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GENETICS OF SCHIZOPHRENIA AND BIPOLAR DISORDER

P. Pregelj
University Psychiatric Hospital Ljubljana, Ljubljana, Slovenia

According to recent knowledge there are probably multiple susceptibility genes involved in patophysiology of schizophrenia and bipolar disorder, each of small effect, which act in conjunction with environmental factors. These genes could influence synaptic plasticity, neurodevelopment and neurotransmission. There are an estimated 4,000 genes involved in the complicated communication between brain cells. However, overlapping of candidate genes between both disorders was reported. Recent studies revealed that random mutations not inherited from either parent play a role in schizophrenia. The relation between psychopathological events, the phenomenology of the trauma and neurobiological changes related to schizophrenia and bipolar disorder is not totally understood. The symptoms of schizophrenia are believed to be triggered by stress-induced changes in neurobiological systems representing an inadequate adaptation of neurobiological systems to exposure to stressors. Recent studies suggest that epigenetic mechanisms may play an important role in the interplay between stress exposure and genetic vulnerability also in humans. In preclinical studies it was first suggested that epigenetic mechanisms may be involved in the modulation of gene expression in response to stressful stimuli. Recently, epigenetic differences in a neuron-specific glucocorticoid receptor (NR3C1) promoter between postmortem hippocampus obtained from suicide victims with a history of childhood abuse and those from either suicide victims with no childhood abuse or controls were found, indicating the involvement of these mechanisms in human adaptation to stress. Future research could lead to prenatal screening for both disorders, and for new, more personalized approaches to treating people depending upon their genetic profile.

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