

CORRELATION BETWEEN THE DIFFERENT TYPES OF ANTIPSYCHOTICS AND SERUM CORTISOL, DEHIDROEPIANDROSTERONE SULFAT AND THEIR RATIO IN SCHIZOPHRENIA

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ABSTRACT

Background: Evidence for disturbances in HPA activation and abnormal HPA regulatory mechanisms in schizophrenia is accumulating.

Aim: To compare serum levels of cortisol, DHEA-S and their ratio between patients with schizophrenia and healthy controls and among patients before and after treatment with different types of antipsychotics.

Material and methods: In this clinical prospective study, 60 patients with schizophrenia and 40 healthy age and sex matched control subjects were included. All patients experienced an acute exacerbation of the illness (PANSS: P1 and P3 $\geq$ 4). Clinical evaluation of patients was performed using the Positive and Negative Symptom Scale. A questionnaire for socio-demographic and clinical data collection was used. Serum levels of cortisol, DHEA-S and their ratio were measured at baseline in all participants and after 3 and 6 weeks, respectively, of the antipsychotic treatment with different types of antipsychotics in patients with schizophrenia.

Results: Patients with schizophrenia had significantly higher serum cortisol and DHEA-S levels in comparison to the control group. There was no significant difference in serum levels of cortisol, DHEA-S and their ratio between patients treated with different types of antipsychotics (typical/atypical). Serum levels of the analyzed hormones significantly reduce during the 6-week period of examination in both subgroups treated with different types of antipsychotics.

Conclusion: Elevated serum cortisol and DHEA-S in schizophrenic patients might be associated with their role in the pathophysiology of the disorder. There is no significant difference in serum levels of cortisol, DHEA-S and their ratio among the patients treated with different types of antipsychotics.

Keywords: schizophrenia, cortisol, DHEA-S, typical/atypical antipsychotics

INTRODUCTION

Schizophrenia is a chronic and disabling mental disorder characterized by psychopathological symptoms, elevated emotional distress and a significant decline in cognition, quality

of life and psychosocial functioning [1]. Apart from a clear role of genetic factors, a number of environmental exposure factors have been identified that increase a risk of schizophrenia [2].

For instance, it has been reported that stressful life events at various life periods play an important role in shaping the risk for schizophrenia and triggering psychotic relapse [3]. There is evidence that patients with schizophrenia often approach these events with maladaptive coping strategies and show lower levels of resilience [4, 5]. According to the vulnerability-stress concept, patients with schizophrenia display increased sensitivity to stress. The hypothalamo-pituitary-adrenal (HPA) axis is one of the major hormonal systems mediating physical and psychological stress response. Evidence for disturbances in HPA activation and abnormal HPA regulatory mechanisms in psychiatric illnesses is accumulating. A body of evidence has accrued demonstrating particular dysfunction of the HPA axis, leading to elevated peripheral cortisol levels in a proportion of patients with schizophrenia [6]. Recently, there has been increased interest in the role of neurosteroids, particularly dehydroepiandrosterone (DHEA) which, in its sulfated form (DHEA-S), is the most abundant in humans [7]. It is considered both a neurosteroid, being produced in the brain, as well as a neuroactive steroid, produced in the adrenals and gonads and having its effect on the brain [6, 8].

The hypothalamo-pituitary-adrenal axis is a crucial system in maintaining homeostasis and adapting to stress. When stress is acute, adaptive biochemical responses include increased adrenocortical secretion of stress hormones, where cortisol and dehydroepiandrosterone prominently take place. Cortisol (glucocorticoid) is a major mediator of the physiological stress response and impacts many physiological systems, allowing the body to react to a stressor, while DHEA mainly have anabolic effects (i.e. promoting growth and repair), thus repairing catabolic damage so long as their levels remain sufficiently high in circulation. In humans, 99% of circulating DHEA is in its sulfated form, DHEAS (together abbreviated as DHEA(S)). Serum DHEAS levels are 100 or more times higher than DHEA, and DHEAS has a much longer life and shows no diurnal variations. Therefore, from a practical point of view, estimation of DHEAS is preferable to DHEA as its levels are more stable. Neuroactive steroids, such as cortisol, dehydroepiandrosterone, and its sulfate ester, are the steroid hormones that have several notable roles in the central nervous system [9]. DHEA(S) have multiple effects in the central nervous system mediated through its

