Does Diffusion-Weighted Imaging in Transient Ischemic Attack Patients Improve Accuracy of Diagnosis, Prognosis, or Both?

To the Editor:

Over the past decade, much attention has been placed on identifying reliable predictors of stroke risk after transient ischemic attack (TIA). These may be potentially helpful in selectively triaging patients and appropriating limited healthcare resources. Ay et al have now combined a clinical and radiographic prognostic model to predict risk of ischemic stroke within the first 7 days after TIA. This predictive model, although practical and convenient, should be applied with an understanding of its inherent limitations.

While the well-known ABCD² score has been validated in many cohorts as a risk stratifying tool, the clinical variables used in the score may actually serve to increase diagnostic accuracy.⁴ As an objective marker of acute tissue damage, DWI can provide incontrovertible evidence of ischemia. The combination of clinical and radiographic features (ie, diffusion-weighted imaging, [DWI]) may further enhance the diagnostic power to capture true cerebrovascular ischemic events and exclude nonischemic mimics such as migraine or seizure. Because diagnosis of TIA remains challenging in the emergency room setting, these acutely performed tools are certainly of importance in improving diagnostic accuracy.

However, they do not inform prognosis per se and one should not conflate diagnostic scores with prognostic scores. Research in TIA needs to continue to focus on understanding mechanisms and causes of brain ischemia that are associated with increased stroke risk. Hyperacute neuroimaging of the cerebral vasculature can identify high-grade stenosis or occlusion and may be better suited to prognosticulate stroke risk after TIA.⁴–⁵ Still, why do some TIA patients with high-grade carotid stenosis go on to have a subsequent stroke while others do not? The diagnosis or mechanism of TIA is not in doubt in these instances, but predicting stroke risk remains difficult.

Biomarkers and modern neuroimaging may shed some light on these questions. Recent studies have shown that significant proportion of acute TIA patients have perfusion deficits without DWI lesions or have large perfusion-diffusion mismatch suggesting tissue-at-risk of subsequent infarction.⁶–⁸ These latter approaches seem to address pathophysiology more squarely and lend themselves to targeted therapies such as acute revascularization of occlusive lesions, blood pressure augmentation, and/or antithrombotic agents. Akin to unstable angina and myocardial infarction risk,⁹ future scoring tools for TIA should incorporate multiple clinical and radiographic parameters that can improve diagnostic accuracy, elucidate pathophysiology, and prognosticate stroke risk in the effort to triage patients with TIA more effectively.

Disclosures

None.

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