Can we rely upon fMRI to localize verbal memory when planning epilepsy surgery?

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Several studies have shown that fMRI can identify brain regions important for verbal memory in patients with epilepsy being considered for surgery. There is significant correlation between laterality indices when the intracarotid sodium amytal test and fMRI are compared in the same patient. Moreover, asymmetric activation left mesial temporal or langauge network activation during verbal encoding predicts verbal memory decline after left temporal lobectomy. A model including left fMRI activation during delayed recognition, side of seizure onset, and preoperative verbal memory score correctly predicted worse verbal memory in 90% (Dupont et al 2010). These data suggests that fMRI is at least as accurate as the intracarotid sodium amytal test (Wada) for preoperatvie memory mapping. The Wada is invasive, suffers from many procedural vagaries, and has been shown to have limited predictive value for post-operative deficits. Only 10 cases of global amnesia have been reported over more than 50 years after epilepsy surgery, and all had independent preoperative evidence for contralateral dysfunction or atypical language dominance. The Wada has been declining in use, and many centers, perhaps a majority, no longer perform it at all. fMRI can replace it.