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A COMPARATIVE STUDY OF SOME PREMORBID CHARACTERISTICS, CLINICAL FEATURES AND IMMUNOGRAM INDICATORS IN PATIENTS WITH POSTPARTUM PSYCHOSIS AND FIRST-IN-LIFE PSYCHOTIC EPISODE

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Abstract

Objective: To study and compare premorbid characteristics, clinical features, the functional state of the brain according to EEG data, neuroimaging MRI characteristics and immunogram indices in patients with postpartum psychosis and first--in-life psychotic episode.
Methods: Twenty-three patients with postpartum psychotic disorders and 65 patients with a first-in-life psychotic episode were included in an open cross-sectional study. Clinical interviews, general clinical impression scale, MRI, EEG and the flow cytofluorimetry method were used.
Results: Women with postpartum psychosis had higher rates of nervous and endocrine system disorders ($p<0.05$), short duration psychotic disorders ($p<0.001$), affective syndrome ($p<0.05$), and lower relative and absolute B-lymphocyte counts ($p<0.01$). Abnormal levels of cytotoxic T-lymphocytes ($p<0.05$) and the immunoregulatory index ($p<0.001$) were registered more frequently in the severe course of postpartum psychosis. Among the abnormalities on MRI scans in patients with PP there were gliosis foci, dilation of perivascular spaces, signs of diffuse cerebral subcortical atrophy, reduced volume of the right hippocampus, enlarged subarachnoid spaces, pituitary microadenomas, and first detected volumetric masses - 61% in total. The EEG of women with PP showed alpha-beta-wave dysrhythmia in 67% of cases, single bursts of low bilateral synchronous acute theta waves in 28%, pathological EEG patterns - 44%, and signs of epilepsy - 17%.
Conclusions. The frequency of nervous and endocrine system diseases, suppression of the humoral immune system and its connection to the severity of the course of disease can signify the active participation of immune dysregulation in the genesis of postpartum psychosis.

Key words: postpartum psychosis, first psychotic episode, premorbid characteristics, EEG, MRI, immunogram.

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Introduction

Relatively mild mental disorders (anxiety, depression) occur in approximately 13% of women who give birth. Severe postpartum psychiatric disorders (PPD), particularly psychotic-level disorders, are not among the most common mental disorders. However, it is difficult to overestimate their importance due to the serious consequences and damage they can cause to both maternal and newborn health. Modern psychiatry has no precise data on the frequency of PPD in the population. It ranges from 0.89 to 2.6, and according to some studies, up to 5 cases per 1,000 births. That is why in 2016 the international resource of rare diseases "Orphanet" defined PP as an independent rare disease within the bipolar spectrum [1]. The postpartum period causes a special vulnerability in women. According to epidemiological studies, a woman's risk of being admitted to a psychiatric hospital within 6 months after delivery is much higher compared to any other period of her life [2,3]. Although the association of pregnancy and childbirth with the development of PPD is clear, the neurobiological basis of these disorders remains poorly understood. The low frequency in the population, heterogeneity of symptoms, and the lack of objective information on the brain state (neuroimaging capabilities) are the main difficulties in studying the etiopathogenetic mechanisms of PPD. Understanding PPD pathogenesis is necessary to solve two questions. The first question is related to the existence of "targeted" therapy for PPD, with the search for new effective drugs. The second question concerns the clarification of PPD risk factors, which would give clinicians the opportunity to search for women at risk as early as possible before the development of psychosis, for example, during pregnancy. Currently, there are several hypotheses for the development of PPD: changes

in the concentration of hormones responsible for reproductive function (oestrogen, progesterone) occurring in the maternal body after delivery, genetic conditioning, dysfunction of the immune system, disorders in myelination processes mediated by an immune system defect [4,5,6,7]. Each of these hypotheses does not negate the other and probably clarifies individual links in the pathogenesis of PP. Clarification of the etiology, pathogenetic mechanisms, course and prognosis of these disorders are important because of the serious consequences and damage they can cause to both maternal and neonatal health [8].

