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Abstract Book

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99. Oscar Sotolongo-Grau**ASSESSMENT OF ASSOCIATION BETWEEN CELL BOUND AB40 LEVELS IN BLOOD AND HIPPOCAMPUS VOLUME: THE AB128 PROJECT**

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Background: The identification of early, preferably pre-symptomatic biomarkers and true etiologic factors for Alzheimer's disease is the first step to establish effective primary and secondary prevention programs. Consequently, the search for a relatively inexpensive and harmless biomarker for Alzheimer's disease continues. Despite intensive research worldwide, to date there is no definitive plasma or blood biomarker indicating high/low risk of conversion to Alzheimer's disease.

Methods: MRI imaging and β -amyloid ($A\beta$) levels in three blood compartments (diluted in plasma, undiluted in plasma and cell bound) were measured in 81 subjects (33 MCI, 14 AD, 34 HC). Pearson correlation analyses showed neuroimaging brain region of interests (ROIs) associated to $A\beta$ levels. Two statistical methods were applied to study the major relationships identified: an extensive covariation by APOE, age, sex and creatinine variables, and a meta-analysis stratified by phenotype.

Results: Left hippocampus volume raised as the ROI most correlated to $A\beta$ 40 bound to the blood cell pellets. Observed correlation increased after covariation by age, gender, education, APOE and creatinine (partial cor = -0.38, p-value = 0.0004). The association between both measurements was independent of cognitive status. Left hemisphere entorhinal cortex also seemed related to $A\beta$ cell bound fraction. Plasma $A\beta$ measurements were not related to any brain morphometric measurement.

Conclusions: Association of blood cell-bound $A\beta$ with brain morphometry was much stronger than previously observed for $A\beta$ plasma fractions. If confirmed, this observation will require careful interpretation and must be taken into account for blood $A\beta$ based biomarker development.

Keywords: blood based biomarkers, MRI, Alzheimer's disease