non-genomic actions on several neurotransmitter systems, such as γ -amino butyric acid type A (GABAA), N-methyl-D-aspartate (NMDA), and sigma receptors [10]. Animal experiments show that DHEA-S has profound psychotropic effects, such as memory enhancement, antidepressant, anxiolytic and anti-aggression [11]. Moreover, DHEA(S) has potent anti-glucocorticoid and neuroprotective actions on the brain and can protect hippocampal neurons from glucocorticoid induced neurotoxicity. In healthy subjects, acute administration of DHEA rapidly reduces cortisol level. The concomitant release of DHEA(S) in the acute stress response is thought to protect the brain against potentially damaging effects of excessive cortisol activity. Since these acute adaptive responses to stress are designed to increase survival, yet the dysfunctional stress responses, i.e. over or under activity of HPA axis, may be damaging to an individual. Failure to deactivate these stress responses within a dysfunctional stress system may result in an imbalance of these steroid hormones. This may lead to overexposure to the effects of glucocorticoids and increased sensitivity to brain insults [12].

The HPA axis abnormalities in schizophrenia are indicated by elevated basal cortisol levels, non-suppression of cortisol after dexamethasone suppression test and blunted cortisol awakening response. Increased cortisol levels observed in schizophrenia have been proposed as endophenotypic markers of the illness [13].

As compared to healthy controls, DHEA-S levels have been reported to be elevated or having no difference in schizophrenic patients [14-16]. The state of the psychotic illness, duration of untreated psychosis and medication may explain these inconsistencies.

The present study is aimed to extend the evidence base examining the potential roles of cortisol, DHEA-S and their ratio in the pathogenesis of schizophrenia and their potential usefulness as disease biomarkers. Serum levels of cortisol, DHEA-S and their ratio were measured in patients before and after 6-week treatment with the different types of antipsychotics, as well as between patients and healthy controls. Possible correlations of these serum hormone levels with the different types of antipsychotics (typical/atypical) were examined in our study.

MATERIAL AND METHODS

In this clinical prospective study, 60 patients with schizophrenia from both genders, aged 18-50 were included and treated as inpatients or outpatients at the University Psychiatry Clinic, Skopje, North Macedonia. All patients experienced an acute exacerbation of the illness (PANSS: P1-Delusions and P3-Hallucinatory behavior ≥ 4). Patients who suffered from major physical illness, drug or alcohol abuse, epilepsy and other organic brain syndromes were not included. All patients underwent physical examination and routine laboratory tests to rule out physical illness. Clinical evaluation of patients was performed using the Positive and Negative Symptom Scale (PANSS). Non-standardized questionnaire was used for socio-demographic and clinical data collection.

After enrollment, patients with schizophrenia received stable doses of typical or atypical antipsychotics. After 3 and 6-week treatment, severity of schizophrenia symptoms were again assessed using PANSS.

At the end of the study, examined schizophrenic patients were divided into two groups according to the antipsychotic therapy response:

1. a group of subjects suffering from schizophrenia classified as responders who had no ratings of >3 on items P1, P2, P3, P5 and P6 of the PANSS and had a $\geq 30\%$ reduction from baseline in the PANSS total score

2. a group of subjects suffering from schizophrenia who did not meet these criteria were defined as non-responders.

All participants in the study provided written informed consent form to participate in this prospective study after having received a detailed explanation of the study procedures. The study was approved by the Ethics Committee of Medical University in Skopje, North Macedonia and by the Board of the University Clinic of Psychiatry.

