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IMPLICATION OF GENETIC POLYMORPHISMS AND CHANGES IN EXPRESSION LEVELS OF PROTEINS REGULATING NEURONAL PLASTICITY AND APOPTOSIS IN SCHIZOPHRENIA DISORDER

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Introduction: Pathologic changes in neuronal plasticity and apoptosis are important factors influencing alterations in synaptic transmission and impaired cognitive function, characteristic features of schizophrenia. Brain derived neurotrophic factor (BDNF), complexin-2, and annexin A-5 are known as members of regulatory pathways responsible for maintenance of neuronal plasticity and apoptosis.
Objectives: The study was focused on assessment of possible association of functional single nucleotide polymorphisms (SNPs) and expression levels of BDNF, complexin-2, and annexin A-5 with schizophrenia.
Aims: For this purpose we investigated functional polymorphisms and plasma levels of these proteins in schizophrenia-affected neuroleptic-treated and neuroleptic-free patients and healthy controls.
Methods: DNA samples were genotyped by polymerase chain reaction with sequence-specific primers. Plasma levels of BDNF, complexin-2, and annexin A-5 were measured with an enzyme-linked immunosorbent assay. The significance of differences between allele and phenotype frequencies in study groups was determined using Pearson's $\chi 2$ test. For evaluation of intergroup differences in the levels of BDNF, complexin-2, and annexin A-5, both parametric and non-parametric statistics were used. The assessment of correlation between the measured parameters within each group was also performed. P-values less than 0.05 were considered significant.
Results: In patients with schizophrenia, as compared to controls, the carriers of mutant alleles of the functional polymorphisms of BDNF, complexin-2, and annexin A-5 genes were overrepresented, and the blood levels of these proteins were altered.
Conclusions: Functional polymorphisms of genes encoding BDNF, complexin-2, and annexin A-5 proteins are associated with schizophrenia resulting in altered expression levels of these proteins upon this disorder.

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