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Research Article

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The Study of Suicidal Behavior and Indicators of Electrolyte Blood Composition in Borderline Mental Disorders under the Influence of Combined Psychopharmacotherapy

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Abstract

The formation of new approaches to the treatment of neurotic disorders, taking into account pathogenetic mechanisms, is an urgent task in neurology and psychiatry, due to the high prevalence of this group of diseases, the risk of developing suicidal behavior, a negative impact on the quality of human life, aggravating the course of somatic diseases, contributing to the development of physical and mental and social maladaptation with limited professional activity and disability. According to the WHO, in 2015 Anxiety Depressive Disorder (MAD) caused 50 million people to be disabled. A disappointing forecast of WHO experts is that while maintaining current trends in the spread of the disease by 2020, TDR will be in second place after coronary heart disease in the number of years lost due to disability [6].

In this regard, the purpose of this study was to study the structure of depressive disorders, suicidal behavior of patients in the Republic of Mordovia (Russia), as well as to study the characteristics of the course of psychopathological anxiety-depressive disorders in the framework of the most frequent nosological forms of diseases in Mordovia - neurotic and reactive depressions, as well as chronic forms - neurotic personality development in comparison with psychopathy under the influence of traditional psychopharmacotherapy and combined treatment with antioxidant drugs.

Keywords: Suicidal Behavior, Electrolytes, Borderline Mental Disorder

Material and Methods

A simple, randomized, comparative study in parallel groups was conducted. At the first stage, a retrospective clinical and statistical analysis of medical records of patients who sought medical attention from a doctor - psychiatrist - suicidologist at the Republican Psychoneurological Dispensary of the Republic of Mordovia from 2005 to 2017 was carried out. During the same period, 127 case histories of patients (40 men, 87 women) were admitted for inpatient treatment to the Mordovian Republican Psychiatric Hospital with a direct diagnosis: depressive syndrome.

The most common cause of depression was a reaction to severe stress with impaired adaptation. In a number of patients, the presence of a concomitant pathology of the cardiovascular system was an aggravating factor in the development of suicidal behavior.

Therefore, in the second stage, we examined patients with comorbid mental pathology and GB. For analysis, we selected medical records of a hospital patient aged 34 to 76 years who received inpatient treatment in the psychiatric ward of the Mordovian Republican Clinical Psychiatric Hospital with anxiety-depressive symptoms against a background of cardiovascular pathology, for the period August-December 2018. The study was conducted in 21 patients. The criteria for inclusion in the observation was the presence of a mixed anxiety and depressive disorder, presented in ICD-10 under F 41.2.

The main criteria for the diagnosis of mixed anxiety and depressive disorder were the simultaneous presence of symptoms that were not developed enough to make one of the diagnoses - anxiety or depressive disorder, when no component dominated the other. At the same time, along with anxiety and its vegetative symptoms, there was a decrease in mood, loss of interest, decrease in motor activity, ideational inhibition, self-doubt and self-confidence [7].

Criteria for exclusion from the study: the presence, along with alarming and depressive symptoms, of a severe pathology of intellectual, mnestic functions, a sphere of consciousness, such as delirium, dementia, severe amnestic disorders, as well as the presence of severe depression occurring with psychotic symptoms.

For the analysis of medical records of inpatients, an analytical map was developed, which was formalized and filled in the form of a spreadsheet program Excel 2010 package Microsoft Office. Also, to determine the severity of the main psychopathological syndromes, standardized Hamilton scales were used to assess depression.

The gas-electrolyte blood composition was determined on the Easy Stat analyzer (USA) for patients with various forms of neurotic disorders upon admission to the hospital and at the end of treatment. The pH of the blood, the voltage of carbon dioxide (pCO2) were determined; oxygen tension (pO2); bicarbonate concentration (HCO3); concentration of sodium ions (Na +) and potassium (K +).

The results were processed using generally accepted statistical methods using the standard software package "Statistics 6.0". The main statistical values were determined: mean (M), error of the mean (m). The significance of differences was calculated using Student's t-test in the case of equality of variances, its modification (T-test with separate estimates of variances) in the case of variance inequality at $p < 0.05$).

The Results of the Study.

An analysis of the medical records of patients who went to the psychiatrist-suicidologist revealed a high total number of completed suicides and suicidal attempts among the entire population of the Republic of Mordovia. Mortality due to completed suicides between 2005 and 2017. Ranged from 31.3 to 19.4 per 100 thousand people, which indicates a low detectability of depression in the general medical network, the need to develop optimal therapeutic approaches to the treatment of depression, and the need to prevent suicidal behavior.

The study of outpatient records revealed either the patient's refusal to undergo any treatment after a suicidal attempt or standard treatment approaches - tricyclic antidepressants were usually used in people with suicidal behavior, and patients canceled them after 2-4 weeks of treatment.

A retrospective analysis of suicidal behavior revealed that suicidal attempts, which caused hospitalization in the hospital, were most often observed in people aged 17 to 30 years [Figure 1]. At the age of 31-50, the number of suicides decreased. The lowest rates of suicidal behavior correspond to the age of 51-60 years, in people over 60 the number of suicidal attempts increases again. Their cause was stressful events significant for the patient, leading to despair, feelings of hopelessness, worthlessness, internal psychological conflict.