Steroid determination

Serum cortisol and DHEA-S levels were measured in the Institute of Clinical Biochemistry at the Medical University in Skopje, North Macedonia. Serum samples of cortisol and DHEA-S were collected between 8 a.m. and 9 a.m. hours after 20 minutes of rest. All partic-

ipants were instructed to abstain from unusual physical activity or stress for a period of 24 h prior to blood sampling. Blood samples were collected at the baseline in all participants and after 3 and 6 weeks of the antipsychotic treatment in patients with schizophrenia. Cortisol and DHEA-S levels were measured by the IMMULITE 2000, competitive chemiluminescent enzyme immunoassay.

Statistical analysis

Several statistical methods have been used for the statistical analysis of the data obtained in the course of the study: non-parametric methods (Chi-square test, Mann-Whitney U test, Friedman ANOVA) and parametric methods (t-test for independent samples). Correlation between parameters was examined with Pearson and Spearman Rank correlation coefficients. From among the multivariate methods, MANOVA was used. Values of $p < 0.05$ were considered statistically significant.

RESULTS

There were no significant differences between patients and controls in terms of sex (Pearson Chi-square=1.32 df=1 $p=0.25$), males were dominant in both groups (73.3% in patients group; 62.5% in control group).

Mean age was 35.30 ± 9.2 years for patients with schizophrenia and 36.67 ± 7.1 years for healthy controls ($t=0.79$; $p=0.43$).

There were significant differences between patients and controls in terms of education, with a dominant higher level of education in the control group (Pearson Chi-square=22.05 df=3 $p=0.00006$); employment, with a dominant employed examinees in the control group in comparison with the patients group (Pearson Chi-square=44.74 df=2 $p=0.000000$) and marital status, with dominant married examinees in the control group as opposed to the patients group (Pearson Chi-square=8.25 df=2 $p=0.016$).

Patients with schizophrenia had significantly higher mean serum cortisol and DHEA-S levels in comparison to the control group. The mean cortisol/DHEA-S ratio was not significantly different between examined and control group (Table 1).

Table 1. Serum levels of cortisol, DHEA-S and their ratio in the examined and control group.

Hormone	Examined group	Control group	Test	p-value
Cortisol	555.7 ± 159.8	351.7 ± 172.1	t=6.07	0.00000
DHEA-S	329.5 ± 125.1	167.4 ± 57.5	t=7.66	0.00000
Cortisol/ DHEA-S	2.1 ± 1.95	2.3 ± 1.49	Z= -1.57	0.11

t (t-test for independent samples) Z (Mann-Whitney U test)

Among patients, males and females did not significantly differ between themselves in terms of the mean levels of serum cortisol, but female patients had significantly lower mean levels of DHEA-S ($t=-3.12$; $p=0.0028$) and significantly higher mean levels of cortisol/DHEA-S ratio ($Z=2.81$; $p=0.0049$).

According to the age of the patients, there was no significant correlation with the mean serum cortisol levels, but there was significant negative correlation of age with serum DHEA-S ($r= -0.36$; $p=0.004$) and significant positive correlation with cortisol/DHEA-S ratio ($r=0.37$; $p=0.004$).

The age of onset of the disorder did not significantly correlate with serum cortisol levels ($r= -0.14$; $p=0.29$), DHEA-S ($r= -0.1$; $p=0.44$) and cortisol/DHEA-S ratio ($r=0.14$; $p=0.27$).

Duration of the disorder did not significantly correlate with serum cortisol, but it has significant correlation with serum DHEA-S levels ($r= -0.35$; $p=0.007$) and cortisol/DHEA-S ratio ($r=0.31$; $p=0.014$).

Number of hospital treatments did not significantly correlate with serum cortisol levels ($r= -0.0015$; $p=0.99$), serum DHEA-S ($r=$

-0.13 ; $p=0.32$) and cortisol/DHEA-S ratio ($r= -0.011$; $p=0.93$).

Number of relapses of the disorder significantly correlate with serum DHEA-S levels ($r= -0.26$; $p=0.041$), but not with serum cortisol levels ($r=0.21$; $p=0.11$) and cortisol/DHEA-S ratio ($r=0.09$; $p=0.48$).

