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The association between BDNF gene polymorphisms and cerebrospinal fluid biomarkers in alzheimer's disease

Alzheimer's disease is irreversible neurodegenerative progressive disorder, with complex and multifactorial etiology and the most frequent cause of dementia worldwide. The more frequent form is a sporadic or Late-Onset AD (LOAD). Besides older age, other numerous risk factors for LOAD are various risk genotypes, and among them are genes for Brain Derived Neurotrophic Factor (BDNF) and its receptor Tropomyosin-related kinase B (TrkB), that code proteins involved in modulation of brain plasticity, neuronal growth, survival, function, regeneration but also apoptosis. Reduced levels of the central and peripheral BDNF have been found in various neurodegenerative and psychiatric disorders, including LOAD. Risk factors for LOAD might provoke earlier onset, duration, severity and progress of AD. At present there is no cure for AD. Therefore a quest for validated, specific and sensitive biomarkers is an unmet need of the AD research. The aim of the study was to evaluate the association of BDNF (rs6265, rs11030104, rs7934165, rs1519480, C270T) and TrkB (NTRK2) gene polymorphisms with the Cerebrospinal Fluid (CSF) biomarkers (Aβ1-42, total tau, p-tau181, p-tau199, p-tau231 and the visinin-like protein VILIP-1 (VILIP-1) of LOAD. The diagnosis of probable LOAD (N=114) was made according to the DSM-IV and the NINDS-ADRDA criteria. Our results revealed significant differences in total tau, p-tau181 and VILIP-1 concentrations in patients subdivided according to the BDNF rs6265, rs11030104, rs11030104, rs7934165 and C270T genotypes and different p-tau181, p-tau199 and VILIP-1 concentration in carriers of the NTRK2 genotypes. These results reveal a significant association between BDNF and CSF biomarkers in LOAD.

Biography

Nela Pivac is Senior Scientist, re-elected, at the Ruđer Bošković Institute (RBI) in Zagreb, Croatia and Associate Professor at the Interdisciplinary PhD study in Osijek University. She is Associated Editor of *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, Head of the Laboratory for Molecular Neuropsychiatry, main Editor of the RBI Annual report, and leader of numerous national and international projects. She has won 4 state awards for scientific achievements and published 139 scientific papers and 38 chapters in the books, cited 2948 times, H-index=32 and serves as a Reviewer for domestic and international projects and numerous reputed journals.

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