

Searching for Correlations Between Results of Psychological Tests and FDG-PET as Well as Spectroscopic Metabolites From Posterior Cingulate Gyrus in Patients with MCI.

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Background: The aim of the study was to search for correlations between the results of psychological tests and FDG-PET as well as spectroscopic metabolites from the posterior cingulate gyrus (PCG) in patients with amnesic (aMCI) and non-amnesic MCI (naMCI).

Material and Methods: The study group consisted of 35 aMCI, 16 naMCI and 20 control subjects matched for age, sex and years of education. All subjects underwent a wide range of psychological tests including MMSE, CDR, TYM, DEMTEC, CDR, FAS, IADL and GDS as well neuroimaging brain studies including FDG-PET with the evaluation of glucose metabolism and magnetic resonance spectroscopy (MRS) with the evaluation of several metabolites such as NAA (neuronal marker), choline (marker of myelin turnover) and myoinositol (marker of gliosis). The results of FDG-PET and the levels of MRS metabolites obtained from PCG were compared between the subject groups and then correlated with the scores of psychological tests using Pearson's coefficient.

Results: Compared to CG, both aMCI and naMCI subjects showed significantly lower levels of glucose metabolism and NAA within PCG. In the aMCI subgroup the results of FDG-PET studies revealed significant negative correlations with the scores of TYM ($p=0.17$, $r=-0.48$) while in the naMCI subgroup lower levels of NAA correlated with lower scores in DEMTEC.

Conclusions: In both aMCI and naMCI metabolic changes within PCG such as glucose hipometabolism and decreased neuronal activity correlate with the results of single psychological test.