Relationship Of MoCA Assessment With Hypometabolic Region Of 18F-FDG PET/CT In Prodromal Alzheimer Disease

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This study identifies neuropsychological and neuroimaging characteristics between normal and newly diagnosed prodormal Alzheimer disease (Prd-AD) patients. All subjects underwent MoCA assessment with Prd-AD patients showed onset of an episodic memory deficit, and fulfilled the National Institute of Aging-Alzheimerâ€™s Association criteria for probable AD with majority of the subjects (21/22) underwent the 18F-FDG PET/CT brain imaging. The subjects consisted of 6 males and 16 females aged 60 to 79 years old (mean+SD~1.55+0.596) with years of formal education (mean+SD~9.95+2.734). All subjects provided written consent prior to the inclusion in the study. Normal brain template were spatially normalized and smoothed into the MNI space using the Statistical Parametric Mapping (version SPM12) software and Matlab version 8.1. A voxel-by-voxel statistical analysis of hypometabolic region in Prd-AD were done by comparing one patientâ€™s scan to the normal brain template. The default setting were set at nonlinear basis function: 7 x 8 x 9; number of iterations: 16; bounding box:-78 80, -112 82,-100 90; regularization: medium; voxel sizes 2 x 2 x 2 mm3; smoothed and warped images were done by adding a Gaussian filter of 12 mm FWHM. Chi-square test and analysis of variance found no significant differences in sex, age, years of education with assessment domain in MoCA for normal subjects but there was a significant difference in PrD-AD patients in term of years of education with attention p=0.028, semantic fluency p=0.019, orientation skill p=0.010. In conclusion, 18F-FDG PET/CT brain images showed that majority of the PrD-AD patients had mild cerebral atrophy at bilateral temporal lobes with hypometabolism in frontal, medial and bilateral temporo-parietal lobes. The PrD-AD exhibited hypometabolism in the parietal lobe, lateral temporal cortex and precuneus seen in 18F-FDG PET/CT provide a complementary information to distinguish PrD-AD from mild cognitive impairment clinically diagnosed via MoCA assessment that has overlapped symptoms.