The aim of this study was to clarify some of the premorbid characteristics, clinical features, and immune status indicators in patients with PPD compared to patients who had a psychotic episode for the first time.

Materials and methods

The study was an open cross-sectional comparative. Patients aged 18-45 years hospitalized in the state institution "Republican Research and Practice Center for Mental Health" from September 2020 were included in the study groups. The inclusion of patients in the study was preceded by obtaining informed consent, the form of which was approved by the Ethics Committee (protocol No. 2 of September 17, 2020). The main group consisted of 23 patients and the comparison group consisted of 65 patients. The main group consisted of patients suffering from PPD (ICD 10 code: F53.1). The comparison group included patients with a first-in-life psychotic episode. Among them were: 37 patients with acute polymorphic psychotic disorder without schizophrenia symptoms, 18 patients with acute polymorphic psychotic disorder with schizophrenia symptoms, and 10 patients with other acute predominantly delusional psychotic disorders. Exclusion criteria for the study included refusal to participate in the study, acute infectious diseases during inpatient treatment (coinciding with psychotic symptomatology), and organic mental disorders identified prior to the present episode. As the methods of research were used clinical-psychopathological, clinical-biographical, experimental-psychological, method of instrumental and laboratory investigations. The General Clinical Impression Scale (CGIS) was used to assess the severity of symptoms. Biological material was collected from all patients in the study and comparison groups. By flow cytofluorimetry we determined the relative and absolute content of T and B-lymphocyte subpopulations, T-helpers, cytotoxic T-lymphocytes, natural killer cells, and calculated the immunoregulatory index. Statistical data processing was performed using descriptive statistics parameters calculation, Spearman rank correlation coefficient and Chi-square criterion for 2x2 distribution to establish the relationship, Mann-Whitney U-test and Kruskal-Wallis analysis of variance for independent samples to detect differences. Nonparametric methods for mathematical data processing were chosen, since most variables were distributed according to a distribution different from the normal distribution. Statistical analysis was performed using the Statistica 6.0 software package.

Results of the study

Socio-demographic characteristics of the patients in the study and comparison group. The mean age of patients in the main group (with psychotic disorders in the postpartum period) was 29.9 ± 4.8 years, and 30.7 ± 7.7 years in the comparison group. The vast majority of patients in the study group were married - 91%, 9% were single. About half of the patients in the comparison group had never been married - 49%, 29% had been married, and 22% were divorced. The groups did not differ significantly in educational level. Seventy-eight percent of the patients in the main group and 57% of the comparison group had higher or vocational education, the rest - only basic schooling. The social composition of the groups differed significantly. The main group included employees (44%), unemployed (39%), and workers (17%). The comparison group was more diverse: workers (36%), unemployed (35%), female students (12%), employees (11%), and self-employed (6%).

Aggravation of hereditary history of mental disorders. The women of the main group had a more frequent family history of mental disorders than those in the comparison group (43.4% and 23%, respectively, $p<0.01$) (Table 1).

Tab. 1: Hereditary burden of mental illness

Speech disorders' evaluation parameters	Main group		Comparison group		P-level
	n.	%	N	%	
Mental disorder in a family history	10	43.4	15	23	p < 0.01
Degree of relationship					
Father	4	17.4	2	3.0	p >0.01
Mother	4	17.4	6	9.2	p > 0.05
Sisters and brothers	1	4.3	2	3.0	p > 0.05
Aunts and Uncles	1	4.3	3	4.6	p > 0.05
Grandparents	-	-	2	3.0	p <0.05
Mental illness in relatives *					
Depression	3	13	5	7.7	p > 0.05
Alcohol addiction	4	17.4	1	1.5	p < 0.01
Alzheimer's disease	1	4.3	-	0	p > 0.05
Schizophrenia	1	4.3	9	13.8	p < 0.001
Mental retardation		0	1	1.5	p > 0.05
Obsessive-compulsive disorder	1	4.3	-	-	p > 0.05
Postpartum psychosis	1	4.3	-	-	p > 0.05

*One proband of patients of the main and comparison groups suffered from two mental disorders

