

Regional amyloid accumulation predicts memory decline in initially cognitively unimpaired individuals

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Abstract:

Introduction: The value of quantitative longitudinal and regional amyloid beta (A β) measurements in predicting cognitive decline in initially cognitively unimpaired (CU) individuals remains to be determined.

Methods: We selected 133 CU individuals with two or more [11C]Pittsburgh compound B ([11C]PiB) scans and neuropsychological data from Open Access Series of Imaging Studies (OASIS-3). Baseline and annualized distribution volume ratios were computed for a global composite and four regional clusters. The predictive value of A β measurements (baseline, slope, and interaction) on longitudinal cognitive performance was examined.

Results: Global performance could only be predicted by A β burden in an early cluster (precuneus, lateral orbitofrontal, and insula) and the precuneus region of interest (ROI) by itself significantly improved the model. Precuneal A β burden was also predictive of immediate and delayed episodic memory performance. In A β subjects at baseline (N = 93), lateral orbitofrontal A β burden predicted working and semantic memory performance.

Discussion: Quantifying longitudinal and regional changes in A β can improve the prediction of cognitive functioning in initially CU individuals.

Published: 2 August 2021

Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring

<https://doi.org/10.1002/dad2.12216>

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