MRI WHITE MATTER HYPERINTENSITIES (WMH) IN PARKINSON’S DISEASE DEMENTIA (PDD) - THE ROLE OF VASCULAR, METABOLIC AND GENETIC FACTORS

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Introduction: The pathogenesis of PDD remains unclear. WMH may contribute to non-dopaminergic Parkinson’s Disease (PD) symptoms as dementia and gait disorders. Aim: To assess the role of WMH in PDD vs PD and the possible role of homocysteine (Hcy), metabolic and genetic factors. Methods: N=192 PD patients and N=184 age and sex matched healthy controls (HC) were included and compared in terms of vascular, metabolic (including Hcy) and genetic risk factors. Battery of tests was used to separate a group of PDD according to Emre et al. criteria. 1.5 T MRI scans were assessed by blind neuroradiologist with the use of visual scales for WMH of Wahlund et al. and Erkinjuntti et al. Genetic testing included polymorphisms of MTHFR, COMT, SLC19A1 genes related to Hcy metabolism. Results: 29.7% of patients fulfilled the criteria of PDD. Significantly higher Hcy plasma levels were noted in PD and PDD vs HC groups, and in PDD vs PD. Vascular risk factors were more frequent in HC than in PD group. Multivariate regression analysis showed that WMH (Erkinjuntti), increased Hcy, decreased folate and vit.B12 levels were independent risk factors for PDD. The frequency of homozygous COMT rs4680G and rs4633C allele carriers was significantly decreased in PD vs HC (but not PDD) patients, but there were no significant differences in MTHFR and SLC19A1. Higher Hcy levels were associated with MTHFR 677C T polymorphism. Conclusions: WMH along with Hcy, folate, vit.B12 levels may contribute to cognitive decline in PD. MTHFR polymorphism along with levodopa therapy may contribute to higher Hcy levels in PD patients.