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2016 Part the Cloud Translational Research Funding for Alzheimer's Disease

A Biomarker-Based Trial of Plasmalogen Repletion in MCI/AD

Can a novel oral medication help restore the lipids necessary for nerve cell function that are lost in Alzheimer's disease?

Background

Certain types of lipids (fats) are important for nerve cell health and function. Specific kinds of lipid molecules, called plasmalogens, may also help protect nerve cells from damage by breaking down abnormal proteins into non-toxic fragments. In Alzheimer's disease, plasmalogens may help prevent the build-up of beta-amyloid, a protein fragment that accumulates into amyloid plaques in the brain – a hallmark of the disease. Older individuals and people with Alzheimer's disease have lower levels of plasmalogens in their blood suggesting its possible involvement in the disease process. Therefore, the loss of these specific lipids may serve either as an early, or possibly modifiable, risk factor for Alzheimer's disease.

Research Plan

In their Phase I study, Mitchel Allan Kling, M.D., and colleagues plan to use a new therapeutic to restore levels of plasmalogens in individuals with Alzheimer's disease or mild cognitive impairment (MCI). They have developed a novel man-made lipid that is converted to plasmalogens after it is ingested. The plasmalogens are then transported via the blood into the brain.

Dr. Kling and colleagues will conduct a clinical trial of this new compound in thirty people with a diagnosis of Alzheimer's disease or MCI and low levels of plasmalogens in their blood. The participants will be treated with increasing doses of the molecule over the course of 16 weeks. Blood and cerebrospinal fluid samples will be collected at multiple time points to track changes in the levels of plasmalogens and other biological changes associated with Alzheimer's disease. Dr. Kling and his team hope to identify the safe and optimal dose of the molecule that maintains plasmalogen levels in the range associated with the lowest risk of Alzheimer's disease.

Impact

Identifying and correcting modifiable factors that may contribute to disease could prevent or delay the onset of Alzheimer's. Dr. Kling's use of a novel oral medication to restore important lipids in the brain is a new therapeutic approach to Alzheimer's disease treatment. These results will provide the foundation for future clinical trials to test this new therapeutic in larger numbers of people at the earliest stages of Alzheimer's disease.

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PI

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- Associate Professor of Psychiatry, Perelman School of Medicine, University of Pennsylvania
- Director, Psychiatric Emergency Services, Philadelphia VA Medical Center
- Co-PI, Alzheimer's Disease Metabolomics Consortium

Research Category

- Translational Research & Clinical Interventions

Awards

- This is Dr. Kling's first Association award