Patterns and mechanisms of brain atrophy in healthy aging and dementia: Why is the aging brain susceptible to Alzheimers Disease?

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Name of Fellow

Lisa Kalheim

Institution
Funder

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Contact information of fellow
Country

Norway

Title of project/programme

Patterns and mechanisms of brain atrophy in healthy aging and dementia: Why is the aging brain susceptible to Alzheimers Disease?

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The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

AD | cognitive decrement | amyloid | MRI | PET

Research Abstract
The prevalence of Alzheimer’s Disease (AD) increases sharply from 60 years, reaching about 50% in 90 year olds. At the same time, 50% of healthy elderly report worries about their own memory function. Thus, understanding the neural foundation for cognitiv e decrements in both demented and healthy aging is among the most important tasks for research in neuroscience. At the heart of this question is the role of amyloid protein in neurodegeneration and memory decline in both AD and healthy aging. Current mode ls hold that the influence of amyloid on the brain is largest in very early phases of AD, years before clinical symptoms become manifest, so it is paradoxical that the influence of amyloid on brain atrophy and memory problems in healthy elderly is little researched and with inconsistent results. Progress is hindered by methodological differences and statistically under-powered studies due to very costly data collection. The main objective of this project is to make a leap forward with researchers at the f orefront of aging and AD, by launching a large database including 500 healthy and 500 patients. Focus is on 3 major events common to normal aging and AD, the EBA triad: disturbance of Episodic memory function, reduced Brain integrity and accumulation of A myloid. The database will include measures of brain atrophy (MRI), amyloid (CSF and/ or PiB PET) and memory for asymptomatic elderly and patients with mild cognitive impairment and AD. Based on these biomarkers, cognitive scores and genetic profiles, part icipants will be divided into groups, spanning from very low to extremely high AD risk. This yields a unique possibility to identify commonalities and differences between amyloid and brain atrophy and memory problems across groups with different AD risks. The statistical power of this project to detect effects in healthy elderly is excellent, enabling this novel strategy.

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