

TIME IS BRAIN – ONLY PART OF THE STORY: ROLE OF CT PERFUSION IN WORKUP FOR MECHANICAL THROMBECTOMY IN ACUTE STROKE

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PURPOSE: Recent randomized controlled studies have shown favorable results for endovascular treatment of acute ischemic stroke, which signifies a new era in stroke management. Mechanical thrombectomy, in addition to intravenous thrombolysis, in treatment of acute stroke with large artery occlusion in the anterior circulation up to 6 hours after symptom onset is now level 1a evidence. However, there is no well-established universal consensus regarding the imaging workup protocol for acute stroke patients, which differ amongst these trials. We believe computed tomographic (CT) perfusion imaging, with its ability to identify irreversibly damaged infarcted core and potentially salvageable ischemic penumbra, can help in patient selection and improve patient outcome. We will review our recent experience in this group of patients.

METHODS: Retrospective review from January 2014 to September 2015 yielded 24 patients with acute stroke eligible for consideration of mechanical thrombectomy presenting within a time window of less than 6 hours. CT perfusion was performed for 12 of the 24 patients with Toshiba Aquilion One machine and CT perfusion images were generated by Vitrea Fx software version 6.5.1 and reviewed by two reviewers.

RESULTS: Of the 12 patients with CT perfusion scan performed, 3 perfusion patterns were observed. 6 patients had matched defects, 5 patients had perfusion mismatch and 1 patient had lacunar infarct. All of the 5 patients with perfusion mismatch subsequently underwent mechanical thrombectomy. 1 patient with matched defect underwent mechanical thrombectomy in view of early presentation with short duration of symptom onset, unfortunately complicated by hemorrhagic transformation and poor outcome.

CONCLUSION: Duration after stroke onset is a very important factor in considering eligibility for mechanical thrombectomy, however it cannot account for varying physiology amongst different patients, such as cerebral collateral arterial supply and tissue resistance to ischemia. Advanced neuroimaging techniques are practical in clinical setting of acute stroke and can help triage patients for revascularization therapy.