NIHSS SURROGATES AS A PREDICTOR OF 90-DAY FUNCTIONAL OUTCOME AFTER MECHANICAL THROMBECTOMY FOR M2 MIDDLE CEREBRAL ARTERY OCCLUSIONS

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FRACTAL ANALYSIS OF HEALTHY AND DISEASED VASCULATURE IN PEDIATRIC MOYAMOYA DISEASE

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Background and Purpose Fractal dimension is a metric that assigns an objective measure to the notion of structural complexity. We sought to investigate differences in structural complexity between healthy and affected territories of cerebral vasculature in moyamoya, as well as associated scalp vasculature and native transdural collaterals, in patients with Moyamoya by comparing their respective fractal dimensions.

Methods Our cohort consisted of 12 patients with unilateral anterior circulation moyamoya with 15 associated transdural collaterals. Representative frames of distal arterial vasculature from internal and external carotid angiograms were selected then processed via automated image segmentation and also manually annotated by a cerebrovascular surgeon. In the affected hemisphere, the region with transdural collateral supply was analyzed, and compared to the contralateral region. The resulting skeletonized angiograms were then analyzed for their fractal dimensions.

Results We found the average fractal dimension (Df) of the moyamoya-side ICA was 1.82 with slightly different means for both the AP and Lateral view (mean = 1.82, stDev = .062; mean = 1.81, stDev = .067). The overall mean for healthy cerebral vasculature was also found to be 1.82 (AP view: mean = 1.83, stDev = .062; Lateral view: mean = 1.81, stDev = .069). Mean Df of native transdural collaterals was found to be 1.82 (AP view: mean = 1.83, stDev = .063; Lateral view: mean = 1.81, stDev = .069). The mean Df difference between auto-segmented and manually segmented images across all angiograms was .013 (stDev = .042).

Conclusion In accordance with the clinical understanding of moyamoya disease, the distal arterial structural complexity is not affected in moyamoya, and is maintained by transdural collaterals formed by vasulogenesis. Auto-segmentation of cerebral vasculature is also shown to be accurate when compared to manual segmentation.

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VIDEO ANALYSIS OF PATIENT PREPARATION IN THE ANGIOGRAPHY SUITE DURING EMERGENT THROMBECTOMY FOR ACUTE ISCHEMIC STROKE

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Introduction Thrombectomy is the standard of care for select acute ischemic stroke (AIS) patients with large vessel occlusion and reducing time to recanalization is critical in maximizing patient outcomes. Process efficiency is therefore important in moving patients through the acute stroke management pipeline from the time of their presentation to thrombectomy. We previously conducted a quality improvement project at our