

EPILEPSY SURGERY SHOULD NOT BE OFFERED EARLY IN PATIENTS WITH NON-LESIONAL MRI SCANS

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The aim of epilepsy surgery is to achieve seizure remission in patients unresponsive to the available drug treatments. The cumulative time-dependent probability of remission after surgery varies across studies ranging from 66% in patients undergoing temporal lobectomy to 16% in those receiving multiple subpial transections (Tellez-Zenteno et al, 2005). The pooled percent of cases achieving seizure-freedom off-drug is 22% (Tellez-Zenteno et al, 2007). The MRI findings are one of the independent predictors of the outcome of epilepsy surgery. In a meta-analysis of nine studies, the presence of an abnormal MRI was found to predict a positive surgical outcome (Odds Ratio 0.4 for seizure recurrence; 95% Confidence Interval 0.3-0.6)(Tonini et al, 2004). In an observational cohort of surgical candidates at six US centers, the number of cases undergoing surgery varied according to the MRI findings, ranging from 81% in patients with abnormal imaging to 45% in those with no detectable lesions (Berg et al, 2003). In a large cohort of patients having comprehensive presurgical assessment, lack of clear focus hypothesis after non-invasive monitoring was a major reason for withholding surgery (Bien et al, 2009). In MRI-negative patients, intracranial EEG recording is needed. In MRI-negative patients undergoing temporal lobectomy, intracranial EEG recording detected a bitemporal or fronto-temporal multifocal ictal onset in 24% of cases and only positive emission tomography (PET) has been found to predict surgical outcome (Immonen et al, 2010). Depth and strip electrodes record only from a very limited brain area; it is challenging to delineate the real onset zone and the spreading of the seizure if the ictal onset zone is outside the contact. The histopathology in these cases is often normal, with only a minority of patients having hippocampal pathology. Excision of epileptogenic tissue may be insufficient. Significant memory decline may follow surgery. Post-operative cognitive performance (verbal and figural memory) has been found to be worse in MRI-negative patients than in patients with lesional MRI (Helmstaedter et al, 2011). Similar results have been obtained in patients undergoing frontal lobe surgery in whom normal MRI was the strongest predictor of seizure recurrence after immediate post-operative seizures (Jeha et al, 2007). The long-term prognosis of epilepsy is characterized by differing patterns, which include the possibility of delayed remission (Sillampaa & Schmidt, 2006) and the chance of response to a new drug even when drug resistance was diagnosed (Luciano & Shorvon, 2007). Achieving seizure remission is the paramount aim of epilepsy surgery. Preservation of functional tissue is mandatory to prevent cognitive impairment. The lower success rate in patients with normal MRI coupled to higher cognitive impairment is the consequence of the resection of non-lesional brain tissue. For these reasons, early surgery should NOT be offered to patients with negative MRI.

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