The parents prevailed in both groups among the relatives of the patients suffering from mental diseases: in 8 patients (34.8%) of the main group and in 8 patients (12%) of the control group. Depression (13%) and alcohol addiction (17.4%) were the most common psychiatric disorders among the relatives of the main group patients. Schizophrenia (13.8%) was the most frequent mental disorder among the relatives of the comparison group women. When comparing the groups, we found that schizophrenia was significantly more common in the family history of comparison group patients than in the main group (13.8% and 4.3% respectively, $p<0.001$), and alcohol dependence was more common in the family history of DU patients than in those with primary psychosis (17.4% and 1.5% respectively, $p<0.01$).

The effects of having a history of somatic diseases. There was little difference in the frequency of somatic diseases suffered in the year prior to onset of mental disorder between the patients with PPD and the comparison group - 10 (43.4%) and 27 (41.5%) cases, respectively ($p > 0.05$) (Table 2).

Tab. 2: Diseases suffered during the year before the onset of mental disorders

Disease	Main group		Comparison group		P	χ^2
	абс.	%	абс.	%		
Respiratory organs	1	4.3	4	6.1	$p > 0.05$	0.51
Cardio-vascular system	2	8.7	3	4.6	$p > 0.05$	2.13
Digestive system	2	8.7	4	6.1	$p > 0.05$	0.73
Genitourinary system	1	4.3	4	6.1	$p > 0.05$	0.51
Nervous system	1	4.3	-	-	$p<0.05$	4.1
Endocrine system	2	8.7	-	-	$p<0.05$	4.75
Infectious diseases (Covid-19)	1	4.3	12	18.4	$p<0.001$	12.43
Total cases	10	43.4	27	41.5	$p > 0.05$	002

However, the structure of somatic diseases differed between the groups. Cardiovascular, digestive, and endocrine system diseases were the leading ones in the main group. In the comparison group infectious disease (Covid-19) was the leading one - 12 cases (18.4%). When comparing the groups, we found significant differences in the incidence of diseases of the nervous and endocrine systems, as well as Covid-19. Thus, nervous and endocrine system diseases were more frequent in the main group ($p<0.05$), and the comparison group patients were more likely to have Covid-19 ($p<0.001$).

The course of pregnancy, childbirth, and the nature of psychiatric disorders in the history of women in the main group. PPD occurred more frequently after the first delivery (14 cases, 61%), in which our data are similar to other research data [9]. In 6 cases (26%) PPD developed after the second labour and in 3 women (13%) after the third. The number of pregnancies in the study sample often did not coincide with the number of deliveries, because 10 (43.4%) patients had an obstetric history of pregnancy termination. PPD occurred most frequently after the second pregnancy (10 cases, 43.4%), in 7 cases (30%) women had PPD after the first pregnancy, in 4 cases (17%) after the third, and in 2 cases (4% each) after the fourth and fifth pregnancies.

More than half of the patients with PP were exposed to stressors during pregnancy (13 patients, 56.4%) (Table 3).

Tab. 3: Stress factors during pregnancy of patients in the main group

Types of stress factors	N	
	number	%
Conflict relationship with spouse	2	87
Conflict relations with relatives	3	13
Difficulties in conceiving and bearing a child	3	13
Criminal prosecution of family members	3	13
Severe somatic illness of spouse, death of close relatives	2	87

Among the stress factors, the respondents most often named conflictual relationships with their husbands, relatives, difficulties in conceiving and carrying a child, etc.

Most women with PP had pregnancy complications (15 patients, 65%): in 7 cases (30%) they were complications on the foetal side and in 8 cases (35%) on the maternal side. Birth complications were less common (8 patients, 35%): in 4 cases (17.5%) they involved the mother and in 4 cases (17.5%) the child.

Eight women (35%) in the main group had sought psychiatric help prior to the present episode. These findings are comparable with those of 58 women with severe psychiatric disorders in the postpartum period, of whom 33% had sought psychiatric or psychotherapeutic care before delivery [10]. Mental disorders in the personal history of women in the main group in 5 cases (22%) corresponded to psychotic level of disorders and in 3 cases (13%) to neurotic level of disorders. Seventeen percent of all patients in the main group had been previously treated in a psychiatric hospital for PPD after a previous delivery.

