in the two groups, and it was reported that cortisol levels did not predict the development of PTSD.
There are findings suggesting that low cortisol levels after exposure to trauma might have increased the risk of developing PTSD. There are also studies suggesting that no relationship between cortisol levels and the development of PTSD exists. In the present study, cortisol levels decreased as the time elapsed since the trauma increased in the PTSD group. It is therefore assumed that these individuals will have lower than normal cortisol levels in adulthood.
In the present study, presence of PTSD had no effect on BDNF levels in child victims of sexual abuse, and there was no correlation between BDNF levels and the time that had elapsed since the trauma. In general, studies conducted on patients with PTSD have found lower BDNF levels compared to the control group[1,2]. BDNF levels were compared between patients with or without PTSD after trauma, and BDNF levels were lower in patients with PTSD (2). In the study by Hauck et al., serum BDNF levels were higher in patients who experienced sexual assault in the last one year compared to the control group; however, BDNF levels did not differ significantly among those who experienced trauma beyond the last one year[3].
In conclusion, there was no significant difference between children and adolescents with or without PTSD in terms of cortisol, ACTH, and BDNF levels. However, the decrease in cortisol levels with increasing time after trauma in PTSD group points to the possible role of cortisol in the pathophysiology of the disease. Longitudinal studies on a larger sample are required in order to confirm the findings of the current study that was conducted in children and adolescent patients.
Keywords: BDNF, cortisol, PTSD

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[Abstract:0271] ***Addiction***

Thalamic and cerebellar gray matter density reduction in synthetic cannabis users

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INTRODUCTION: In the last five years, substances called "Spice" in Europe, "K2" in the United States, and "Bonzai", "Jamaika", "Jamaika gold" or "Jamaika supreme" in Turkey are available and widely used, especially by young people[1].
In the present study, we investigated differences in brain regions in a group of synthetic cannabinoid users who had been abstinent for at least 7 days, in comparison healthy controls who had never used cannabis. We hypothesized that SC users would have volume reductions in the areas which have a large number of cannabinoid receptors.
METHODS:
Participants: We analyzed the medical records of patients that were treated in an addiction clinic in Istanbul between January 2013 and December 2014. The medical records of 35 patients were evaluated, and 15 were excluded due to lack of sufficient data. All participants were diagnosed as having cannabis use disorder, based on DSM-V, by two separate psychiatrists. The data derived from patient records included sociodemographic data, including sex (male/female), age, marital status, duration of education, age at first cannabis and SC use, duration of use (months), duration of problematic use of SCs (month), weekly frequency of SC use in the last year, weekly number of SC uses in the last year, and the presence of criminal records. The study was approved by the Ethics Committee of Uskudar University. All participants in the study were male and right-handed and all had complete biochemical examinations and urine toxicology tests. Twenty healthy males who fulfilled inclusion criteria and were matched in terms of age, level of education, and sociodemographic status with substance users enrolled and were grouped as controls in the study.

Participants who had another axis-I psychiatric disorder, a past or current substance use disorder other than nicotine, or neurological disorders were excluded.

Patients' depressive symptoms and anxiety symptoms were assessed by the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI), respectively. The psychological symptom patterns of the patients were assessed by the Symptom Checklist-90 (SCL-90).

Structural Magnetic Resonance Image Acquisition: Imaging was performed on a 1.5T MR scanner (Achieva, Philips Healthcare, Best, The Netherlands) with a SENSE-Head-8 coil at NPISTANBUL Neuropsychiatry Hospital, Istanbul. T1-weighted MPRAGE sequence was employed as high resolution anatomical scan (voxel size 1.25/ 1.25/ 1.2 mm; 130 slices; field of view 240 mm).

VBM Analyses: We examined the between-group differences in gray matter volume by using VBM. Data were processed and examined using the SPM software (Welcome Department of Imaging Neuroscience Group, London, UK; http://www.fil.ion.ucl.ac.uk/spm) and the VBM8 Toolbox (http://dbm.neuro.uni-jena.de/vbm.html) with default preprocessing parameters. Adaptive Nonlocal Means (SANLM) and a classical Markov Random Field (MRF) model were applied to the images in order to remove inhomogeneities and to improve the signal-to-noise ratio. Registration to standard MNI-space consisted of a linear affine transformation and a nonlinear deformation using high-dimensional DARTEL normalization. Subsequently, analyses were performed on segmented GM images, which were multiplied by the non-linear components derived from the normalization matrix to preserve actual GM values locally (modulated GM volumes). To check the quality of the normalization procedure, the normalized unsegmented images were visually inspected. Sample homogeneities were controlled using covariance to identify potential outliers. Lastly, the segmented and modulated images were spatially smoothed with an 8 mm full-width, half-maximum Gaussian kernel.

Data Analyses: The two groups were compared using the independent sample t-test, as implemented in the SPM second-level model. To account for differences in brain sizes, total intracranial volumes were entered in the model as covariates. The clusters were deemed significant if they survived FEW correction at p level of 0.05 (cluster forming threshold=20 voxels). Finally, to identify the associations between structural abnormalities and clinical scales, we conducted voxel of interest (VOI) analyses on cerebral tissues where group differences were identified. These areas were extracted using the MarsBaR toolbox and transferred to SPSS statistical software (SPSS Inc., Chicago, IL, USA) for further analysis. Pearson's correlation coefficients were computed between the extracted VOIs of the activated clusters and outcome variables.