Table 1: Changes in the gas-electrolyte composition of blood in patients with various forms of borderline mental disorders upon admission to hospital

№ п/п	Parameter	Donors`	Neuroses	Personality Development	Psychopathy
1.	pH	7,48±0,007	7,62±0,005*	7,422±0,009	7,377±0,007
2.	PCO2, mm.Hg	49,5±1,18	48,54±0,67	42,38±0,89*	47,5±1,01
3.	PO2, mm Hg	28,76±2,06	14,65±1,37*	18,7±1,42*	15,9±1,31*
4.	HCO3, mmol/l	23,58±0,6	28,87±0,43*	22,49±0,48	28,7±0,58*
5.	Na+, mmol/l	132,02±0,52	131,05±0,49	133,5±0,71*	134,96± 0,52
6.	K+, mmol/l	3,73±0,14	3,71±0,09	3,81±0,08	3,71±0,02

Note: * - the difference from the group of healthy donors, significantly at $p < 0.05$;

Against the background of all types of treatment, a change in the acid-base reaction of the blood was observed [Table 1, 2]: the pH value decreased in all the studied groups, and most of all in patients who received traditional treatment in groups with neurosis, personality development, psychopathy, which was below the level healthy donors and went beyond the physiological norm. Such a reaction on the part of the blood pH is possibly associated with the pharmacological effects of diazepam, which has muscle relaxant and anxiolytic properties that contribute to a change in the nature and frequency of respiration. This also explains the increase in the partial pressure of carbon dioxide in all the studied groups.

Under the influence of complex treatment, an increase in the partial pressure of CO_2 was also observed, however, these indicators did not go beyond the physiological norm as with traditional therapy.

It should be emphasized that in patients under the influence of complex therapy, which included anti hypoxants, a significant increase in the partial oxygen tension was noted, which was not registered during treatment with traditional pharmacological preparations.

By the 20th day of treatment, the indicators of the gas-electrolyte composition of the blood were restored to a greater degree in patients who received complex pharmacotherapy and sessions of hyperbaric oxygenation [Table 2]. Such indicators as: blood pH, partial pressure of oxygen and carbon dioxide, corresponded to the level of healthy donors, as well as the content of HCO_3 in the group with psychopathy. Against the background of complex treatment in patients with psychopathy in the decompensation stage, an increase in potassium concentration to 3.86 ± 0.08 mmol / L was observed, and in groups with neurosis and personality development, the sodium content decreased to 139.9 ± 0.47 mmol / l and 139.93 ± 0.46 mmol / l, which was not observed under the influence of traditional therapy.

Table 2: Changes in the gas-electrolyte composition of blood in patients with various forms of borderline mental disorders at the end of therapy

№ п/п	Parameter	Donors	Neuraoses		Personality Development		Psychopathy	
			TT	KT	TT	KT	TT	KT
1	pH	7,48± 0,007	7,323± 0,007*Б	7,343± 0,005АБ	7,323± 0,006*Б	7,346± 0,006АБ	7,324± 0,007*Б	7,344± 0,008АБ
2	PCO2,, мм.рт.ст	49,5± 1,18	50,78± 0,99*Б	48,9± 1,05Б	52,6± 0,65*Б	48,81± 0,6АБ	51,6± 0,95*Б	47,74± 0,62АБ

3	PO2, мм.рт.ст	28,76± 2,06	17,9± 1,8*Б	23,42± 1,65АБ	17,97± 1,29*	24,25± 2,15АБ	18,51± 1,11*	25,63± 1,61АБ
4	HCO3, ммоль/л	23,58± 0,6	26,52± 0,5	26,6± 0,37*	27,2± 0,29*Б	26,75± 0,27*Б	27,17± 0,48*	25,91± 0,38А
5	Na+, ммоль/л	132,02± 0,52	140,54± 0,41	139,9± 0,47*	140,6± 0,33	139,93± 0,46*	141,21± 0,47	140,3± 0,42А
6	K+, ммоль/л	3,73± 0,14	3,95± 0,15	3,82± 0,07	3,94± 0,12	3,76± 0,08А	3,88± 0,1Б	3,86± 0,08Б

Note: * - differences from the group of healthy donors, significant at $p < 0.05$.

A - differences from patients who received "traditional" psychopharmacotherapy on the corresponding day of observation, significant at $p < 0.05$;

B - differences from the initial values, significant at $p < 0.05$;

Conclusions

1. Features of the suicidal behavior of patients in the Republic of Mordovia are: the presence of completed suicides and a high number of suicidal attempts among persons observed in the general medical network; a close relationship of suicidal behavior with periods of endocrine rearrangement is activation during puberty at the age of 17 to 30 years and during the period of involution in people over 60 years of age.

2. The use of anti hypoxants in the complex treatment of borderline mental disorders is justified, which allows us to recommend their use in the treatment of this category of patients.

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