The total duration of the disease in the patients of the main and comparison groups was assessed from the onset of the first symptoms of mental disorder to their complete disappearance. Patients with PPD significantly more often had a short-term psychosis than the control group: in 5 (22%) patients the total duration of the disorder had not exceeded 30 days, while among patients with primary psychosis, such short-term disorders occurred much less frequently, in 3 (5%) cases ($p<0.001$). In 30 (46%) patients in the comparison group and 7 (31%) patients in the main group, a complete reduction of symptoms occurred between day 30 and 60 of the appearance of the first symptoms of psychotic disorder ($p<0.05$). There was no significant difference between the treatment and control groups in the number of cases in which symptoms lasted more than 60 days (47% and 49%, respectively, $p<0.05$). When analysing the duration of hospitalization in women with PPD and

with primary psychosis, no significant difference was found between the groups (Table 4).

Tab. 4: Length of hospitalization in the psychiatric hospital of patients of both groups

Length of hospitalization	Main group		Comparison group		P-level
	n	%	n	%	
Up to 1 month	12	521	22	33.9	p>0.05
1 to 2 months	9	392	38	58.5	p>0.05
2 to 3 months	2	87	4	6.1	p>0.05
More than 3 months	-	-	1	1.5	p>0.05

Mental disorders in women in the main group most often occurred in the first 14 days after delivery (10 patients, 44%). Between the 15th and 30th day after delivery, mental disorders appeared in 5 women (22%). Between day 31 and day 90, one patient (4%) developed symptoms, and 7 patients (30%) developed symptoms of mental disorder between the third and sixth month after childbirth.

Leading clinical syndrome related to the structure of mental disorder. The treating physicians were asked to estimate the syndrome prevailing in the clinical picture of psychosis. When two or more syndromes were present in the clinical picture to the same degree of severity, they were offered intermediate options. Subsequent analysis revealed that in the main study group, affective syndrome was most often present in the structure of mental disorder (9 cases, 39%), and in the control group, paranoid syndrome (30 cases, 46%), (p<0.05). Catatonic symptoms were observed only in the main group (2 cases, 9%), but for such a number of cases the level of reliability is insufficient (p>0.05) (Table 5).

Tab. 5: Leading clinical syndrome in the structure of mental disorder

Clinical syndrome	Main group		Comparison group		P
	n	%	N	%	
Paranoid	5	21.7	30	46	p<0.05
Hallucinatory	2	8.7	11	17	p>0.05
Affective	9	39.2	7	10.8	p<0.05
Affective-paranoid	3	13	8	12.3	p>0.05
Hallucinatory-paranoid	2	8.7	5	7.7	p>0.05
Oneroid-affective	-	-	1	1.5	p>0.05
Catatonic	2	8.7	-	-	p>0.05
Affective-hallucinatory	-	-	3	4.6	p>0.05

Analysis of the results of instrumental studies.

The EEG results were obtained in 88 patients: 18 from the main group and 70 from the control group. Normal EEG was registered in 5 patients (27.8%) in the PPD group and in 2 patients (2.9%) in the comparison group (p<0.001) (Table 6).

Tab. 6: Immunogram parameters in patients in the study groups, Median [IQR]

