## P1-338 THE CONSISTENCY OF HYPOMETABOLIC BRAIN VOXELS IN PROBABLE ALZHEIMER'S DISEASE AND AMNESTIC MILD COGNITIVE IMPAIRMENT PATIENTS FROM THE ALZHEIMER'S DISEASE NEUROIMAGING INITIATIVE

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**Background:** Fluorodeoxyglucose positron emission tomography (FDG-PET) studies find characteristic patterns of cerebral hypometabolism in probable Alzheimer's disease (AD) and amnestic mild cognitive impairment (MCI) patients. To define regions-of-interest (ROIs) or voxel-based search regions for future studies use, it would help to characterize the consistency of hypometabolic brain voxels in these patient groups. The objective of this study is to characterize the consistency of hypometabolic brain voxels in AD and MCI patients from the AD Neuroimaging Initiative (ADNI) using statistical parametric mapping (SPM) and bootstrap resampling. **Methods:** Batched SPM5 was used for each of 1000 bootstrap iterations to compare FDG images from 74 probable AD patients and 142 amnestic MCI patients to those from 82 normal controls (NC). Hypometabolic voxels were defined using uncorrected $P \leq 0.005$ for each SPM5 run. We examined the map formed with hypometabolic voxels detected at a specific percentage of times or higher over the 1000 runs. **Results:** Compared to NC, AD was associated with hypometabolic voxels in extensive posterior cingulate/precuneus, parietotemporal and frontal regions $\geq 1\%$ of the 1000 runs, many fewer voxels from frontal regions and only slightly fewer voxels from the posterior regions in at least 50% of runs, and no voxels from the frontal and only slightly fewer voxels from the posterior brain regions in at least 90% and 100% of runs. In comparison with NC, MCI was associated with hypometabolic voxels in extensive posterior cingulate/precuneus, parietotemporal and frontal regions in at least 1% of the 1000 runs, many fewer voxels from these regions in at least 50% of runs, restricted to only regions of posterior cingulate/precuneus and medial frontal cortex in at least 90% of runs, and only a few voxels from the posterior cingulate/precuneus in 100% of runs, providing empirical support for the more heterogeneous nature of the amnestic MCI group. **Conclusions:** Bootstrap analysis provides an alternative to the parametric family-wise error approach to examine the consistency of hypometabolic brain voxels in patients with AD and amnestic MCI. It also provides a foundation for identifying posterior cingulate/precuneus and parietotemporal ROIs or search regions for future FDG PET studies of AD and MCI.

## P1-339 MEDIAL TEMPORAL LOBE ATROPHY IN VASCULAR DEMENTIA: VISUAL TEMPORAL LOBE RATING SCALE

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**Background:** Medial temporal lobe atrophy (MTA) as assessed by MRI can be measured in several ways. Most of all, visual rating scale is a quick and easy measurement. MTA is a sensitive marker for Alzheimer's Disease, but not specific. It has been documented in other dementias including vascular dementia (VD). This study is to evaluate the degree of MTA in VD patients using a standardized visual rating scale and to suggest the importance of the possible role of MTA in VD. **Methods:** Twenty-five VD, 32 AD and 26 non-demented patients underwent a coronal three-dimensional magnetization prepared rapid gradient echo brain MRI sequence. MTA was rated visually using a 5-point rating scale from 0 (no atrophy) to 4 (severe atrophy). **Results:** The mean summed MTA score was 5.39 in AD, 2.16 in VD and 0.56 in non-demented patients. The patients with VD showed significantly smaller medial temporal volumes than those with non-dementias measured visually but they were more severe in Alzheimer's disease and in left side. Additionally, MTA of left side score was significantly associated with age. **Conclusions:** Medial temporal volumes measured visually are smaller in size in patients with VD although not to the same extent as AD. This suggests MTA in VD patients may be associated with pre-existing Alzheimer's disease.

## P1-340 POSTERIOR CINGULATE CORTEX ATROPHY AND REGIONAL CINGULUM DISRUPTION IN MILD COGNITIVE IMPAIRMENT AND ALZHEIMER'S DISEASE

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**Background:** This study aimed to investigate the atrophy of the posterior cingulate cortex (PCC) and medical temporal lobe (MTL) structures (i.e., the entorhinal cortex (ERC) and hippocampus) and the regional disruption of the cingulum bundle in mild cognitive impairment (MCI) and Alzheimer's disease (AD) patients. The relationships between atrophy of these structure and regional cingulum disruption were also explored. **Methods:** Three-dimensional MRI and diffusion tensor imaging were applied to 19 MCI, 19 probable AD patients, and 18 normal controls (NC). Fractional anisotropy (FA) values were obtained from three different regions of the cingulum. **Results:** Both MCI and AD patients showed decreased PCC volumes compared with NC. ERC atrophy was also significant in AD and MCI, while hippocampus atrophy was significant only in AD. MCI patients showed a significant FA decrease in the parahippocampal cingulum (PH-C), whereas AD patients had lower FA values in the posterior cingulate cingulum (PC-C) and PH-C, as compared with NC. However, the middle cingulate cingulum (MC-C) showed no significant FA differences between groups. Moreover, the volumes of MTL structures were significantly correlated with PH-C and PC-C FA values. **Conclusions:** In terms of PCC functional deficit in MCI or early AD, our results support both the direct effect of PCC atrophy itself and the indirect effect of cingulum fiber degeneration secondary to MTL atrophy.