Preexisting Cerebral Microbleeds on Susceptibility-Weighted Magnetic Resonance Imaging and Post-Thrombolysis Bleeding Risk in 392 Patients

Cerebral microbleeds (CMBs) are seen easily on MRI as hypointense lesions. Hemosiderin causes susceptibility artifacts and signal loss. Prior studies assessing the risk of CMBs on bleeding risk after tissue-type plasminogen activator offered contradictory conclusions. No study to date has examined location of CMBs and most studies used T2*-gradient-echo–weighted MR images, which are less sensitive than susceptibility-weighted imaging for CMB detection. This study aimed to determine the impact of CMB burden and location as detected on pretreatment susceptibility-weighted imaging sequences on the post-thrombolysis bleeding risk in a large cohort of patients in Bern, Switzerland, treated for acute ischemic stroke. During a 3-year period, 392 patients out of 724 patients treated with intravenous thrombolysis, endovascular therapy, or intravenous thrombolysis followed by endovascular therapy had susceptibility-weighted images and fulfilled inclusion criteria. Twenty percent of patients had CMBs detected on pretreatment MRI. Higher age and hypertension were predictors of CMB on multivariable regression analysis.

Symptomatic intracerebral hemorrhage and asymptomatic intracerebral hemorrhage were not associated with CMB existence or burden. A higher CMB burden marginally increased the risk for intracerebral hemorrhage outside the infarct. Clinical outcome and survival at 3 months were not associated with CMB existence. In addition, the main location of CMBs and their likely cause did not influence bleeding complications or outcome. These results support the notion that intravenous thrombolysis and endovascular therapy in patients with acute ischemic stroke should not be withheld in patients with CMBs. See p 1684.

Totaled Health Risks in Vascular Events Score Predicts Clinical Outcomes in Patients With Cardioembolic and Other Subtypes of Ischemic Stroke

The Totaled Health Risks in Vascular Events (THRIVE) score has been used to predict clinical outcome in recent acute stroke endovascular trials. It is calculated by assessing points for patient age, initial stroke severity by the National Institutes of Health Stroke Scale Score, and the presence of risk factors such as hypertension, diabetes mellitus, or atrial fibrillation. THRIVE scores range from 0 to 9. This study sought to determine whether the THRIVE score was useful in predicting prognosis after ischemic stroke in patients who did not receive intravenous tissue-type plasminogen activator. A total of 3879 patients from a prospectively collected ischemic stroke database in China were included in the analysis. Their results showed that THRIVE score independently predicted good clinical outcome (modified Rankin scale score 0–2 at 3 months) in patients with cardioembolic and noncardioembolic stroke. An increasing THRIVE score also independently predicted an increase in 3-month mortality. An increasing THRIVE score was also associated with higher rate of hemorrhagic transformation of ischemic infarct. The authors concluded that the THRIVE score is a rapid and reliable tool for predicting clinical outcome in patients with ischemic stroke among East Asian patients. The use of clinical scores such as THRIVE seem useful in clinical practice, however, as an adjunct not replacement for clinical judgment. See p 1689.

Intravenous Thrombolysis of Basilar Artery Occlusion: Thrombus Length Versus Recanalization Success

Patients with acute basilar artery occlusion frequently have poor outcome. There is a high mortality rate without any recanalization. In patients with anterior circulation arterial occlusion, recanalization with intravenous thrombolysis has been shown to be dependent on clot location and length. One study showed that patients with middle cerebral artery thrombi longer than 8 mm had <1% probability of recanalization. This study aimed to evaluate the impact of thrombus length and location on recanalization after intravenous tissue-type plasminogen activator thrombolysis in basilar artery occlusion. One hundred and forty patients received full dose intravenous tissue-type plasminogen activator plus concomitant systemic anticoagulation with heparin (in 97% patients). Clot location and length were determined from pretreatment computed tomographic angiography, magnetic resonance angiography, or digital subtraction angiography. Post-treatment recanalization was measured in 103 patients by computed tomographic angiography or magnetic resonance angiography and dichotomized to partial to complete recanalization (thrombolysis in myocardial infarction 2–3) and nil to minimal (thrombolysis in myocardial infarction 0–1). Thrombolysis in myocardial infarction 2–3 was achieved in 62% of patients. Patients with unsuccessful recanalization had longer thrombi, which were more often in the midbasilar location and less common at the top of the basilar artery. Patients with recanalization had shorter thrombi (median 5.5 mm) than nonrecanalization (median 15.0 mm; P<0.001). Patients with thrombi ≤10 mm and recanalization had more frequently in top of the basilar location (92.5%) and less frequently in caudal or midbasilar (7.5%) clot location (P=0.01). Increased thrombus length resulted in lower recanalization rates. In their secondary analyses, patients with successful recanalization achieved better clinical outcome and lower mortality. The authors conclude that even though thrombus length is independently associated with successful basilar artery recanalization, patients with large thrombi (>30 mm) of the basilar artery had higher recanalization rates than patients with thrombi ≥8 mm of the middle cerebral artery. Thus, first-line therapy for all patients with acute basilar artery thrombosis, regardless of thrombus length, should be intravenous thrombolysis. See p 1733.
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