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Expression Alteration of Disrupted in Schizophrenia 1 (DISC1) Gene, a Potential Peripheral Marker for Schizophrenia and Paranoid Personality Disorder

Arvin Haghighatfard
Department of Biology, Tehran North Branch, Islamic Azad University, Tehran, Iran

Abstract

Introduction: Schizophrenia (SCZ) is a major psychiatric disorder with unclear etiology or biological diagnosis. Paranoid Personality Disorder (PPD) is a type A personality disorder characterized by paranoia and generalized mistrust. Disrupted in schizophrenia 1 (DISC1) is a gene located on human chromosome 1 that is involved in neurodevelopment of brain. Variations and translocations in this gene were found associated with schizophrenia and other psychiatric disorders. Present study aimed to evaluate the expression alteration of DISC1 gene in peripheral blood of SCZ and PPD patients and its correlation with clinical features.

Keywords

Schizophrenia; Paranoid personality disorder; DISC1; Gene expression.

Introduction

Schizophrenia (SCZ) is a major neuropsychiatric disorder with estimated 1% prevalence worldwide. Etiology of schizophrenia is unknown, and diagnosis is depending only on descriptive symptomatic and psychiatric interviews. On the other hand, SCZ shows great symptomatic heterogeneity in presence and severity of positive, negative and cognitive symptoms, which lead to so much complexities in diagnosis and treatment of patients [1,2]. Positive symptoms are included hallucinations, delusions and paranoia, negative symptoms are included affective flattening, lack of motivation, poor speech and social withdrawal and cognitive impairments comprise attention deficits disrupted memory functions and sever impairments in executive functions [3]. Clinical symptoms of schizophrenia mostly onset, during adolescence or early adulthood, that may support the evidences about neurodevelopmental disturbance role in pathophysiology of SCZ. Schizophrenia and related complex psychiatric disorders may represent the end point of several different pathogenic pathways. Post mortem studies of schizophrenia could strength neurodevelopmental model due to detected pre-existing morphological abnormalities in the brains of schizophrenic patients at the onset of the condition. In addition, psychiatric reports show that schizophrenics demonstrate several behavioral abnormalities and executive function deficiencies in childhood years before the onset of symptoms [4]. Paranoid personality disorder (PPD) is a type A personality disorder characterized by paranoia and a pervasive, longstanding suspiciousness and generalized mistrust of others. Prevalence of Paranoid personality disorder was estimated about 0.5% to 2.5% in general population in different countries. No clear etiology or molecular mechanism was suggested for PPD but the heritability of this disorder is high.

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Subjects were given an explanation on the aim of the study. Finally, before the beginning of study written informed consent was provided according to the Declaration of Helsinki. The study was approved by central ethical committee of Islamic Azad University in Tehran. Sampling and gene expression evaluation Blood samples (5 ml) were collected from the cubital vein without tourniquet using PAXgene blood RNA tubes (Cat No762165) between 10.00 and 11.00 h and RNA extraction started immediately after sampling. Total RNA was extracted from peripheral blood samples according to the column based standard protocols of the RNA Purification kit (GeneJETTM RNA Purification Kit#K0732, Fermentas, Latvia). Total RNA .was treated with DNase to prevent the contaminating genomic DNA using DNase Treatment and Removal Reagents (DNase I, RNase-free (#EN0521) Fermentas, Latvia), according to the manufacturer's protocol. The quality and integrity of extracted RNA was examined by gel electrophoresis and UV spectroscopy, and sampling repeated for subjects with lowquality RNA in the first sample.

Then cDNA was synthesized with a Transcription First Strand cDNA Synthesis Kit (RevertAid Premium First Strand cDNA Synthesis Kit #K1652, Fermentas, Latvia) according to the manufacturer's protocol.

References

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E mail: arvinland@yahoo.com

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