

**Longitudinal Correlation of Preoperative Voxel Based Morphometric Analysis with Post-Surgical Outcomes  
in Patients with Temporal Lobe Epilepsy**

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**Introduction**

The purpose of this study is to evaluate gray matter concentration between patients who are responded to surgical treatments and non-responders with respect to surgical outcomes.

**Methods**

A total of 55 patients with TLE (18-74 age range) underwent either anterior temporal lobectomy (ATL) or Selective Laser Amygdalohippocampectomy (SLAH). On pre-operative MRI, 22 TLE patients were found to have mesial temporal sclerosis (MTS), and 33 had normal findings on MRI. Of MTS cases (MRI positive) 16 patients were responded to surgical treatments and 6 patients were still experienced seizure after surgery within 6 months follow up. With 24 months follow up, 13 patients were remained seizure free and 4 patients had still seizure. In the patients with MRI findings negative 19 patients were responded to surgical treatments and 14 patients were seizure free. Within 24 months follow up, 6 patients remained still seizure free and 13 patients reported with seizures. Note that we only had clinical follow ups of 36 patients with 24 months follow up.

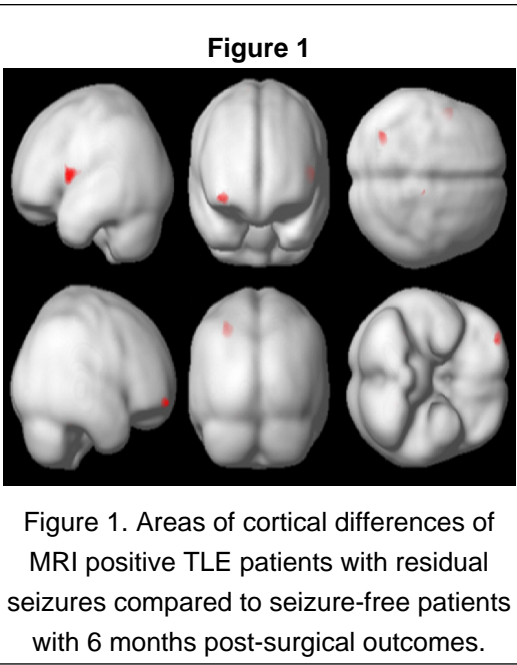
**Results**

Correlations with 6 months post-surgical follow up:

In TLE patients with MRI findings positive, significant differences in GM concentration have been shown between responders and non-responders in 5 different regions. These regions are included contralateral inferior temporal gyrus (50.63mm<sup>3</sup>), ipsilateral middle temporal gyrus (27.00mm<sup>3</sup>), contralateral postcentral gyrus (124.88mm<sup>3</sup>), contralateral supramarginal gyrus (54.00mm<sup>3</sup>) and ipsilateral superior parietal lobule (158.63mm<sup>3</sup>). In TLE patients with MRI findings negative, fusiform gyrus (77.63mm<sup>3</sup>) shows significant differences in GM concentration between two groups.

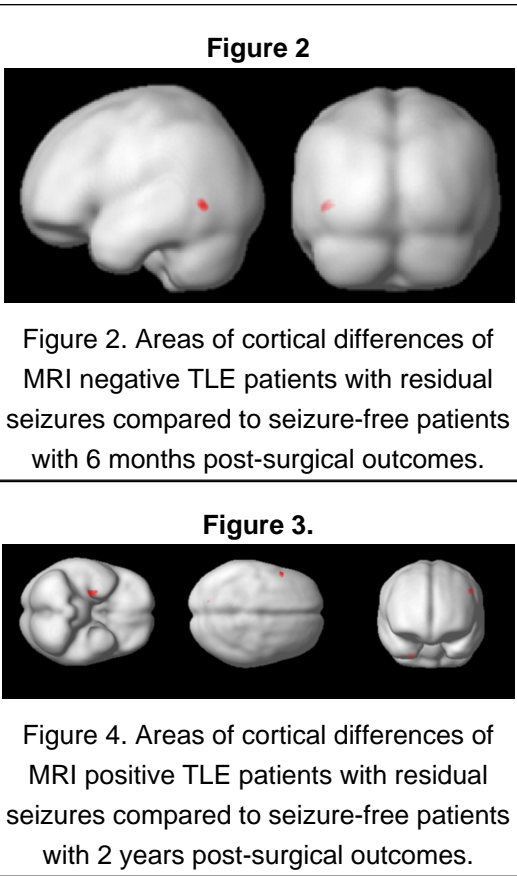
Correlations with 24 months post-surgical follow up:

In TLE patients with MRI findings positive, significant differences in GM concentration have been shown between responders and non-responders in 3 different clusters. These regions are included contralateral inferior temporal gyrus (43.87mm<sup>3</sup>), ipsilateral posterior parietal cortex (47.25mm<sup>3</sup>), and ipsilateral prefrontal cortex (54.00mm<sup>3</sup>). However, In TLE patients with MRI findings negative,



**Learning Objectives**

In this study, we aim to evaluate the use of morphometric analysis as a predictive model for TLE in the setting of MTS. This could be useful in conjunction with other advanced imaging techniques such as DTI and fMRI specially when the MRI findings are negative.



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