVT and compares its safety and efficacy against GPIs.

Methods A single-center retrospective review identified all patients who received cangrelor or eptifibatide intraoperatively while undergoing EVT for management of acute stroke. Clinical data including baseline medications and comorbidities, dosing, adjunctive antiplatelet therapy, hemorrhagic complications, vessel or stent patency, hospital course, and functional status as defined by the modified Rankin Scale (mRS) and National Institutes of Health Stroke Scale (NIHSS) at baseline and at multiple time points during and after hospitalization were reviewed. Binary variables were tested with Pearson χ^2 tests or Fisher's exact tests. Continuous variables were tested with two-tailed t-tests or Wilcoxon tests.

Results Out of 1,010 EVT patients, 36 patients who received cangrelor and 104 patients who received eptifibatide intra-procedurally were selected. There were no significant differences in baseline mRS, initial NIHSS score, or prior administration of intravenous thrombolysis. Cangrelor usage during EVT was associated with a significantly decreased risk of hemorrhagic conversion (41.3% vs 22.2%, $p < 0.05$). There is a trend to decreased risk of symptomatic hemorrhage (15.4% vs 8.33%, $p = 0.4$). Intraprocedural cangrelor was most frequently administered for stenting of tandem occlusions ($n = 16$, 44.4%) and successful reperfusion confirmed with follow-up vascular imaging occurred in 94.44% of patients ($n = 34$). There were no significant differences in thrombotic reocclusion of the stent or vessel or mortality during the hospitalization. Cangrelor usage was associated with significantly lower 24-hour and discharge NIHSS scores ($p < 0.05$). Cangrelor usage was associated with significantly increased rate of favorable outcome, defined as a mRS of 0-2, at discharge ($p < 0.05$). This was not seen on 30-day ($p = 0.09$) or 90-day follow-up ($p = 0.32$).

Conclusion Cangrelor use was associated with a decreased risk of hemorrhagic conversion and may lead to favorable functional outcomes for patients during hospitalization when compared to GPI use. Future prospective studies are warranted to investigate its use in EVT.

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O-016

THROMBUS PERMEABILITY IS ASSOCIATED WITH DISTINCT PROTEOMIC FEATURES AND DIFFERENTIAL SUSCEPTIBILITY TO ADAMTS13 THROMBOLYSIS

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Background and Purpose Acute ischemic stroke (AIS) thrombus perviousness/permeability has been shown to be related with various clinical outcomes and reflect histopathologic composition. However, it remains unclear if perviousness is also associated with differences in proteomic composition.

Materials and Methods Mechanical thrombectomy retrieved clots from 59 patients were evaluated with quantitative mass spectrometry. Proteomic differences between high perviousness (≥ 11 Hounsfield Units; HU) and low perviousness (< 11 HU) clots were investigated. Increasing perviousness as a continuous variable was also correlated with specific abundance across all identified proteins. Lastly, an ex vivo lysis assay was performed to investigate the differential susceptibility to tPA, DNase, ADAMTS13 thrombolysis as a function of perviousness.

Results From 85,244 distinct patients who had an MRI of the spine, 2,791 (3.3%) were identified with perineural cysts. Thrombus perviousness was negatively related to certain constituent proteins, including macrophage marker CD14 ($P = 0.039$, $Z = 1.176$), monocyte/macrophage associated proteins (PYCARD/ASC and SAMHD1) ($P < 0.002$), and hemoglobin subunit zeta ($P = 0.046$, $Z = 1.68$). A positive association between perviousness and other proteins was observed, including platelet cytoskeleton remodeling (TPM3) and platelet granule secretion/aggregation (SYTL4/FcγRIIA) ($P < 0.006$). Ex vivo lysis assay indicated that highly pervious clots were more susceptible to ADAMTS13-augmented tPA thrombolysis compared to low pervious clots ($P < 0.05$), though without differences to DNase digestion.

Conclusion Thrombus permeability is associated with distinguishable proteomics features, including greater abundance of platelet-related proteins in highly permeable clots and monocyte/macrophages in less permeable clots. These findings also suggest that highly pervious thrombi may be differentially susceptible to ADAMTS13 augmented thrombolysis.

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