MET-FINGER-APOE: Multimodal lifestyle intervention + metformin to prevent cognitive decline

This Phase IIb clinical trial will evaluate whether a combination of lifestyle intervention approaches along with a drug used to treat diabetes may prevent cognitive decline.

**Background**

Research has shown that there is not a single cause of Alzheimer’s and dementia, but rather the disease develops over time as a result of multiple factors such as lifestyle, environment, and genetics. Studies show that a healthy lifestyle may reduce the risk to develop Alzheimer’s and other types of dementia, such as vascular dementia (which is a decline in thinking skills caused by conditions that block or reduce brain blood flow).

Recently, a Finnish study known as FINGER (Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability) led by Dr. Miia Kivipelto showed that a two-year combination of lifestyle intervention approaches including physical exercise, a healthy diet, cognitive stimulation, and monitoring of heart health risk factors - improved cognitive abilities (memory and thinking) in older adults at high risk to develop dementia. This approach is currently being tested globally in the World-Wide FINGERS (WW-FINGERS) network of dementia prevention studies through multidomain lifestyle interventions. Building on these results, Dr. Kivipelto and colleagues will test whether a combination of lifestyle changes and a medication called metformin may further reduce the risk to develop cognitive impairment and Alzheimer’s. Metformin is a safe and effective drug for treating type 2 diabetes. Studies show that individuals with diabetes may be more likely to develop Alzheimer’s and other dementia, and metformin could help prevent the development of these brain diseases through the treatment of diabetes and may have a beneficial impact on the brain. Dr. Kivipelto will test if metformin in combination with healthy lifestyle changes may further help to prevent dementia.
Research Plan
Dr. Kivipelto and colleagues will conduct a Phase IIb clinical trial with 600 participants from United Kingdom, Sweden, and Finland, aged 60-77 years, who are at high risk of developing Alzheimer’s because of their age, genes and lifestyle. This trial, called MET-FINGER-APOE study, will be part of the WW-FINGERS network of dementia prevention studies through lifestyle interventions.

Participants in the study will follow either a lifestyle intervention combination that includes physical exercise, healthy diet, monitoring of heart health risk factors and cognitive training - or usual healthy lifestyle advice recommended by their local health service. The group that receives the combination of lifestyle intervention approaches will be further split into a group that receives metformin and a group that does not. The total trial duration will be for 2 years. The researchers will evaluate the effect of the intervention by administering cognitive tests to the participants. To better understand the potential added effects of metformin, the researchers will perform brain scans as well as evaluate Alzheimer's-related biological markers from blood samples of the participants.

Impact
The study results may provide insights into whether a drug used to treat diabetes can be repurposed along with a combination of lifestyle intervention approaches to reduce the risk of developing dementia. If successful, the study could give rise to larger clinical trials.

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