Immunogram parameters	F23.0 (n=37)	F23.1 (n=15)	F23.3 (n=11)	F53.1 (n=23)	p-value
B-cell (CD3-, CD19+), %	u	9.1 [7.9; 13.7]	10.3 [6.8; 13]	7.55 [4.7; 9.2]*	H=8.06. **p=0.0448**
B-cell (CD3-, CD19+), абс	0.15 [0.1; 0.23]	0.15 [0.1; 0.19]	0.1 [0.1; 0.18]	0.1 [0.07; 0.15]*	H=8.13. **p=.0433**
T-cell (CD3+, CD19-), %	75.7 [71.1; 81.1]	72.5 [68.8; 76.2]	78.8 [73.8; 82.6]	80.45 [78.1; 84]*	H=13.61. **p=0.004**
T- cell (CD3+, CD19-), абс	1.26 [0.98; 1.5]	1.23 [0.84; 1.4]	1.2 [0.7; 1.42]	1.18 [0.99; 1.4]	H=0.97. p=0.807
T-help (CD3+, CD4+), %	48.3 [42.6; 51.9]	44.9 [40.7; 50.7]	48.2 [41.7; 54.1]	48.75 [43.8; 51.7]	H=0.89. p=0.825
T-help (CD3+, CD4+), абс	0.8 [0.6; 0.98]	0.7 [0.556; 0.86]	0.62 [0.48; 0.80]	0.695 [0.56; 0.845]	H=4.02. p=0.2597
T-cytotox (CD3+, CD8+), %	23 [19.1; 26.8]	24.6 [21.1; 27.3]	23.3 [22.3; 32.4]	25.3 [23.3; 30.1]	H =4.87. p=0.1819
T-cytotox (CD3+, CD8+), абс	0.37 [0.3; 0.4]	0.39 [0.252; 0.55]	0.32 [0.2; 0.5]	0.32 [0.3; 0.475]	H =0.55. p=0.909
IRI, immunoregulatory index, (CD4/CD8)	2.1 [1.6; 2.6]	2.1 [1.57; 2.4]	2.17 [1.38; 2.35]	1.81 [1.56; 2.36]	H =1.31. p=0.725
NK-cell (CD3- CD16+ CD56+), %	10.2 [7.3; 14.6]	15 [9.6; 21.1]	8.1 [4.5; 12.7]	9.1 [6.2; 12.9]*	H =7.59. **p=0.0452**
NK-cell (CD3- CD16+ CD56+), абс	0.18 [0.1; 0.27]	0.197 [0.176; 0.29]	0.1 [0.059; 0.15]	0.102 [0.094; 0.200]*	H=10.22. **p=0.0168**

Note * - statistical significance of differences between groups - pj0.05 by Kruskal-Wallis H -test.

F53.1 - psychiatric and behavioural disorders associated with the postpartum period
F23.0 - acute polymorphic psychotic disorder without symptoms of schizophrenia
F23.1 - acute polymorphic psychotic disorder with symptoms of schizophrenia
F23.3 - other acute predominantly delusional psychotic disorders
IQR - interquartile range

Mild cortical rhythm disturbances in the main and comparison groups were observed with approximately equal frequency (33.3% and 37.1%, respectively, p>0.05). Moderate changes in cortical rhythmics were observed in the main group in 6 cases (33.3%) and in the comparison group in 41 cases (58.6%) (p>0.05). In both the main and comparison groups, there was one case each of marked changes in cortical rhythmics (5.6% and 1.4%), (p>0.05). The frequency and types of EEG abnormalities in both groups are presented in Table 7.

Tab. 7: Frequency of cortical rhythm disturbances in the main and comparison groups

Degree of cortical rhythm disturbances	Main group		Comparison group		p-level
	n	%	N	%	
Norma	5	27.8	2	2.9	p<0.001
Light	6	33.3	26	37.1	p>0.05
Moderate	6	33.3	41	58.6	p>0.05
Prominent	1	5.6	1	1.4	p>0.05

Paroxysmal activity was significantly more frequent in the group of women with PPD than in the comparison group (16.7% and 0%, respectively, p<0.001). Whereas, alpha-wave dysrhythmias were more common in the group of women with first-onset psychosis (95.7% and 50%, p<0.001). Otherwise, there were no significant differences between the groups in the nature of EEG abnormalities, although we should note the fact that theta-wave dysrhythmia and signs of diencephalic dysfunction were noted only in the comparison group.

MRI scans were performed on 87 patients: 20 in the main group and 67 in the control group. MRI examinations revealed no abnormalities in 10 patients (50%) in the main group and abnormalities in 10 patients (50%) (Table 8).