Graph 1 presents mean serum levels of cortisol, DHEA-S and their ratio in the two subgroups of patients divided according to the type of antipsychotic treatment - typical or atypical antipsychotics, across all three assessment points (baseline, after 3 and 6 weeks of the treatment).

We used MANOVA analysis to compare the difference in serum levels of cortisol, DHEA-S and their ratio among patients who were treated with different types of antipsychotics during the 6 week period of examination (table 2). There was no significant difference in serum levels of cortisol, DHEA-S and their ratio between subgroups of patients treated with typical or atypical antipsychotics ($F=1.235$ $df=3$ 56 $p=0.306$).

Serum levels of the analyzed hormones significantly reduced during the 6 week peri-

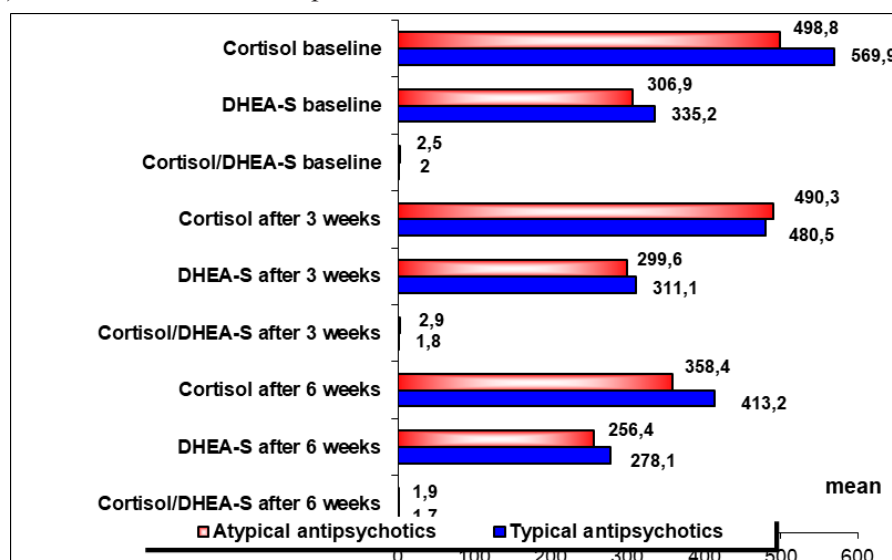
Graph 1. Mean serum hormone levels in patients with schizophrenia treated with different type of antipsychotics (typical/atypical) across three assessment points.

Table 2. Comparison of hormonal concentrations in patients with schizophrenia according to the different types of antipsychotics across three assessment points (MANOVA).

Serum stress hormones	t-value	Df		F	P
Atypical/typical antipsychotics					
Hotelling-Lawley test	0.066	3	56	1.235	0.306
Cortisol	43167.535	1	58	.796	0.376
DHEA-S	12072.060	1	58	.300	0.586
Cortisol/DHEA-S	10.901	1	58	1.368	0.247
Across three examination					
Hotelling-Lawley test	1.274	6	53	11.251	0.000
Cortisol	440214.853	2	116	31.7	0.000
DHEA-S	58949.547	2	116	7.44	0.001
Cortisol/DHEA-S	5.898	2	116	3.42	0.036
Interaction					
Hotelling-Lawley test	0.215	6	53	1.902	0.098
Cortisol	35043.053	2	116	2.523	0.085
DHEA-S	1352.717	2	116	.171	0.843
Cortisol/DHEA-S	3.442	2	116	1.994	0.141

od of examination in both subgroups treated with different types of antipsychotic treatment ($F=11.251$ $df=6$ 53 $p=0.000$). There was a significant reduction of serum cortisol ($p=0.000$), DHEA-S ($p=0.001$) and their ratio ($p=0.036$). There was no significant interaction in group x time for any of the three analyzed parameters ($F=1.902$ $df=6$ 53 $p=0.098$).

