neuropsychological assessment based on the CERAD protocol, PiB-PET, FDG-PET, volumetric MRI, and quantification for plasma lipid components with apolipoprotein A1 (APOA1) and B (APOB), and were followed up 1 year after. **Results:** Duration of illness was significantly longer in aMCI- than aMCI+ (4.6 ± 2.1 vs. 1.2 ± 1.4 years). After 1 year, no aMCI- subject converted to Alzheimer's disease (AD) dementia, while 26.7% of aMCI+ converted to AD dementia. Brain images of aMCI- individuals were quite different from those of aMCI+, which had typical early or prodromal AD patterns. aMCI- subjects showed decreased regional cerebral glucose metabolism in the right culmen and left fusiform gyrus, and decreased gray matter density in the right middle temporal gyrus, compared with aMCI+ subjects. They also showed decreased left temporal, right inferior frontal and precentral gray matter density compared with CN subjects. Plasma APOA1 level was significantly lower in aMCI- than in both aMCI+ and CN subjects. Plasma APOA1 also showed significant correlation with global cognition measured by MMSE and CDR-SOB, as well as regional brain metabolic changes and atrophy, even after controlling various potential confounders including demographic variables and global cortical PiB retention. **Conclusions:** Our findings suggest that in spite of the similarity in cross-sectional cognitive features, aMCI- has quite different clinical progression pattern compared to aMCI+. While aMCI+ can be regarded as aMCI due to AD process, the cognitive deficits of aMCI- appears to be related with the alteration of cholesterol transport mechanism medicated by APOA1, independent of AD process.

IC-P-034 PREDICTING BETA-AMYLOID DEPOSITION AND COGNITIVE DEFICITS IN HEALTHY ADULTS: A MULTIVARIATE ANALYSIS OF NEURAL PROCESSING DURING AN FMRI FACE TASK

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Background: The current study investigated the relationship between in vivo beta-amyloid (Aβ) deposition, a putative biomarker of Alzheimer's Disease (AD), and patterns of neural activity associated with viewing images of faces. Our goal was to assess the value of functional magnetic resonance imaging (fMRI) as a potential neural marker of underlying AD and possible deficits in cognitive performance. **Methods:** Sample included a total of 50 cognitively healthy adults (MMSE≥26) distributed across three groups: 14 young adult controls (32.7±2.0 years), 18 low Aβ older adults (74.0±8.1 years) and 18 high Aβ older adults (74.1±8.6 years). Participants underwent 18 F-Florbetapir PET imaging to measure Aβ load and functional magnetic resonance imaging (fMRI) to measure neural activation while viewing faces. Additionally, participants underwent a neuropsychological battery to measure performance in different cognitive domains (e.g., working memory, processing speed, episodic memory, reasoning and semantic memory). **Results:** Using multivariate pattern analysis, we found decreased neural activity in fusiform gyrus, a region highly responsive to processing faces, was predictive of elevated amyloid deposition in older adults. Furthermore, expressing this pattern of dampened neural activation was significantly associated with deficits in reasoning, beyond the effects of age. Finally, we were able to use the neural patterns to predict A β status of participants not included in the analysis, showing that the current model has potential to generalize to a much larger population of healthy adults. **Conclusions:** Findings indicate that neural dysfunction in fusiform could be a helpful marker to estimate likelihood of underlying AD neuropathology and cognitive deficits when A β status is unknown. Therefore, fMRI in conjunction with multivariate analysis may be a powerful tool for detecting neural dysfunction in preclinical stages of AD.

IC-P-035 REGIONAL WHITE MATTER LESIONS AND PIB RETENTION IN COGNITIVELY IMPAIRED ELDERLY

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Background: Increased white matter lesions (WML) are common in the elderly and associated with increased risk of cognitive impairment. Pathological studies indicate associations between WMLs and small vessel ischemic disease. Recent imaging studies suggest that some component of MRI-detected WM change may be due to axonal degeneration secondary to cortical neurodegenerative disease. **Methods:** 78 cognitively impaired subjects (MMSE 14-30) were recruited through the University of Michigan Cognitive Disorders Clinic for brain MRI and 11C-PiB imaging. Subjects with a Hachinski scale score >4 or meeting NINDS-AIREN vascular dementia criteria were excluded. MRI's from 6 subjects were not evaluated due to artifact. Parametric PiB distribution volume ratio (DVR) images were used to obtain DVR values for 7 cortical regions of interest in the following areas: lateral frontal, medial frontal, posterior parietal, posterior cingulate, anterior cingulate, lateral temporal, and occipital lobe. A PiB index was derived by averaging the mean DVR of these 7 ROI's. WML volumes were log transformed to address skewed distributions. Brain volumes were adjusted for intracranial volume. PiB index was examined as High and Low values. Logistic regressions determined associations between PiB binding and regional WML volume. A final logistic regression analysis examined High/Low PiB DVR index in relation to WML volume, adjusted for relevant variables. **Results:** Subject diagnoses were grouped into those with memory impairment (MI): amnestic mild cognitive impairment (aMCI) and Alzheimer's disease (n=34), and those without significant memory impairment: Frontal temporal dementia, Lewy Body Dementia, and non-amnestic MCI (n = 38). Average age was 68.4. High PiB index was associated with periventricular (PV) but not deep, WML volume. In a final logistic regression, high PiB index was associated with a diagnosis of MI ($p = 0.002$), decreased gray matter volume ($p = 0.06$) and greater PV WMH volume ($p = 0.04$). PiB index was not associated with age or dementia severity. **Conclusions:** In a cognitively impaired cohort without significant history of cerebrovascular disease, greater amyloid binding was positively associated with AD/aMCI diagnosis and PV WMH burden. Regional WMH volumes may be helpful as a radiographic biomarker for identification of those at increased risk of having cortical AD pathology.

IC-P-036 ARTERIAL SPIN LABELING CEREBRAL BLOOD FLOW AND BRAIN VOLUMES IN DEMENTIA-FREE ELDERLY

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Background: Decreased brain perfusion, as shown by SPECT imaging, is associated with increased risk of cognitive decline and dementia. Noninvasive measurement of cerebral blood flow (CBF) using arterial spin labeling (ASL) MRI provides an opportunity to examine how CBF may lead to key neurodegenerative changes (e.g., brain volume loss, high WMH burden) associated with increased risk of dementia. In this context, we examined ASL CBF, as a potential functional marker of increased neurodegenerative risk in nondemented elderly. **Methods:** 49 non-demented volunteers (mean age 85, MMSE 28.5) underwent 3T MRI (Siemens Trio), including structural and Q2TIPS PASL sequences and detailed cognitive and neurological assessment. Automated WMH volumes were obtained from FLAIR images using a customized routine, segmented into deep and periventricular WMHs and log transformed when necessary to account for skewed distributions. Brain, hippocampal, and WM volumes were obtained using FreeSurfer 5.1. WMHs were subtracted from total WM to obtain normal appearing white matter (NAWM) masks, which were co-registered, along with cortical and subcortical gray matter maps to M0 ASL sequences to obtain regional CBF values (ml/100g/min). Differences in total WMH and NAWM CBF were examined using matched pairs t-tests. Multivariate linear regressions determined associations between CBF, brain volumes, and subject characteristics. Multilinear regression analyses examined relationships between regional CBF and brain volumes, adjusted for relevant variables. **Results:** Decreased WM