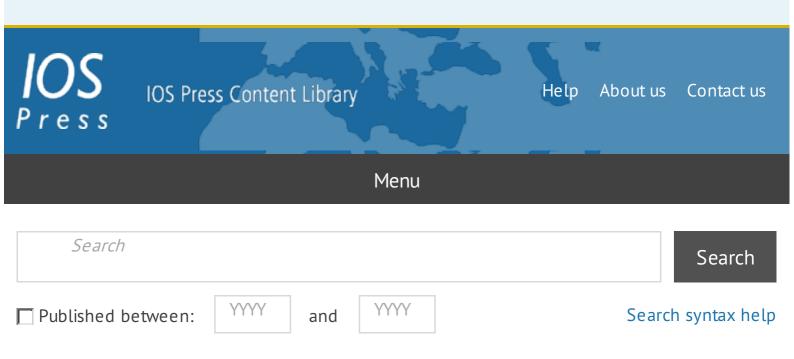
Alzheimer's disease normative cerebrospinal fluid biomarkers validated in PET amyloid-

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Alzheimer's Disease Normative Cerebrospinal Fluid Biomarkers Validated in PET Amyloid-™ Characterized Subjects from the Australian Imaging, Biomarkers and Lifestyle (AIBL) study

Article type: Research Article

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Abstract: Background: The cerebrospinal fluid (CSF) amyloid-**■** (A■)1-42, total-tau (T-tau), and phosphorylated-tau (P-tau181P) profile has been established as a valuable biomarker for Alzheimer's disease (AD). Objective: The current study aimed to determine CSF biomarker cut-points using positron emission tomography (PET) Ax imaging screened subjects from the Australian Imaging, Biomarkers and Lifestyle (AIBL) study of aging, as well as correlate CSF analyte cut-points across a range of PET A⊠ amyloid ligands. Methods: A⊠ pathology was determined by PET imaging, utilizing 11C-Pittsburgh Compound B, 18F-flutemetamol, or 18F-florbetapir, in 157 AIBL participants who also underwent CSF collection. Using an INNOTEST assay, cutpoints were established (A\1-42 > 544ng/L, T-tau < 407ng/L, and P-tau181P < 78 ng/L) employing a rank based method to define a "positive" CSF in the sub-cohort of amyloid-PET negative healthy participants (n=97), and compared with the presence of PET demonstrated AD pathology. Results: CSF A≥1-42 was the strongest individual biomarker, detecting cognitively impaired PET positive mild cognitive impairment (MCI)/AD with 85% sensitivity and 91% specificity. The ratio of P-tau181P or T-tau to A\21-42 provided greater accuracy, predicting MCI/AD with A⊠ pathology with №92% sensitivity and specificity. Cross-validated accuracy, using all three biomarkers or the ratio of P-tau or T-tau to A≥1-42 to predict MCI/AD, reached ■92% sensitivity and specificity. Conclusions: CSF A■1-42 levels and analyte combination ratios demonstrated very high correlation with PET AM imaging. Our study offers additional support for CSF biomarkers in the early and accurate detection of AD pathology, including enrichment of patient cohorts for treatment trials even at the pre-symptomatic stage.

Keywords: Alzheimer's disease, amyloid-■, cerebrospinal fluid biomarkers, positron emission tomography A■ imaging, tau

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