At the end of the study, examined schizophrenia patients were divided into two groups, according to the antipsychotic therapy response: responders and non-responders. At baseline assessment point, the group of responders showed significantly higher serum cortisol ($t=7.05$; $p=0.000000$) and DHEA-S levels ($t=4.06$; $p=0.00014$) compared with the group of non-responders. The Cortisol/DHEA-S ratio did not significantly differ between the groups ($t=0.09$; $p=0.93$).

We used the MANOVA analysis to compare the difference in serum levels of cortisol, DHEA-S and their ratio between responders and non-responders during the 6-week period of examination.

Across all three assessment points (baseline, after 3 weeks, and after 6 weeks), the re-

sponders had significantly higher serum cortisol levels ($p=0.000$) and DHEA-S ($p=0.002$) levels compared with non-responders, whereas the cortisol/DHEAS ratio did not significantly differ among these two groups ($p=0.7$). Hormonal values significantly decreased during the study period of 6 weeks in both groups.

Responders who had taken atypical antipsychotics did not have any significant difference in serum levels of cortisol, DHEA-S, as well as not having any significant difference in their ratio in comparison with responders who had taken typical antipsychotics (table 3).

Non-responders who had taken atypical antipsychotics had no significant different serum levels of the cortisol, DHEA-S and their ratio in comparison with non-responders who had taken typical antipsychotics (table 4).

Graph 2 presents the minimal, maximal and mean levels of cortisol in patients across the three examination points. Serum cortisol values fell significantly after 6-weeks of antipsychotic treatment with different types of antipsychotics.

Table 3. Serum hormone levels in responders according to the types of antipsychotics (atypical/typical).

Hormone	Atypical antipsychotics N=31	Typical antipsychotics N=6	Test	p-value
Cortisol	648.3±118.8	601.0±103.1	Z=0.86	0.39
DHEA-S	377.3±114.0	367.2±126.7	Z=0.37	0.71
Cortisol/DHEA-S	2.14±2.0	1.8±0.6	Z=0.16	0.87

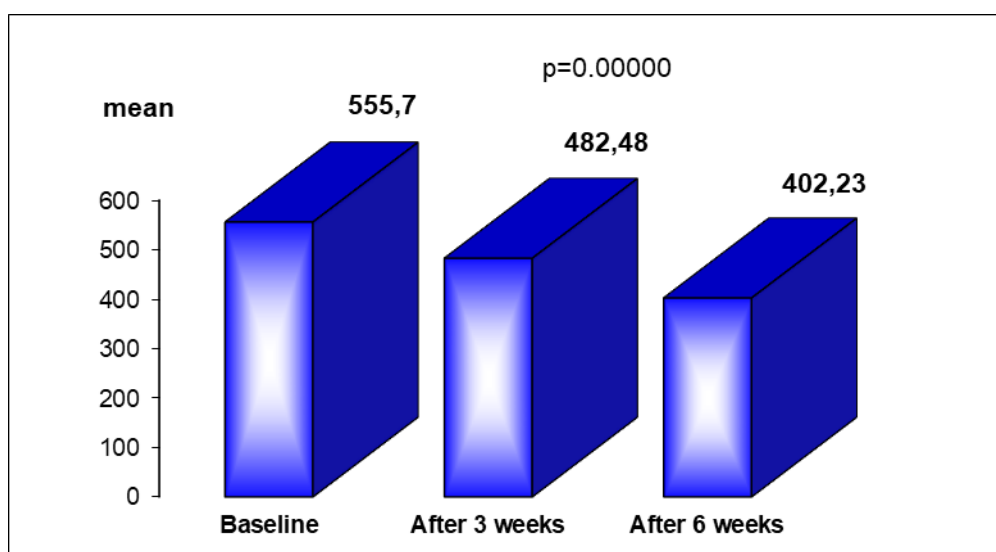
Z (Mann-Whitney U test)

Table 4. Serum hormone levels in non-responders according to the types of antipsychotics (atypical/typical).

