

DETERMINATION OF LANGUAGE DOMINANCE USING FUNCTIONAL MRI: A COMPARISON WITH THE WADA TEST

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We performed functional MRI (fMRI) in 22 consecutive epilepsy patients undergoing intracarotid amobarbital (Wada) testing and compared language lateralization measures obtained with the two procedures. fMRI used a single-word semantic decision task previously shown to activate lateralized language areas in normal adults. Correlation between the two tests was highly significant (r equals 0.96; 95% CIs 0.90 to 0.98; p less than 0.0001). These results validate the fMRI technique and suggest that "active" areas observed with this semantic processing task correspond to those underlying hemispheric dominance for language. The strong correlation observed supports the view that language lateralization is a continuous rather than a dichotomous variable. In addition to lateralization information, fMRI consistently demonstrated focal regions of activity in lateral frontal and temporo-parieto-occipital cortex. These functional maps may be helpful in defining the boundaries of surgical excisions.

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Comment from Gregory D. Cascino, MD, FAAN, Associate Editor: *This study indicates the potential use of functional MRI for language lateralization.*

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