Accuracy of Magnetic Resonance Angiography for Internal Carotid Artery Disease

To the Editor:

We read with great interest the article entitled “Diagnostic accuracy of magnetic resonance angiography for internal carotid artery disease: a systematic review and meta-analysis.” The authors made a comprehensive review and meta-analysis of many articles which compared magnetic resonance angiography (MRA) and digital angiography (DGA), considered the gold standard to study carotid stenosis.

As a contribution, although not cited by the authors, we published an article in 2001 about this theme. We compared, in a prospective longitudinal study, 20 internal carotid arteries (ICA) in 10 patients with symptomatic stenosis submitted to screening carotid Doppler studies. Six patients had transient ischemic attacks and 4 had mild strokes. Subjects with 70% or tighter stenosis in this first evaluation were submitted to another carotid duplex scan, bidimensional time-of-flight MRA and DGA, in order to compare these diagnostic methods. We used the NASCET method to measure ICA stenosis, and we considered DGA as the gold standard. Each diagnostic procedure was independently evaluated by the participating physicians, who were blind to the results of other tests.

We found an excellent correlation between the methods when we divided our sample in surgical (70% to 99% stenosis) and nonsurgical patients. Sensitivity (95% CI) for detecting surgical patients (70% to 99% stenosis) was 100% (39.6% to 100%) for both duplex scan and bidimensional time-of-flight MRA, compared to DGA, and specificity was 93.8% (67.7% to 99.7%) and 75% (47.4% to 91.7%) respectively. Positive predictive value (95% CI) was 80% (29.3% to 98.9%) for duplex scan and 50% (17.4% to 82.6%) for MRA. Negative predictive value (95% CI) was 100% (74.7% to 100%) and 100% (69.9% to 100%) respectively.

Because of our small sample size, confidence intervals were large, but results are similar to those found in the meta-analysis by Debrey et al. A previous meta-analysis found different results with 82% to 86% sensitivity and 98% specificity for duplex scan and MRA cases with total ICA occlusion. In stenosis ≥70%, sensitivity ranged from 83% to 86% and specificity ranged from 89% to 94%.

Differentiation between ICA subocclusion and total occlusion proved difficult with MRA alone, but could be accurately done by analyzing the combined results of duplex scan and MRA.

In conclusion, combining duplex scan and MRA results may prove more dependable than using MRA alone; when both methods are concordant, they may safely substitute invasive DGA.

Disclosures

None.

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