Hormone	Atypical antipsychotics N=17	Typical antipsychotics N=6	Test	p-value
Cortisol	427.1±122.1	396.7±127.1	Z=0.6	0.55
DHEA-S	258.4±62.5	246.7±192.4	Z=1.05	0.29
Cortisol/DHEA-S	1.7±0.6	3.3±4.2	Z=0.35	0.73

Z (Mann-Whitney U test)

Graph 2. Serum cortisol levels in patients with schizophrenia before and after 3 and 6 weeks of antipsychotic treatment.



Similar results were observed for mean serum levels of DHEA-S, which fell significantly after 3 and 6-weeks of antipsychotics treatment - Friedman ANOVA Chi Sqr.(N=60, df=2)=30.9; p=0.00000.

The mean cortisol/DHEA-S ratio also fell significantly across the three examination points of 6-weeks antipsychotic treatment - Friedman ANOVA Chi Sqr. (N = 60, df = 2) = 13.3; p =0.00129.

DISCUSSION

Schizophrenia is a neuro-endocrine-developmental disorder with complex etiology characterized by interactions between genetic and environmental factors that impacts sensitive periods of brain development [17]. Regardless of the severity of clinical symptoms at disease onset, patients can show substantial changes in

symptomatology and intensity over the course of disease progression.

Recently, studies on schizophrenia have increasingly focused on potential causative factors, such as structural and functional brain abnormalities. Some studies have implicated that the levels of cortisol and DHEA-S in the pathophysiology of schizophrenia changed following comparison with controls. However other studies have given conflicting results, which may reflect differences in assays, timing of blood sampling, different stages of disease or effects of antipsychotic treatment [18].

Using a relatively homogeneous patient population and a parallel control group, we compared serum levels of cortisol, DHEA-S and their ratio not only among patients and controls, but also within patients before and after 3 and 6-weeks of antipsychotic treatment with the different types of antipsychotics (typical/atypical).

Our study showed that plasma cortisol levels were significantly elevated in the group of patients with schizophrenia compared to the

controls. This is in agreement with the results of most studies [2, 12-13, 18-27]. However, there are studies reporting no significant differences between the schizophrenic patients and healthy controls in terms of serum cortisol levels [16, 28-29] as well as lower serum cortisol levels in patients with schizophrenia [30-31].

The results of this study indicate that treatment with antipsychotics, both typical and atypical, lower serum cortisol levels, established on the measured levels before treatment and after 3 and 6 weeks of antipsychotic therapy. Serum levels of cortisol significantly reduced during the 6 week period of examination in both subgroups treated with the different types of antipsychotics (typical/atypical antipsychotics). Also we found no significant difference in serum levels of cortisol between the subgroup of patients treated with typical antipsychotics and the subgroup treated with atypical antipsychotics, thus indicating that both types of antipsychotics had an effect on reducing the serum cortisol levels. On the other hand, one study reported that serum levels of cortisol significantly increased as a result of atypical antipsychotic treatment [32].

Examined serum DHEA-S levels in this study showed statistically significant higher levels in patients with schizophrenia compared to control subjects, which coincided with the results of most studies [15, 19, 21, 28, 33-36]. By contrast, some other studies found decreased serum DHEA-S levels [37] and no difference [2, 16] in schizophrenia patients compared to healthy controls.

The results of our study indicate that treatment with antipsychotics, both typical and atypical, lower serum DHEA-S levels, according to the measured levels before treatment and after 3 and 6 weeks of antipsychotic treatment. Serum levels of DHEA-S significantly reduced during the 6 week period of examination in both subgroups with different types of antipsychotic treatment (typical/atypical antipsychotics). We also found no significant difference in serum levels of DHEA-S between the subgroup of patients treated with typical antipsychotics and the subgroup treated with atypical antipsychotics, thus indicating that both types of antipsychotics had an effect on reducing the serum DHEA-S level.

