ELSEVIER

Alzheimer's & Dementia 11 (Suppl 7S) (2015)

Alzheimer's & Dementia

SATURDAY, JULY 18, 2015
ALZHEIMER'S IMAGING CONSORTIUM (IC)
ORAL SESSIONS
IC-01
MOLECULAR IMAGING

IC-01-01 ARE LOW LEVELS OF PIB-PET SIGNAL CLINICALLY SIGNIFICANT?

Sylvia Villeneuve[1,2], Helaine St. Amant[2], Jacob W. Vogel[3], Shawn Marks[2], Miranka Wirth[4], Charles DeCarli[5], William J. Jagust[2], *[1]Northwestern University Feinberg School of Medicine, Chicago, IL, USA; [2]Helen Wills Neuroscience Institute, University of California, Berkeley, CA, USA; [3]University of California Berkeley, Berkeley, CA, USA; [4]Charité –Universitätsmedizin, Berlin, Germany; [5]University of California Davis, Davis, CA, USA. Contact e-mail: villeneuve.sylvia@gmail.com*

Background: In a previous study[1] we suggested that the current SUVR thresholds of ~1.4-1.5 are too high to capture early amyloid accumulation. We showed evidence that by the time a person reaches these thresholds, amyloid is already widespread throughout the cortex and suggested an SUVR value of 1.21 as an optimal cutoff to detect early PIB-PET signal using whole-brain [^{11}C]PIB retention. The goal of this study was to characterize individuals with intermediate levels of amyloid on a variety of demographic, cognitive and brain markers (Table 1). **Methods:** This study included 242 subjects (183 normal older adults and 59 adults with mild cognitive impairment). Group comparisons between PIB- (SUVRs $<$ 1.21), PIB*i* (SUVRs $\geq$ 1.21 and $<$1.4) and PIB+ (SUVRs $\geq$ 1.4) were first restricted to cognitively normal individuals and then repeated in the total sample. **Results:** In normal older adults, group differences were found for age, ApoE4 status and rate of amyloid accumulation. PIB*i* and PIB- individuals were younger than PIB+ individuals, and PIB*i* and PIB+ individuals had a higher frequency of ApoE4 carrier status and a higher rate of amyloid accumulation than PIB- individuals. When the analyses were performed in the total sample, the same results were found. Additionally, PIB+ individuals showed lower cortical thickness in AD-regions[2] as well as lower global cognition (MMSE score) than PIB*i* and PIB-. **Conclusions:** While PIB*i* individuals showed similar rate of amyloid accumulation and ApoE4 status to PIB+, they were comparable to PIB- on the other markers. These results suggest that low levels of PIB-PET signal are clinically relevant and that subjects with SUVR values between 1.21 and 1.4 are early accumulators. [1] Villeneuve et al., AAIC 2014; [2] Wirth et al., JAMA Neurol. 2013

Table 1
Variables of interest

Demographic Markers	Cognitive Markers	Brain Markers
• Age • Gender • Education • ApoE e4 status	• Mini-Mental Status Examination (MMSE) • [1] Memory complaint • [1] Factor Scores (baseline and change data) o Episodic Memory o Executive Function	• Hippocampal Volume • FDG AD-regions • Cortical Thickness AD-regions • Amyloid accumulation[2]

[1]Data only available in 127 cognitively normal older adults.
[2] Data only available in 55 cognitively normal older adults, rate of change in amyloid over 2 time points (3.4 years, 1.4 SD).

IC-01-02 LOCAL AMYLOID-B TOXICITY ON LARGE INTRINSIC BRAIN NETWORKS IN COGNITIVELY HEALTHY ELDERLY

Duygu Tosun, Michael W. Weiner, *University of California San Francisco, San Francisco, CA, USA. Contact e-mail: duygu.tosun@ucsf.edu*

Background: Considerable in vitro and animal data suggests that Aβ, even in the absence of tau tangles, has adverse effects on neuronal dysfunction, supporting the hypothesis that neuronal dysfunction is due in part to direct Aβ toxicity that is not completely mediated by tau. Although previous studies demonstrated the effects of global Aβ burden on the default mode network in cognitively normal elderly individuals, effects of local network Aβ burden on the other large-scale intrinsic connectivity networks (ICNs) are not yet clear in asymptomatic individuals. In this study, we aimed to investigate the effects of both global and local Aβ deposition on various cortical ICNs in older adults with normal cognition. **Methods:** Fifty-three elderly subjects with normal cognition were included. We characterized the association of Aβ burden with intrinsic connectivity changes in a wide range of functional networks, including working memory, attention, motor and perceptual timing, and visual detection networks, as well as resting-state default

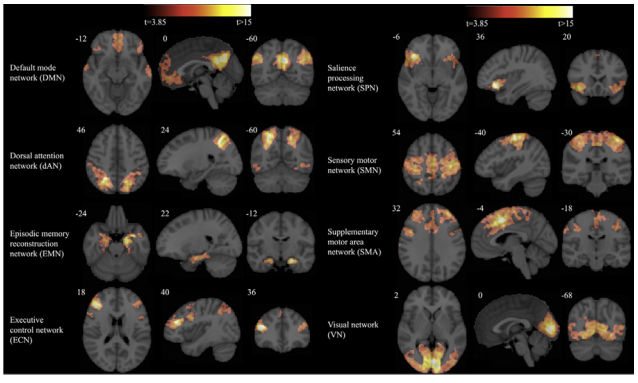

Figure 1. Spatial maps of the ICNs of interest identified by seed-to-voxel based analysis of Aβ– and ApoE ε4 non-carrier subjects.