

034 **NEURAL CORRELATES OF DE NOVO DEPRESSION FOLLOWING LEFT TEMPORAL LOBE EPILEPSY SURGERY: A VOXEL BASED MORPHOMETRY STUDY OF PRE-SURGICAL STRUCTURAL MRI**

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Objective To investigate cerebral grey matter (GM) abnormalities in temporal lobe epilepsy (TLE) patients who develop de novo depression following TLE surgery using voxel-based morphometry (VBM).

Method We retrospectively examined the pre-surgical grey matter (GM) abnormalities in 45 patients with TLE due to unilateral left-sided hippocampal sclerosis using a 1.5 T MRI scanner, which were segmented with optimised VBM parameters using SPM8 software. Grey matter maps were normalised to a sample template using DARTEL. Voxel-wise GM differences between patients that developed de novo post-surgical depression (n=6) were compared with patients with no pre- or postoperative psychiatric diagnoses (n=25), using independent samples t-tests. Analysis of covariance with age and gender as covariates was adopted for the VBM statistics; the level of statistical significance was set at $p < .001$, uncorrected.

Results Reduced preoperative GM in both the ipsilateral thalamic and orbitofrontal cortices (OFC) were significantly associated with the development of de novo depression within 4 years postoperatively. Further analyses revealed that GM

atrophy of these structures was unrelated to a history or frequency of secondary generalised tonic-clonic seizures (SGTCS). We observed no differences in seizure freedom (ILAE 1 vs 2-6) or seizure recurrence (ILAE 2 vs 3-6) between the groups.

Conclusion Although the development of postoperative de novo depression following TLE surgery is likely to be multifactorial, our results suggest that ipsilateral thalamic and OFC atrophy in LTLE patients may play a modulatory role. Structural and functional abnormalities in these areas have also been implicated in primary mood disorders (1). Prospective studies with larger cohorts utilising in vivo imaging techniques are warranted to replicate these results, and further elucidate the neural correlates of de novo postoperative mood disorders.

REFERENCE

- 1 Drevets WC. Neuroimaging and neuropathological studies of depression: implications for the cognitive-emotional features of mood disorders. *Curr Opin Neurobiol.* 2001;240–249