Tab. 8 EEG disorders in the study groups

	Main group		Comparison group		p-level
	n	%	n	%	
Beta wave dysrhythmia	3	16.67	20	28.6	p>0.05
Alpha-wave dysrhythmia	9	50	67	95.7	p<0.001
Theta wave dysrhythmia	-	-	6	8.6	p>0.05
Single bursts of low bilaterally	3	16.67	15	21.4	p>0.05
synchronous sharp alpha waves	2	11.11	6	8.6	p>0.05
Signs of pathogenetically significant diffuse organic changes*	8	44.45	23	32.8	p>0.05
Signs of medial structures dysfunction	2	11.11	5	7.1	p>0.05
Signs of dysfunction of diencephalic structures	-	-	6	8.6	p>0.05
Paroxysmal activity	3	16.67	-	-	p<0.001

* Signs of pathogenetically significant diffuse organic changes (pathologic EEG patterns) includes: focusing of beta-activity, inversion of alpha-rhythm, decrease of average and peak frequency of alpha-rhythm, exceeding of limits of theta-activity index (11).

In the comparison group, 30 patients (44.8%) showed no abnormalities and the remaining 37 (55.2%) had abnormalities. There was one case of abnormality for 8 patients in the main group and 2 patients had 2 and 4 abnormalities, respectively. In the comparison group 25 patients had a single abnormality on the MRI, 8 patients had 2 abnormalities, 2 patients had 3 pathological changes, and 2 patients had 4 and 5 abnormalities each.

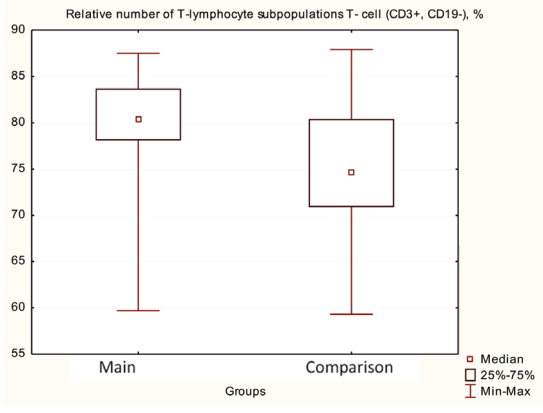
Among the abnormalities in the main group there were the following: the most frequent gliosis foci - 7 cases (35%), less frequent - dilation of perivascular spaces - 3 cases (15%), and also 1 case (5% each) of diffuse cerebral subcortical atrophy, reduced right hippocampal volume, dilation of subarachnoid spaces, and microadenoma of pituitary. Gliosis foci were also the most frequent in the comparison group - 14 cases (20.9%), less frequent was the dilation of perivascular spaces - 6 cases (8.9%).

In 4 cases (5.97%) volumetric masses in the group of first-time psychotic patients were found. These were the first detected volumetric masses without any neurological symptoms: 1 case of parietal fibroma, 1 case of cavernous haemangioma in the frontal lobe, 1 case of dysembryoplastic neuroepithelial tumour of the right hippocampus, and 1 case of lipoma of the valley.

The cases of abnormalities detected on MRI scans were supplemented with information about EEG activity disorder. Thus, in the main group: 5 cases (29.4%) contained a combination of perivascular space dilation and the presence of pathogenetically significant diffuse organic changes on the EEG, 1 case (5.8%) of a combination of pituitary gland microadenoma and beta-wave dysrhythmia. In the comparison group: dilation of subarachnoid spaces was combined with beta-wave dysrhythmia in 3 (4.54%) cases, with beta-focusing in 1 case (1.5%), theta-wave flashes in 1 case (1.5%); dilation of perineural liquor spaces was combined with alpha-wave dysrhythmia in 3 cases (4.5%), while changes in pituitary structure were combined with beta-wave dysrhythmia in 2 cases (3.0%).

Analysis of the immunogram parameters: The analysis of the immunogram parameters revealed statistically significant differences in the immune status of the patients in the study and comparison group, the data are presented in Fig. 1, 2.

