INTRODUCTION: Previous studies of first-episode psychosis (FEP) have revealed widespread loss of cortical tissue. Although tissue loss occurs in all brain sites, ventricular enlargement and fronto-temporal tissue loss are less pronounced in FEP in contrast to chronic patients. These changes in tissue morphology are the first evidence for the disease. In a study involving 15 adolescent and young adult patients, those with FEP were found to have significantly lower plasma BDNF levels compared to healthy controls. In untreated patients with FEP, low hippocampal volume was correlated with low BDNF levels. The aim of the present study was to compare BDNF levels between adolescent patients with FEP and matched healthy controls. Furthermore, the present study evaluated the relationship between symptom severity and BDNF levels.

METHOD:

Study Sample: The study was conducted in the Department of Pediatric Psychiatry at Dicle University Training and Research Hospital. The study data were collected between February 2012 and February 2013. A total of 26 adolescent patients aged between 11 and 17 years who had not received prior therapy and who were diagnosed with psychosis according to the DSM 4 (acute psychosis, schizophréniform disorder) and 26 age- and gender-matched healthy adolescent control subjects aged between 11 and 17 years who did not have a medical or neurological disorder were included in the study. The parents of the patients provided informed consent for all study participants. The Non-interventional Clinical Research Ethics Committee at Dicle University Faculty of Medicine reviewed and approved the study protocol.

Study Procedures: Sociodemographic features of the participants were recorded and a clinical data form was completed. A structured psychiatric interview (K-SADS-PL and PANSS) was conducted with the participants. The clinical global impression (CGI) was used to evaluate disease severity. Finally, a 2 ml venous blood sample was obtained for biochemical tests.

Forms and Scales:

Sociodemographic Data and Clinical Data Form: This form contains questions regarding age, gender, education level, as well as the age, education level and occupation of the parents, consanguinity between parents, number of siblings, birth order among siblings, history of psychiatric disorder among family members and relatives, family history of alcohol/substance abuse, height and weight.

Kiddie Schedule for Affective Disorders and Schizophrenia, Present and Lifetime version (K-SADS-PL): The original scale was developed by Kaufman et al. This scale was adapted to the Turkish language by Gökler et al. in 2004. The K-SADS-PL is administered during an interview with the parents and children, and the final evaluation is performed using input from all data sources. The scale evaluates the presence of psychopathological conditions in children and adolescents.

The Positive and Negative Symptom Scale (PANSS): This scale is a semi-structured interview tool developed by Kay et al. in 1987, and the scale was evaluated for its validity and reliability by Kostakoğlu et al. in 1999. The scale consists of 30 items evaluating positive and negative symptoms and providing information about the general psychopathological condition.

The Clinical Global Impression Scale (CGI): The Clinical Global Impression Scale (CGI) is a standardized evaluation tool used to rate disease severity, disease course over time, and drug effects according to the clinical condition of the patient and the severity of side effects. CGI is rated on a 7-point scale from 1 (normal) to 7 (severe disease).

Measurement of BDNF: The blood samples were collected into gel tubes between 09:00 and 12:00. After withdrawal, blood samples were left at room temperature for 15 minutes to facilitate clotting. Blood samples were centrifuged at 5000rpm for six minutes. The serum was transferred to 1.5ml polypropylene tubes and stored at -80°C for later analysis. Mature BDNF was measured using a human BDNF ELISA Kit (Hangzhou Eastbiopharm CO. LTD China). To minimize assay variance, all BDNF measurements were conducted on the same day. All experiments were performed in duplicate. The tests were performed according to the manufacturer’s instructions. The optical density of each well was measured using an automated microplate reader.

Statistical Analysis: All statistical analysis was performed using the SPSS 15.0 software package. A p value <0.05 was considered statistically significant.

RESULTS: The mean age was 14.6±1.6 years among adolescents in the FEP group (range: 11-17 years; M/F: 11/15) and the mean age was 14.6±1.6 years in the control group (range: 11-17, M/F: 10/16). There was no significant difference between the groups in terms of age and gender, employment status of the parents, and family history of alcohol or substance abuse. Past medical history of the family members and first-degree relatives of ten patients in the FEP group was remarkable for psychiatric disorder, while there was no history of psychiatric disease.
disorder in the control group (p=0.01). The rate of consanguineous marriages was significantly higher in the FEP group relative to the control subjects (p=0.03). There was no significant difference between the groups in terms of smoking history. The education level of the participants, the age and education level of the parents, the number of siblings, the birth order among siblings, height, weight, and BMI values are presented in Table 1.

The mean PANSS positive score was 20.6±7.4, the mean PANSS negative score was 29.0±9.9, and the mean PANSS general psychopathology score was 33.9±5.7. The mean CGI score was 4.7±0.9. The mean age at disease onset was 13.6±1.7 years. The mean duration of untreated psychosis was 14.6±15.2 months. The CGI score increased with increasing duration of untreated psychosis (r=0.48, p=0.04).

The serum BDNF concentration was significantly lower in the patient group (p=0.03). There was no significant relationship between PANSS and CGI scores and serum BDNF. There was no significant relationship between the duration of untreated psychosis and BDNF levels.

**DISCUSSION:** The most important finding of the current study is that adolescent patients with FEP had significantly lower serum BDNF levels compared to healthy controls. Our finding is consistent with reports regarding adult patients with FEP. It is widely accepted that schizophrenia is a neurodevelopmental disorder. It has been suggested that schizophrenia occurs as a result of profound synaptic and dendritic destruction in the adolescent period and the secondary development of abnormal connections. Previous studies have reported an association between decreased plasticity and neurogenesis in the hippocampus and decreased BDNF. In addition, changes in serum BDNF levels reflect abnormal functioning of the dopaminergic system, which results in both positive and negative psychotic symptoms in the first episode of psychosis.

Another important finding is the absence of a significant relationship between disease symptoms, disease severity, and BDNF levels.

The association between BDNF levels and positive and negative symptoms is controversial. Some studies have reported no significant correlation between BDNF levels and schizophrenia symptoms. Two studies demonstrated a negative correlation between BDNF levels and both positive and negative symptoms. Another study reported a negative correlation between serum BDNF and positive symptoms. One study found a positive correlation between BDNF levels and positive symptoms. In conclusion, the present study found lower BDNF levels among adolescent patients with FEP compared to healthy controls, and there was no relationship between clinical symptoms and BDNF levels. The diagnosis of schizophrenia in patients with first-episode psychosis during the follow-up period suggests a relationship between BDNF and the pathogenesis of schizophrenia. We propose that BDNF may be an important neurobiological marker for EOS. Large-scale, multi-center follow-up studies are required in order to generalize the findings of the present study, which was the first study to be conducted in adolescent patients.

**Keywords:** BDNF, early onset schizophrenia, first-episode psychosis

**References:**


**[Abstract:0268] Post-traumatic stress disorder**

*BDNF and cortisol levels in children with or without post-traumatic stress disorder after sustaining sexual abuse*

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**INTRODUCTION:** Cortisol levels decrease or show no change in PTSD, although there are some exceptional cases. In the model proposed by Yehuda, PTSD was associated with increased adrenergic response and/or lack of a sufficient amount of cortisol in the circulation following trauma. In general, studies conducted on patients with PTSD have found lower BDNF levels compared to the control groups. A study of patients with PTSD and healthy controls who did not have a history of trauma found lower BDNF levels in patients with PTSD.