Tittle: Aβ blood levels and Alzheimer disease.

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Abstract:

Background: Until now no Alzheimer's disease (AD) biomarker has been validated as a diagnostic tool. Furthermore some of the most favoured in research are hampered by severe practical pitfalls which almost preclude their incorporation into clinical practice. This has boosted the search for blood markers with encouraging results although still submitted to considerable discrepancy. A possible way to overcome discrepancy is to look for a more complete analysis including several Aβ blood markers.

Methods: In a previous work we measured Aβ-40 and Aβ-42 free in plasma (FP), total in plasma (TP) and cell bound (CB) in groups of healthy control over 65 years old (HC > 65), probable mild cognitive impairment (MCI) and mild-AD patients by ELISA sandwich (Aβ-40 and Aβ-42. Araclon Biotech, Ltd. Zaragoza, Spain).

Results: We reported that several of these blood Aβ markers, including the calculated total Aβ40 + Aβ42 (pool in blood), discriminated between HC > 65, and probable-MCI with high sensitivity and specificity. In the present work we validate those results in a new population sample including these same groups (n = 16) and additionally, HC 45-54, HC55-64 years old, possible-MCI, moderate-AD and severe-AD. In agreement with our previous work, we found that all Aβ blood markers increased in probable-MCI with regard to HC > 65 (except CB Aβ40). These differences reached statistical significance for TP Aβ40, TP Aβ42, CB Aβ42, total Aβ42 and the total pool in blood. Interestingly, we found that total Aβ42 and the total pool in blood measurements were significantly higher in probable-MCI, considered to have less chance to convert to AD. Not significant changes were found in any marker between probable-MCI and mild-AD patients.

Conclusion: These results reinforce the interest of blood Aβ markers for early diagnostic of Aβ pathology, screening of participants and assessment of efficacy in clinical trials of Aβ-targeted drugs.