Fig. 1. : Comparative analysis of the relative content of the T-lymphocyte population in patients of the study groups



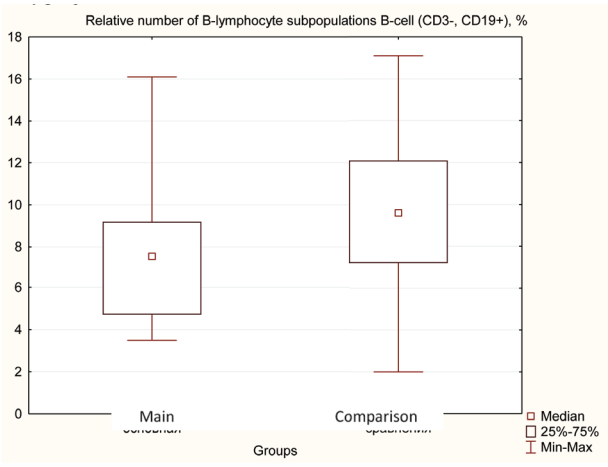
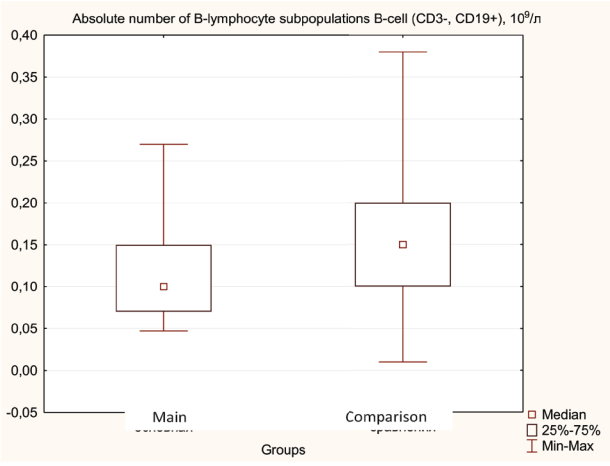


Fig. 2. : Comparative analysis of the relative and absolute content of the B-cell population in patients of the study groups



Patients with PPD revealed a significantly higher relative content of T-lymphocytes compared to patients with a first-in-life psychotic episode - 80.4 [78.1; 83.7] % and 74.6 [70.9 80.4] %, respectively (U=385, p =0.004), and a significantly lower relative and absolute B-lymphocyte content of 7.55 [4.7; 9.2] % and 0.1 [0.07; 0.15] × 109/L compared with 9.6 [7.2; 12.1] % and 0.15 [0.1; 0.2] × 109/L, respectively (U=413, p =0.005 and U=435, p =0.01).

The analysis of the immune status of the patients in the study and comparison group divided into subgroups depending on ICD-10 code, using the Kruskel-Wallis analysis of variance also revealed statistically significant differences between the groups, indicating a certain areageneity of the immune system and propensity for immunopathological processes in women with psychiatric disorders compared to the general population, as well as more pronounced immunodeficiency in women with psychiatric disorders in the postpartum period (table 9).

Tab. 9: Changes on MRI in the main group and in the comparison group

	Main group		comparison		p-level
	N	%	n	%	
Volumetric masses (tumors)	-	-	4	5.97	p>0.05
Focal changes (foci of gliosis)	7	35	14	20.9	p>0.05
Signs of medial structures dysfunction	1	5	3	4.48	p>0.05
Dilation of perineural liquor spaces	-	-	4	5.97	p>0.05
Ventricular enlargement	-	-	4	5.97	p>0.05
Dilation of the convexital sulcus	-	-	3	4.48	p>0.05
Dilation of perivascular spaces	3	15	6	8.96	p>0.05
Expansion of the subarachnoid spaces	8.6	8.6	8.6	8.6	8.6
Hippocampus formation by the type of incomplete inversion	1	5	5	7.46	p>0.05
Mesotemporal sclerosis	-	-	1	1.49	p>0.05
Decreased volume of the right hippocampus	8.6	8.6	8.6	8.6	8.6
Decreased volume of the left hippocampus	1	5	5	7.46	p>0.05
Retrocerebellar arachnoidal liquor cyst	-	-	1	1.49	p>0.05
The structure of the pituitary gland is heterogeneous	-	-	1	1.49	p>0.05
Microadenoma of the pituitary gland	1	5	2	2.99	p>0.05

In the main group, statistically significant differences in the immunogram were observed between the subgroups of women who had foetal complications during pregnancy and those whose pregnancy did not have such complications. The former had more frequent abnormal absolute and relative B-lymphocyte counts (U=5; p=0.002) and natural killer cells (U=10, p=0.01).

