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Proof of Mechanism Study of Senicapoc in Mild or Prodromal Alzheimer's Disease

This Phase II clinical trial will examine if the drug senicapoc reduces brain inflammation and preserves cognitive function in people with early Alzheimer's disease

Background

The brain contains numerous cell types. For example, immune cells known as microglia are found in the brain and are thought to play a key role in brain inflammation associated with Alzheimer's disease. Microglia can promote brain inflammation when they become activated by beta-amyloid, a protein fragment at the focus of research into the causes of Alzheimer's disease.

In previous research, John M. Olichney, M.D., and colleagues found that beta-amyloid-induced activation of microglia can be inhibited by a drug known as TRAM-34. TRAM-34 and similar drugs block the flow of sodium and potassium across nerve cells and impact cellular function. In mice with an Alzheimer's-like condition, TRAM-34 helped to reduce brain inflammation, prevent nerve cell damage and improve memory.

Senicapoc, a drug closely related to TRAM-34, has certain properties that allow it enter the brain more easily and stay in the body longer than TRAM-34. Furthermore, the safety of senicapoc was established in previous human clinical trials, in which it was tested as a treatment for asthma and sickle-cell anemia. The ability to "re-purpose" senicapoc for the treatment of Alzheimer's disease may help it more rapidly advance to clinical trials.

Research Plan

Dr. Olichney and colleagues have proposed a Phase II clinical study of senicapoc in 40 people who have early Alzheimer's disease. Thirty of the participants will receive senicapoc daily and 10 will receive placebo. The participants will be treated and monitored for one year. During that time, the researchers will measure each participant's brain structure and cognitive function. They will also obtain samples of blood and cerebrospinal fluid, which will be tested to determine if senicapoc reduces markers of brain inflammation in these individuals.

Impact

This clinical trial will be the first to study whether senicapoc can reduce brain inflammation and help preserve cognitive function in people with early Alzheimer's disease. If successful, the results of this work could set the stage for larger, more comprehensive clinical studies of senicapoc for the treatment or prevention of Alzheimer's disease.

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