Does thrombus density correlate with the number of retrieval attempts in anterior circulation thromboembolic stroke?

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Abstract

Background/Purpose: An association between tomodensitometric thrombus density (TD) and thrombectomy reperfusion result has been reported, although the reasons are not fully understood. Frequently, several thrombectomy attempts are necessary to restore revascularization. The aim of this study was to evaluate if there is a correlation between TD and the number of stent retrieval attempts (NRA).

Methods: A retrospective analysis of all thrombectomies performed at North Lisbon Hospital Centre from January 2016 to February 2018 was conducted. Only M1 or terminal internal carotid occlusion strokes were included. Procedures using aspiration devices and cases without non-enhanced CT scan and/or CT-Angio were excluded. TD was analysed by two independent neuroradiologists, blinded for the NRA. TD was calculated as a ratio between the Hounsfield Units of the most hyperdense area of the thrombus and the corresponding contralateral arterial segment. Data concerning TD, Thrombolysis in Cerebral Infarction (TICI) scores, NRA and procedure times were analysed.

Results: From a total of 231 thrombectomies, 57 procedures were selected. Median age was 74 years (range: 42-93). rtPA was administered in 59.6% of patients. TICI scores were: 0-2a n=13; 2b-3 n=44. The median NRA was 2 (range: 1-9). No statistically significant correlation between NRA and TD was found (p>.05), even after adjusting for the use of rtPA, age and procedural times. TICI scores and TD were statistically associated (p<.05), as were TICI scores and NRA (p<.05).

Conclusion: The use of TD as a predictor of NRA could not be established. The NRA may be influenced by other factors not analysed in this study (e.g. thrombus length, etiology and retrieval technique), thus requiring further research.