Proposal For CSF Samples From ADNI Subjects In Years 2 & 3 Of ADNI

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Little is known about longitudinal changes of cerebrospinal fluid (CSF) biomarkers during cognitive decline in neurodegenerative disease progression (3). However, emerging data (1,2) suggest that measuring CSF tau and Abeta may be informative for monitoring progression of dementing disorders including dementia due to AD. For example, a recent study investigated longitudinal changes in the CSF biomarkers total-tau (T-tau), phospho-tau (P-tau) and beta-amyloid (Abeta42) during cognitive decline in 40 memory clinic patients aged 61.3+/-7.6 years, non-demented at baseline who underwent LP and neuropsychological testing at two occasions. The baseline mean MMSE-score was 28.3+/-1.8 and the patients were divided into three groups based on baseline memory functioning including: Severely impaired (SIM), moderately impaired (MIM) and no impairment (NIM). Notably, the investigators reported a significant increase in P-tau in the SIM-group during follow-up, while P-tau in MIM and NIM did not change. Eighty-three percent of the SIM-patients converted to dementia (80% AD), while most MIM- and NIM-patients remained non-demented. T-tau- and Abeta42-levels did not change in any of the memory groups during follow-up. Thus, the investigators concluded that increasing CSF P-tau levels during cognitive decline and conversion to dementia suggest that CSF P-tau may be useful as a longitudinal marker of the neurodegenerative process.

While only preliminary data are now available from these types of studies for AD and mild cognitive impairment subjects, ADNI is in a powerful position to follow up on these preliminary studies to provide more definitive data on the utility of obtaining longitudinal measures of CSF tau and Abeta in the subset of the ADNI cohort who have agreed to LP for baseline and year one of the ADNI study. This could be accomplished by providing financial support to ADNI site PIs to obtain consent from the 150 ADNI participants (i.e. 50 controls, 50 MCI and 50 AD subjects) that have consented to LPs at baseline and year 1 to do a 3rd and 4th LP at visits in year 2 and year 3 of ADNI, as well as the support needed to cover the costs of these additional LPs for the site PIs who wish to participate in this voluntary extension of ADNI CSF studies. Support also will be needed for the Biomarker Core to perform the additional studies on these 300 additional CSF samples from the 150 ADNI subjects who consent to this for year 2 and 3 of ADNI.

References:

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