

Hyperdense middle cerebral artery and outcome in acute ischemic stroke patients treated with systemic tPA thrombolysis



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Objective

The aim of this study was to evaluate whether acute evaluation of hyperdensity of middle cerebral artery sign (HMCAS) and assessment of comparison of both MCA density by relative Hounsfield Units (rHU), might be related to clinical outcome in patients with acute ischemic stroke underwent systemic thrombolysis (ST)

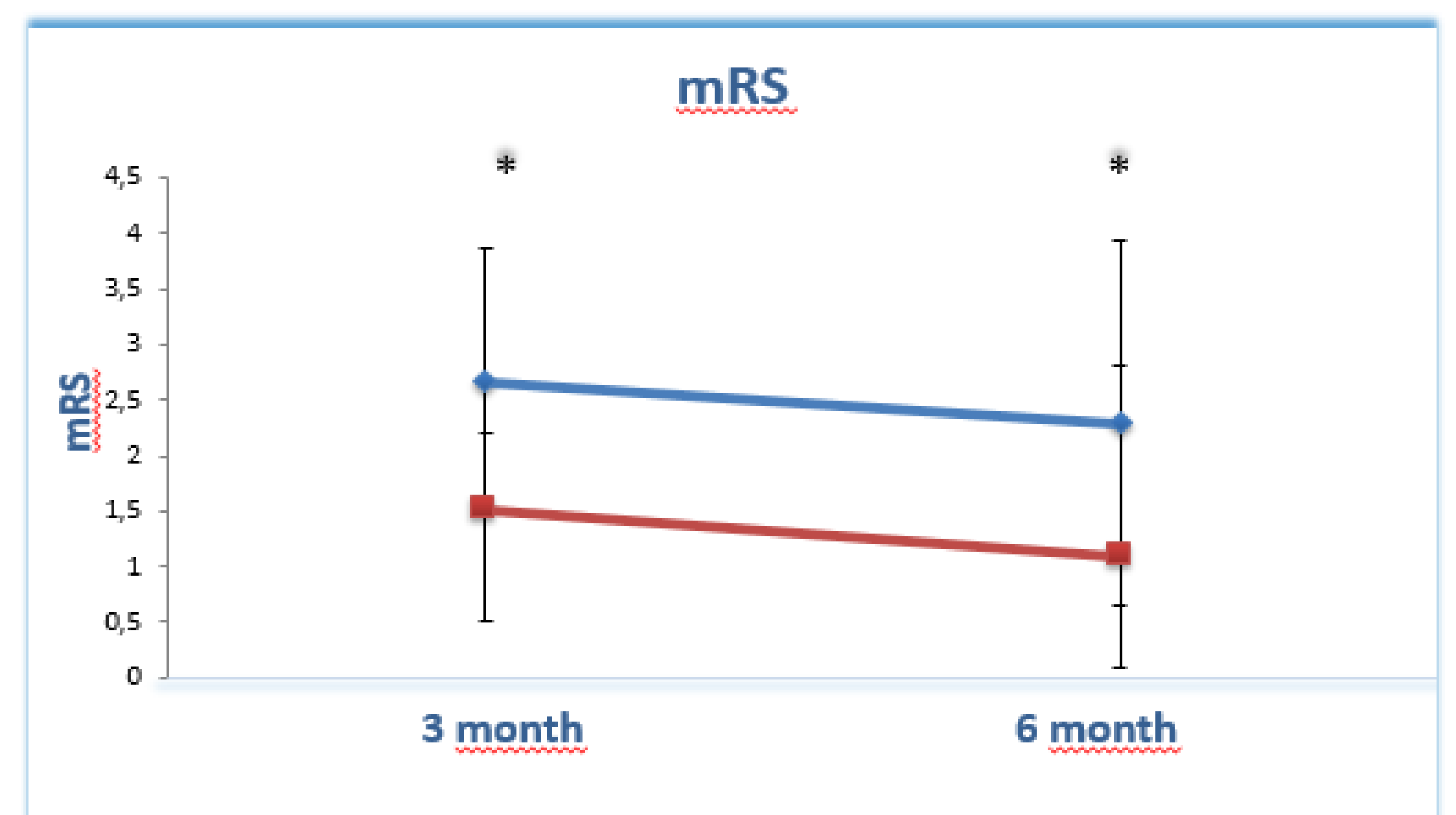
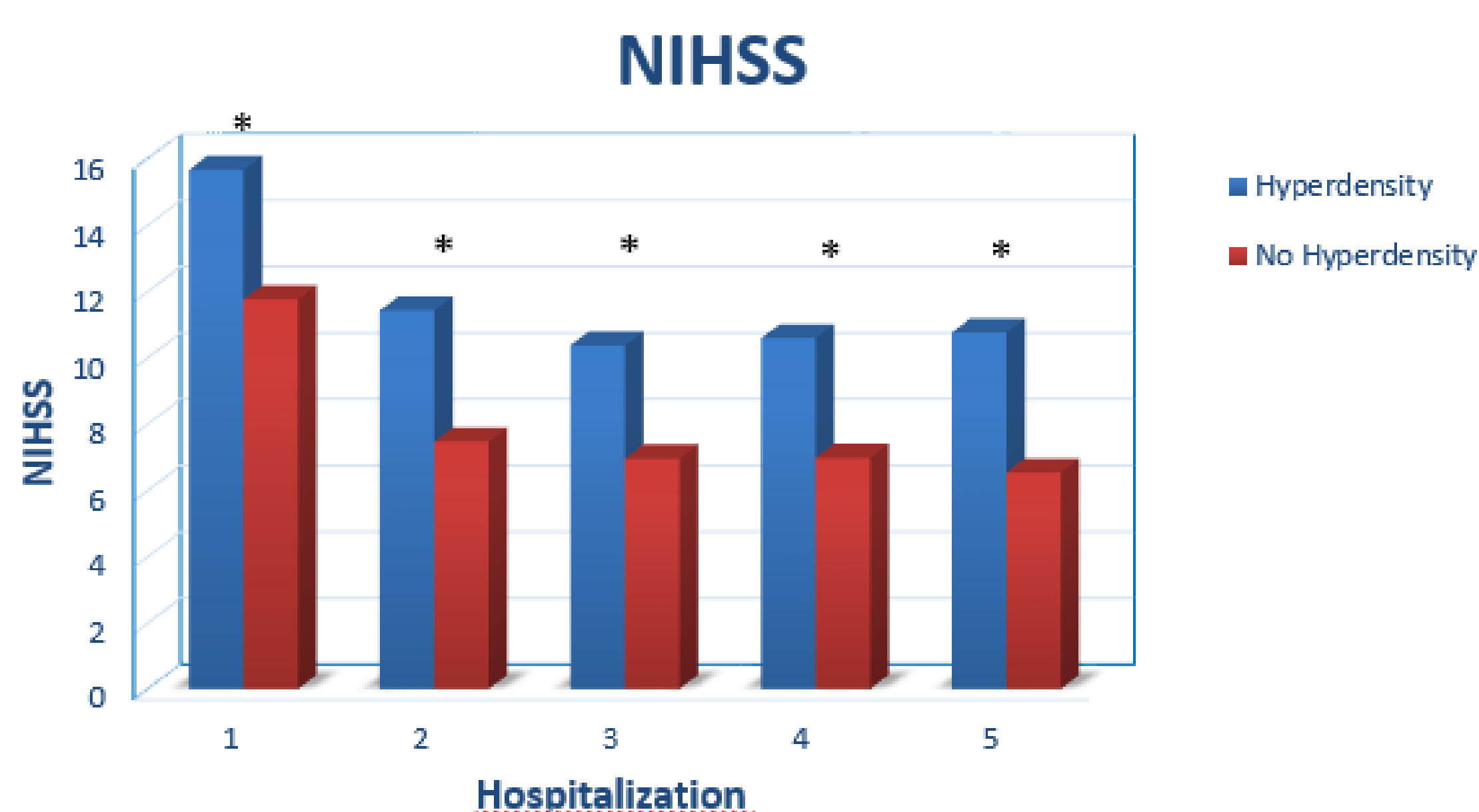
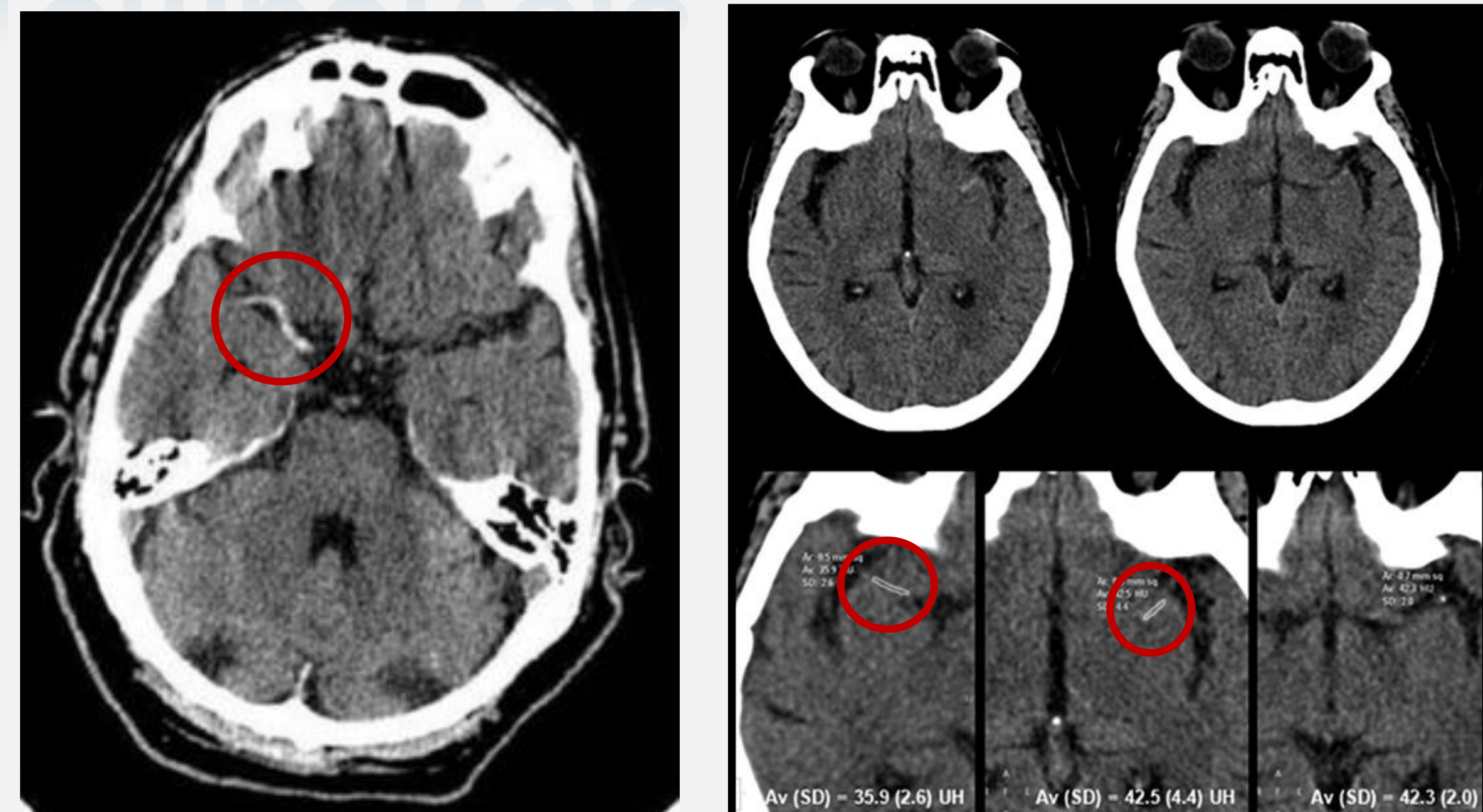
Materials and methods