Our study results provide evidence that serum cortisol and DHEA-S levels in patients with schizophrenia may play a role in the pathophysiology of this disorder and they may serve as use-

ful biological markers potentially for diagnosing the disease or monitoring treatment efficacy. The authors of one recent study concluded that their results further implicate the role of DHEA and HPA axis dysfunction in the pathophysiology of schizophrenia [36]. The authors of one review study also concluded that neurobiological alterations in DHEA(S) are related to the pathophysiology of schizophrenia [1].

In this study we found no significant difference in serum levels of cortisol and DHEA-S between patients treated with typical antipsychotics and atypical antipsychotics. The authors of another study also report that patients who received first generation, second generation, and both types of antipsychotic agents had no significant differences in the cortisol to DHEA-S ratio [16]. On the other hand, there are some findings suggesting that imbalances in serum cortisol, DHEA-S and their ratio may be related to responsiveness to antipsychotic treatment [38].

Finally, we found that the cortisol/DHEA-S ratio was not significantly different between patients with schizophrenia and control group, but it significantly decreased over the 6 week period of treatment with the different types of antipsychotics (typical/atypical). Previous research suggests that the ratio of cortisol/DHEA-S may be increased in patients with schizophrenia [16], however some studies found no difference in ratio compared to healthy controls [2, 23] and the authors of a recent study report a significant decrease of cortisol/DHEA-S ratio in patients relative to controls [36]. We also found no significant difference in cortisol/DHEA-S ratio between the subgroup of patients treated with typical antipsychotics and the subgroup treated with atypical antipsychotics. Thus, the different types of antipsychotics had a similar effect on the ratio.

From the aspect of socio-demographic and clinical data, our study finds that serum cortisol levels did not significantly differ according to gender, but there was a significant difference in serum DHEA-S levels and cortisol/DHEA-S ratio between male and female patients. Females had significantly lower mean serum levels of DHEA-S and a significantly higher mean cortisol/DHEA-S ratio. The authors of one study report that they did not find any statistical difference in the serum levels of cortisol and DHEA-S between males and females [35].

The age of the patients showed significant negative correlation with serum DHEA-S, which

means that serum DHEA-S levels reduce with aging. We also found significant positive correlation between age of the patients and cortisol/DHEA-S ratio. Another study did not find variation in the serum levels of cortisol and DHEA-S in relation to age [35].

The duration of the disorder did not significantly correlate with serum cortisol, but it has a significant correlation with serum DHEA-S levels and cortisol/DHEA-S ratio in patients with schizophrenia.

The number of relapses of the disorder significantly correlates with serum DHEA-S levels, but not with serum cortisol levels and the cortisol/DHEA-S ratio.

Serum DHEA-S levels significantly correlate with gender and age of the patients, also with duration of the disease and number of relapses of the disorder. The cortisol/DHEA-S ratio is associated with age and gender of the patients, as well as with schizophrenia duration. On the other hand, one study reports that the ratio is not associated with disorder duration [39].

At the end of the study, examined schizophrenia patients were divided into two groups, according to the antipsychotic therapy response: responders and non-responders. Across all three assessment points (baseline, after 3 weeks and after 6 weeks), the responders had a significantly higher serum cortisol and DHEA-S levels compared with non-responders, while cortisol/DHEA-S ratio did not significantly differ between these two groups. Hormonal values significantly decreased during the study period of 6 weeks in both groups.

We found that responders who had taken atypical antipsychotics had no significant different serum levels of the cortisol, DHEA-S and their ratio in comparison with responders who had taken typical antipsychotics. Also, non-responders who had taken atypical antipsychotics had no significant different serum levels of the examined hormones and their ratio in comparison with non-responders who had taken typical antipsychotics.

Our study has some limitations. One of the limitations relates to the assessment of diurnal rhythmicity of hormones. Future studies should collect blood samples taken more frequently during the day. Another limitation is the possible

influence of menstrual status, use of oral contraceptives and hormone replacement therapy that might affect cortisol. Smoking also influences serum cortisol levels and is more prevalent in schizophrenic patients. Excluding smokers would have provided better results.

