A Pilot Study of Magnetoencephalography in Alzheimer’s Disease

Type of Project: Exploratory Clinical Research

Methods: Neuropsychology, Neurology, Magnetoencephalography

Status: Funding secured from internal funds


University of Utah Collaborative Units: Magnetoencephalography Laboratory

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Project Summary:

Patients with Alzheimer’s disease (AD) have slowing of cognitive processing speed. Electroencephalography (EEG) and magnetoencephalography (MEG) measure electrical and magnetic brain activity respectively. They can be used to measure cognitive processing speed at the level of milliseconds, faster than any other modality. Magnetoencephalography may offer an advantage over EEG because it is not as susceptible to scalp artifact and may have less variability. Using a cognitive evoked response potential (ERP) called mismatch negativity (MMN) by magnetoencephalography (thus MMNm), one can measure speed of cognitive processing in Alzheimer’s disease and compare it to normal controls. We hope to apply MMNm in this pilot study to demonstrate that MEG can distinguish between AD patients and normal controls.

Potential Benefits:

Once we demonstrate that MEG can distinguish between AD patients and normal controls, we plan to evaluate this strategy in identifying individuals with Mild Cognitive Impairment (MCI) and normal individuals who are at risk for developing Alzheimer’s disease. This approach may also help us measure the effect of medications for Alzheimer’s disease.