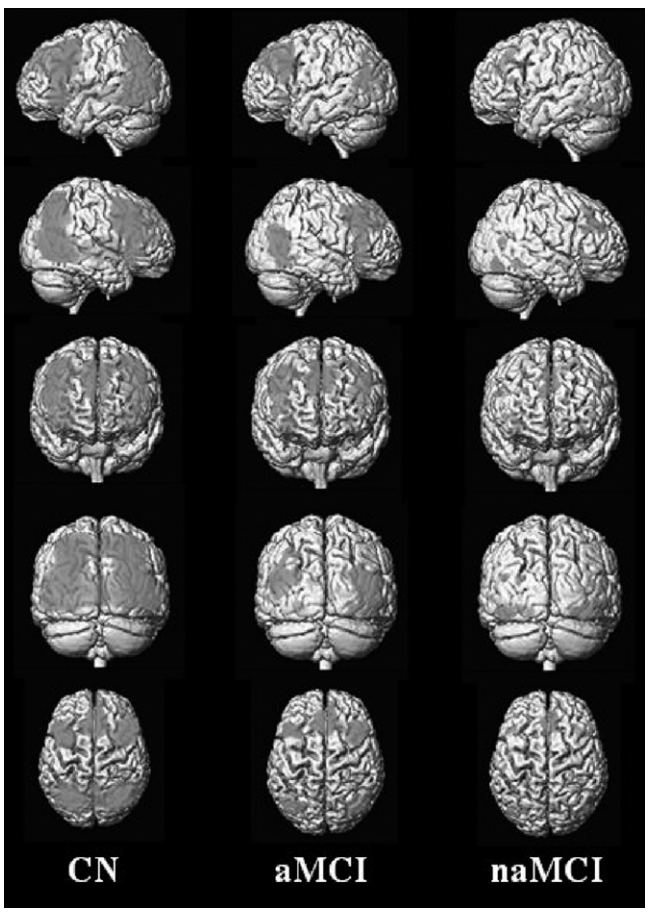
Background: Investigators are increasingly focusing their attention on changes in extra-temporal circuitry in amnestic MCI (aMCI), with growing evidence for disruption in parietal and frontal functionality. The concept of MCI has recently evolved to include non-amnestic syndromes (naMCI) so very little is known about functional changes in these subjects. Our objective was to compare fMRI activation in cognitively normal elderly (CN), aMCI, and naMCI subjects. **Methods:** Twenty-nine CN, 19 aMCI, and 12 naMCI subjects completed a block-design recognition memory paradigm at 3.0T. Subjects were instructed to respond to color photographs they recognized from a previous encoding task completed earlier in the same scanning session. The threshold for significance was set at $p < .001$ (uncorrected) for within group analysis of fMRI activation using SPM2. **Results:** CN subjects activated a network that included the medial and lateral frontal lobes, anterior cingulate, thalamus, posterior hippocampus, fusiform gyrus, posterior cingulate, and lateral temporal-parietal-occipital lobes in a bilaterally symmetric manner (figure). Amnestic MCI subjects activated the same regions (except the thalamus) but with less magnitude. Non-amnestic MCI subjects activated the same regions as CN and aMCI (except the thalamus and posterior cingulate) but with less magnitude still than either CN or aMCI. There were no areas in which the naMCI group showed increased activation compared to aMCI. There were also no areas in which the aMCI and naMCI groups had more activation than CN. **Conclusions:** The network activated by a recognition memory paradigm is largely similar among CN, aMCI, and naMCI. However, the strength of activation is ordered CN > aMCI > naMCI. We interpret the decreased activation observed in naMCI on what is nominally a "memory" task to represent non-memory components of the task in the domains of attentional and visuospatial function.



IC-P1-038 NEUROIMAGING STUDIES ON MILD COGNITIVE IMPAIRMENT AND DEMENTIA IN A COMMUNITY—IMPLICATIONS FOR CLINICAL PRACTICE: THE OSAKI-TAJIRI PROJECT (1)

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Background: The Osaki-Tajiri Project is a community-based stroke, dementia, and bed-confinement prevention program in Osaki-Tajiri, northern Japan. The project aims a comprehensive system for MCI and dementia based on an integrated viewpoint of neurologic, epidemiologic and neuroimaging viewpoints. I herein present recent neuroimaging findings as part of the project. **Methods:** MRI: Randomly-selected 497 participants aged 65 years+ from among the 1,654 residents received MRI to demonstrate different MRI and cognitive findings among normal aging, MCI, and early AD. We used the 1.5T-MRI (SIERRA, GE-Yokogawa, Japan) and the T1- and T2-weighted images were visually assessed. IMP-SPECT: Using the IMP-SPECT, regional cerebral blood flow was calculated for MCI adults. The region of interest (ROI) analysis was performed using 3DSRT software. FDG-PET: We investigated the effect of donepezil for psychiatric symptoms in patients with Dementia of Lewy bodies. Using a model SET 2400 scanner (Shimazu, Kyoto, Japan) and the autoradiographic FDG method, regional glucose metabolism was calculated. Donepezil-PET: We evaluated longitudinal changes by orally administered donepezil with clinical effects. After administration of [^{11}C] donepezil, a dynamic scan was performed for 60 min. Standard uptake value images were obtained by normalizing tissue concentration by injected dose and body mass. The distribution volume was calculated by Logan's graphical analysis. **Results:** MRI: We found that MCI adults showed strategic cerebrovascular diseases with correlations to impaired executive functions. IMP-SPECT: We found that impaired memory and executive function were correlated with decreased cerebral blood flow in the hippocampus and the frontal lobe, respectively. FDG-PET: After donepezil treatment, visual hallucinations were improved with the changes in occipital glucose metabolism. Donepezil-PET: The 'responders' demonstrated higher distribution volume values at baseline and greater reduction rate. **Conclusions:** Community-based neuroimaging researches provide many clinical implications for MCI and dementia. Psychosocial interventions or clinical trials of new drugs are available in our comprehensive system for MCI and dementia.

IC-P1-039 EARLY HIPPOCAMUS HYPERMETABOLISM IN ALZHEIMER'S DISEASE AND DOWN SYNDROME MOUSE MODELS

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Background: Cognitive studies have established that the hippocampal formation is the first brain structure targeted by Alzheimer's disease (AD). A complex structure, the hippocampal formation is made up of separate but interconnected subregions. functionally organized as a circuit. **Methods:** Here, we used a high spatial resolution fMRI variant that allows the assessment of cerebral blood volume (CBV) maps as measurement of *in vivo* basal hippocampal subregional metabolism in two mouse models of AD and Down syndrome (DS) model. The AD models have different promoters (J20 and TgCRND8) but both carry the same human gene mutations that cause familial AD. The DS model (Ts65Dn) is trisomic for the segment of murine chromosome 16, extending from the APP gene to the distal telomere. **Results:** In the hippocampus of 3 month old J20 mice, CBV values were higher than in controls, mainly in the subiculum ($F=3.7$, $p=0.021$) and in CA3 ($F=3.2$; $p=0.026$). TgCRND8 mice were imaged at 2.5 months of age, and demonstrated a similar pattern of hippocampal