Correlation analysis revealed statistically significant moderate direct correlations between the severity of psychiatric disorder on day 20 of the psychiatric hospitalization and deviations from normal cytotoxic T-lymphocyte counts (R=0.5, p<0.05) and the immunoregulatory index (R=0.698, p<0.001) in the women with PPD group.

In the comparison group, women with predominant hallucinatory syndrome had more frequent abnormal T-helper content (U=275, p<0.05). In addition, a weak direct correlation between the overall duration of mental illness and deviations from normal B-lymphocyte content (R=0.31, p=0.02) was found in comparison group patients. It can be assumed that a longer duration of psychotic disorders in women with a first-in-life psychotic episode is associated with the state of humoral immunity.

Conclusion

PPD occurred more frequently after the first labour (61%), most frequently after the second pregnancy (43.4%) in women with a history of obstetric complications (56.5%)

and complications during the current pregnancy (65%) and labour (35%). More than a third of the patients with PPD (35%) had previously sought psychiatric help, and 17% of the patients in the main group had received treatment in a psychiatric hospital because of PPD after a previous delivery. Mental disorders most often occurred in patients in the first 14 days after delivery (44%).

A family history of mental illness was more common in women with PPD than in first-time psychosis patients (43.4% and 23%, respectively, $p<0.01$). Alcohol addiction was more common in the family history of the former (17.4% and 1.5%, respectively, $p<0.01$), and schizophrenia was more common in the latter (4.3% and 13.8%, respectively, $p<0.001$). The patients in both groups also differed in the type of somatic diseases they had suffered from a year prior to developing mental disorder symptoms: nervous and endocrine system diseases were more common in the main group ($p<0.05$), while comparison group patients suffered from Covid-19 more frequently ($p<0.001$). The reason for the lower incidence of Covid-19 in the main group patients is most likely due to the fact that pregnant and recently confined women tend to significantly reduce their contact with other people due to a variety of reasons: temporary disability, maternity leave, poor health, care for the newborn, etc.

The short course of psychosis, which did not exceed 30 days, was significantly more common in female patients with PP (22%) than in the comparison group (5%), ($p<0.001$). In the clinical picture of PP the affective syndrome was the most common (39%), while for primary psychosis the paranoid syndrome was more typical (46%), ($p<0.05$).

In the patients of both groups under study there was a certain suppression of both cellular and humoral immunity. Women with PPD were characterized by higher relative T-lymphocyte counts compared to patients with a first-in--life psychotic episode ($U=385$, $p=0.004$) and lower relative and absolute B-lymphocyte counts ($U=413$, $p<0.01$; $U=435$, $p=0.01$). Patients with a more severe course of PPD more often had abnormal levels of cytotoxic T-lymphocytes ($U=275$, $p<0.05$) and the immunoregulatory index ($R=0.698$, $p<0.001$).

Differences in hereditary history, as well as in the clinical picture of psychosis in the patients of the studied groups, indicate that there is a correlation between postpartum psychosis and bipolar spectrum disorders. The frequency of nervous and endocrine system diseases in the personal history of women with PPD, as well as some suppression of the humoral link of immunity and its connection to the severity of PPD can testify to the active participation of immune dysregulation in the genesis of severe psychiatric disorders of the postpartum period. The presence in the main group of patients who had already had PPD after a previous delivery necessitated a follow-up study of all the women included in the study to clarify the association of the probability of PPD in a subsequent delivery with the presence and nature of psychiatric disorders in the personal history of a woman.

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