TITLE

"Comparing eight international cohorts of healthy controls: baseline characteristics and association with biomarkers of Alzheimer's disease and rates of cognitive decline"

APPLICANT'S INFORMATION

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POPULÄRVETENSKAPLIG TEXT

Nowadays, it is possible to detect Alzheimer's disease at a very early stage. This is now possible thanks to different measures or markers that allow the detection of pathological changes in the brain before symptoms are presented. Some of these useful markers are brain images obtained from Magnetic Resonance as well as two proteins measured in the cerebrospinal fluid through lumbar puncture (amyloid-beta and tau proteins). However, the utility of these markers depends on factors such as age, education, presence of other diseases, etc. For instance, it is more difficult to diagnose Alzheimer's disease in a very old person, with very low education, lots of vascular problems, and depression.

There are different large projects in the world that include patients with Alzheimer's disease as well as healthy participants. However, it is possible that patients and participants are not completely comparable across these projects in terms of age, education, presence of other diseases, etc. For instance, if participants in ADNI (a large project from USA and Canada) are older than participants in AddNeuroMed (a large project from Europe), it is possible that they also have more brain atrophy. This will affect the comparability of results obtained from ADNI and AddNeuroMed, two projects that are helping researchers nowadays to develop treatments for Alzheimer's disease.

Therefore, it is important to advance in the study of how these factors such as age, education, presence of other diseases, etc., influence markers for early detection of Alzheimer's disease. It is also important to better understand how all these aspects are associated with memory impairment, the main cognitive dysfunction found in patients with Alzheimer's disease. In this project we will study all these questions. We will compare factors such as age, education, presence of other diseases, etc., in eight international projects to understand the relationship between these factors and the markers for early detection of Alzheimer's disease (i.e. brain images from Magnetic Resonance and amyloid-beta and tau proteins in cerebrospinal fluid). I addition, we will study how these aspects are associated with memory impairment. Importantly, we aim to create tools that help clinicians and researchers to predict whether individuals that are healthy at present can develop cognitive decline and perhaps progress to Alzheimer's disease in future.