CONCLUSION

Our study provides evidence that the serum levels of cortisol and DHEA-S may serve as biomarkers for diagnosing schizophrenia. Elevated serum cortisol and DHEA-S in schizophrenic patients might be associated with the role of cortisol and DHEA-S in the pathophysiology of the disorder.

Serum DHEA-S levels significantly correlate with gender and age of the patients, along with duration of the disease and number of relapses of the disorder. The cortisol/DHEA-S ratio is associated with the age and gender of the patients, as well as with schizophrenia duration.

Treatment with antipsychotics, both typical and atypical, reduce serum levels of cortisol, DHEA-S and their ratio during the 6-week period of treatment. There is no significant difference in serum levels of cortisol, DHEA-S and their ratio between the patients treated with the different types of antipsychotics (typical/atypical), which indicates that both types of antipsychotics had an effect on reducing serum cortisol, DHEA-S, and their ratio levels.

In the two groups of responders and non-responders, divided according to the antipsychotic therapy response, there were no significant different serum levels of cortisol, DHEA-S and their ratio according to the types of the antipsychotic treatment (typical/atypical) taken.

Results from this study may add to our existing knowledge about the pathophysiology of schizophrenia. However, the complex interaction between neurosteroids and their role as biomarkers in schizophrenia demand further investigation. Further assessment of the association between the different types of antipsychotics and serum levels of cortisol, DHEA-S and their ratio need to be conducted with larger samples.

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Резиме

КОРЕЛАЦИЈА МЕЃУ РАЗЛИЧНИТЕ ТИПОВИ НА АНТИПСИХОТИЦИ И СЕРУМСКИОТ КОРТИЗОЛ, ДЕХИДРОЕПИАНДРОСТЕРОН СУЛФАТ И НИВНИОТ СООДНОС КАЈ ШИЗОФРЕНИЈА

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Вовед: Сè побројни стануваат доказите за нарушената активност и абнормалните регулаторни механизми на хипоталамо-хипофизно-адреналната оска кај шизофренијата.

Цел: Да се компарираат серумските нивоа на кортизол, DHEA-S и нивниот сооднос меѓу пациентите со шизофренија и здравите контролни субјекти, како и меѓу пациентите пред и по третманот со различни типови антипсихотици.

Материјал и методи: Во оваа клиничка проспективна студија беа вклучени 60 пациенти со шизофренија и 40 здрави контролни субјекти соодветни по пол и возраст. Сите пациенти манифестираа акутна егзацербација на болеста (PANSS: P1 и P3 $\geq$ 4). Клиничката евалуација на симптоматологијата кај пациентите се спроведуваше со скалата PANSS. За евалуација на социодемографските и клиничките податоци се користеше нестандардизиран прашалник. Серумските нивоа на кортизол, DHEA-S и нивниот сооднос беа одредувани на почетокот на истражувањето кај сите учесници и по 3 и 6 седмици од антипсихотичниот третман со различни типови антипсихотици кај пациентите со шизофренија.

Резултати: Пациентите со шизофренија имаа значително повисоки серумски нивоа кортизол и DHEA-S во споредба со контролната група. Не постоеше значајна разлика во серумските нивоа кортизол, DHEA-S и нивниот сооднос меѓу пациентите лекувани со различни типови антипсихотици (типични/атипични). Серумските нивоа на анализираниите хормони сигнификантно се редуцираа во тек на шестседмичниот период на егзаминација во двете подгрупи пациенти лекувани со различни типови антипсихотици.

Заклучок: Зголемените серумски нивоа кортизол и DHEA-S кај пациентите со шизофренија може да се асоцирани со нивната улога во патофизиологијата на ова психијатриско растројство. Нема сигнификантна разлика во серумските нивоа кортизол, DHEA-S и нивниот сооднос меѓу пациентите лекувани со различни типови антипсихотици (типични/атипични).

Клучни зборови: шизофренија, кортизол, DHEA-S, типични/атипични антипсихотици