We enrolled 82 patients (47 males) with acute ischemic stroke due to MCA occlusion that were admitted to our hospital within 4.5 hours from symptoms onset and were treated with ST with tPA.

All patients underwent to acute head CT scan followed by intracranial angio-CT scan. In accordance with MCA evaluation, patients were divided into 2 groups: *hyperdensity* or *no hyperdensity*. Functional stroke scales were daily assessed during hospitalization and functional outcome was evaluated at the 3-month and 6-month follow up visits by using the modified Rankin Scale (mRS).

Results

Median NIHSS score at admission was 13.5 and at discharge 6, mRS score was 4.3 ± 0.9 at admission and 3.1 ± 1.7 at discharge. 41 patients showed MCA hyperdensity. There was a significant difference ($p < 0.05$) in HU measures of symptomatic MCA between groups and the difference remained significant also after rHU estimate. Brain MR was performed in 47 patients within 24 hours from the admission. DWI volume was higher in hyperdensity group ($p < 0.05$). NIHSS score at the onset was higher in hyperdensity group and such a difference remained at the discharge ($p < 0.05$). Both groups improved during hospitalization but Δ NIHSS ($\text{NIHSS}_{\text{discharge}} - \text{NIHSS}_{\text{onset}}$) and mRS at the discharge were not significant ($p > 0.05$). Differences in mRS scores were significant at 3 and 6 months follow up visits.



Conclusion

CT based complementary analysis such as MCA hyperdensity evaluation and rHU measurement might have a potential prognostic value in acute stroke patients undergoing to ST. Therefore, HU and rHU can be considered useful tools for a rapid triage of ischemic stroke patients in order to decide who may benefit from ST and who may need other recanalization strategies.

References

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