Descriptive analyses were presented using means and standard deviations for normally-distributed variables.

RESULTS: The SCs group consisted of twenty males who claimed SCs as their drug of choice, had used SCs for a minimum period of one year, or currently were using SCs five or more times per week. The MR scans were acquired on day 7 after the last SC usage.

The comparison group consisted of 20 healthy males who had no history of psychopathology and use of any psychoactive drug. The sociodemographic characteristics of participants of the two study groups are presented in Table 1, and the clinical characteristics of SC users are presented in Table 2. Participants in the SCs group reported SCs as their drug of choice and did not report current use of other drugs, including alcohol. Comparing the control group with SC users, VOI analysis showed that regional gray matter density in both the left and right thalamus and left cerebellum was significantly decreased in SC users.

There was no relationship between age at first cannabis and SC use, duration of use, weekly frequency of SC use in the last year, or the weekly number of SC uses in the last year with gray matter tissue density.

DISCUSSION: There is a very limited literature about SCs, and according to Papanti et al., most of the available reports on SCs were limited to retrospective toxicology surveys, case reports /case series, human laboratory studies assessing potential acute toxicological effects of SCs, and interviews/surveys focusing on self-reported harm/side effects identified among SC users[3].

This is the first volumetric MRI study conducted in SC users that aimed to investigate the structure of the brain. Using VBM, we detected volume reductions in both left and right thalamus and left cerebellum in a sample of SC users, compared with the healthy control group. The thalamus functions as an information-processing and relay station; it is like a bridge for bidirectional signal flow between cortical and subcortical regions, links different cortical regions via trans-thalamic pathways, and is a point of convergence for fronto-striatal and cerebello-thalamo-cortical circuits[4]. By demonstrating that use of SCs is associated with thalamic volume loss, the current findings raise the possibility that SCs may increase the likelihood of such abnormalities.

On the other hand, cannabinoid receptors are highly expressed in the cerebellum, and deficits in cerebellar-dependent functions follow acute or chronic cannabis use in humans. These cerebellar-mediated processes are aberrant in schizophrenia and long-term heavy cannabis use, and lead to cognitive deficits that are similar to those in schizophrenia. The accumulating evidence suggests that cannabis use may lead to cognitive disturbances, psychotic symptoms, and specific regional brain alterations. Nonetheless, the effects of SC use on cerebellar structural integrity in SC users, with or without psychosis, have not been examined yet. Solowij et al. determined that cannabis use may have a relatively greater adverse effect on cerebellar white matter than schizophrenia[5]; however, we detected volume reduction in the left cerebellum in a sample of SC users, compared to a healthy control group.

It is also unclear why no differences were found in other brain regions that are known for CB1 receptor expression.

The results of the present study did not clarify if the differences between groups existed prior to the initiation of SC use, or if other variables, either not controlled for or unrecognized, contributed to the volume reduction in thalamus and cerebellum.

In conclusion, we observed a gray matter density reduction in the right and left thalamus and lower gray matter density in left cerebellum

among SC users, compared to healthy controls. Findings of this study need to be replicated with neuropsychiatric examination among both patients and controls in larger samples.

Keywords: cerebellum, synthetic cannabinoids, thalamus

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[Abstract:0272] ***Schizophrenia and other psychotic disorders***

Evaluation of cortisol and ACTH levels in drug-naive adolescents with first-episode psychosis

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INTRODUCTION: Current evidence indicates the role of cortisol in psychosis; however, the relationship between psychological symptoms and cortisol is not clear. It has been reported that cortisol has an indirect effect on the pathophysiology of psychosis. Studies on untreated patients with first-episode psychosis have mostly found HPA axis hyperactivity. Brain maturation continues during adolescence and is vulnerable to stress[1]. To our knowledge, there is no study that evaluated cortisol and ACTH levels in adolescent patients with FEP. The aim of the present study was to evaluate cortisol and ACTH levels as indicators of the HPA axis activity in adolescent patients who were included in the study with a diagnosis of FEP and diagnosed with EOS after a follow-up period of six months. Furthermore, the present study evaluated the presence of a relationship between psychosis symptom severity and cortisol and ACTH levels.

METHOD:

Study Sample: The study was conducted in the Department of Child Psychiatry at Dicle University. The study data were collected between March 2013 and January 2014. A total of 23 adolescent patients aged between 11-17 years, who did not receive prior therapy and who were diagnosed with psychosis according to DSM-4 criteria, and 23 age- and gender-matched healthy adolescent controls aged between 11-17 years, who did not have a medical or neurological disorder, were included in the study. The parents of the patients provided informed consent for their voluntary participation in the study. Approval was obtained for the study from the Non-interventional Clinical Research Ethics Committee at Dicle University Faculty of Medicine.

Study Procedures: Sociodemographic features of the participants were obtained 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) scale 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 about age, gender, education level, and age, education level and occupation of the parents, consanguinity between parents, number of siblings, birth order among siblings, history of a psychiatric disorder in 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. It was adapted to the Turkish language by Gökler et al. in 2004. 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, 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 general status of psychopathological condition.

The Clinical Global Impression Scale (CGI): The Clinical Global Impression Scale is a standardized evaluation tool used to rate disease