

STROKE

CT angiography offers improved prediction of outcome

New data suggest that CT angiography source images (CTA-SI) are superior to noncontrast CT images for scoring the severity of early ischemic changes in the brains of patients with stroke. “We showed that CTA-SI provides information not available from noncontrast CT alone that is useful in predicting clinical outcome from stroke,” Demchuk and colleagues conclude in their article.

Noncontrast CT (which detects cytotoxic edema) and CT angiography (which detects both blood vessel occlusion and reduced cerebral blood volumes) are both widely used to judge the extent of irreversible ischemia and to guide decision-making with regard to thrombolytic therapy in this setting.

“...CT angiography source images are superior to noncontrast CT images for scoring ... stroke [severity]”

Demchuk and colleagues' previous work showed that CTA-SI had greater sensitivity than noncontrast CT images for detecting early ischemic changes, but their cohort was too small to detect a correlation between the CTA-SI findings and patients' clinical outcomes. Accordingly, in this new retrospective study, the researchers used the semiquantitative Alberta Stroke Programme Early CT Score (ASPECTS) to assess the extent of early ischemic changes in both CTA-SI and noncontrast

CT images from 261 patients with acute ischemic stroke included in the Calgary CT Angiography database.

Baseline CTA-SI ASPECTS correlated more closely with final ASPECTS and with baseline and 24 h NIH Stroke Scale scores—a validated scale used to predict clinical stroke severity—than did baseline noncontrast CT ASPECTS. Moreover, CTA-SI ASPECTS of 8–10 was strongly associated with a good outcome (score ≤ 2 on the modified Rankin scale) at 90 days after stroke. By contrast, no association was found between noncontrast CT ASPECTS and patients' outcomes.

Overall, the researchers suggest that CT angiography is a better imaging technique than noncontrast CT for predicting the initial clinical severity, final extent and outcome of ischemic stroke. However, as Demchuk and colleagues note in their paper, “both recanalization of occluded arteries and time to recanalization are likely to strongly influence final infarct volume and thus decrease the ability of CTA-SI to predict outcome due to significant infarct growth.”

The investigators conclude that further research is needed to elucidate the effect of recanalization on the prognostic value of CTA-SI.

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Original article Bhatia, R. *et al.* CT angiographic source images predict outcome and final infarct volume better than noncontrast CT in proximal vascular occlusions. *Stroke* doi:10.1161/STROKEAHA.110.603936