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FEATURES OF THE PSYCHO-EMOTIONAL SPHERE IN PATIENTS WITH HEMISPHERIC ISCHEMIC STROKE DEPENDING ON THE PRESENCE OF COVID-19 IN HISTORY

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ABSTRACT

This article discusses the features of the psycho-emotional sphere in patients with hemispheric ischemic stroke depending on the presence of COVID-19 in history. The hemodynamic subtype was excluded from the study due to the small number of patients, IS of unspecified etiology - due to the possibly heterogeneous structure of the pathogenesis of IS.

KEYWORDS

psycho-emotional sphere, ischemic stroke, presence of COVID-19, hemodynamic subtype, number of patients, unspecified etiology, heterogeneous structure, structure of pathogenesis.

INTRODUCTION

Past COVID-19 disease increases the likelihood of ischemic stroke, increasing the rate of disability and mortality in the population (4,5). It was found that COVID-19 provokes stroke even in healthy young people, it is more severe and 5-10 times more likely to lead to death (3,5,6). Thus, the average mortality from stroke is usually 5-10%. In patients with COVID-19, it was at the level of 42% (6). According to many authors, against the background of COVID-19, patients with develop and progress changes in the emotional sphere, mainly asthenic and anxiety-depressive disorders [4,5].

Of course, additional studies on large groups of patients are needed to finally understand the mechanisms of complications, the degree of their connection with COVID-19 and the development of schemes for their treatment and subsequent rehabilitation.

Purpose of the study. To study the features of the psycho-emotional sphere in patients with hemispheric ischemic stroke, depending on the presence of COVID-19 in history.

MATERIAL AND RESEARCH METHODS

In this study, out of 250 examined patients, 152 patients (60.8%) had asthenic and anxiety-depressive disorders. To examine the psycho-emotional and neuropsychological spheres in patients with hemispheric ischemic stroke, depending on the presence of COVID-19 in the anamnesis, three subtypes of IS were selected - atherothrombotic (AT), cardioembolic (EC), and lacunar (LI) subtypes. The hemodynamic subtype was excluded from the study due to the small number of patients, IS of unspecified etiology - due to the possibly heterogeneous structure of the pathogenesis of IS. Therefore, in this type of study, MG consisted of 123 patients, among them were patients with AT in the amount of 42 (34.1%), with EC-36 (29.3%) and with LI in the amount of 45 (36.6%), in HC had a different alignment in percentages among the subtypes of IS - AT amounted to 43.9%, EC - 33.3% and LI - 22.8% (Table 1).

Table 1

IS subtypes in MG and HC

IS subtype	MG, n=165		HC, n=85		p<
	n	%	N	%	
atherothrombotic subtype	42	25,5%	25	29,4%	0,005
cardioembolic subtype	36	21,8%	19	22,4%	
lacunar stroke	45	27,3%	13	15,3%	0,001

Asthenic disorders in the examined patients with PIS were determined according to the points of the MFI-20 scale – "decreased motivation", "mental asthenia", "reduced activity", "physical asthenia" and "general asthenia" (1,2). The Hamilton Scale (HDRS) was also used to identify and assess the severity of depressive disorders. The scale is filled in by the doctor. The maximum possible score is 52. The severity of depression is assessed as follows: 0-7 points - no depression, 8-13 points - mild depression, 14-17 points - moderate depression, 18 points or more - severe depression. To study the psycho-emotional state of patients, the Beck anxiety and depression scales were used. The Beck Questionnaire consists of 21 questions. Completing the questionnaire usually took no more than ten minutes on average. According to the Spielberger scale, the levels of personal (LP) and reactive anxiety (RA) were determined for patients (1.2).

The survey was carried out by the method of continuous research, the results of observations were used. Statistical processing of clinical and instrumental materials in accordance with the recommendations for processing the results of biomedical research at a significance level of p<0.05 was carried out using the practical statistical package STATISTICA.

Research results. In general, in patients with MG, compared with HC, there were significantly higher scores on all subscales of the MFI-20 test (p<0.05). Table 2 shows that in the study of Asthenia syndrome, depending on the subtype of stroke, in both groups with CE stroke, the rates of asthenia are higher compared to other subtypes.

Thus, in EC IS in the MG, the indicators on the subscales – "Decreased motivation", "Mental asthenia", "Decreased activity", "Physical asthenia", "General asthenia" amounted to 16.8±0.7; 17.9±0.4; 17.2±0.1; 16.3±0.3; 16.8±0.4 points, respectively. These figures are much higher than those for AT and LI MG - 15.9±0.5; 16.9±0.6; 16.9±0.2; 15.1±0.4; 16.2±0.5 points, respectively, in AT, 14.3±0.4; 15.5±0.8; 14.8±0.7; 15.9±0.5; 15.1±0.2 points, respectively, with LI. Reliability of differences was revealed with LI on the subscales "Decreased motivation", "Mental asthenia", "Decreased activity", ($p<0.05$) (t.2).

Table 2

The level of asthenia according to the MFI-20 scale

MFI-20			Decreased motivation	Mental asthenia	Reduced activity	Physical asthenia	General asthenia
MG	AT	1	15,9±0,5	16,9±0,6	16,9±0,2	15,1±0,4	16,2±0,5
	CE	2	16,8±0,7	17,9±0,4	17,2±0,1	16,3±0,3	16,8±0,4
	LI	3	14,3±0,4	15,5±0,8	14,8±0,7	15,9±0,5	15,1±0,2
CG	AT	4	13,8±0,5	13,4±0,5	12,1±0,6	13,2±0,8	12,9±0,1
	CE	5	12,9±0,6	13,1±0,4	14,8±0,9	13,7±0,5	13,6±0,5
	LI	6	11,1±0,1	12,9±0,7	13,6±0,8	11,2±0,7	10,3±0,3
p<	1--2						
	1--3		0,05	0,05	0,05		
	1--4		0,05	0,05	0,05	0,05	0,005
	1--5		0,05	0,05	0,05	0,05	0,05
	1--6		0,05	0,05	0,05	0,005	0,005
	2--3		0,05				
	2--4			0,05	0,05	0,05	0,05
	2--5		0,05	0,05	0,05	0,05	0,05
	2--6		0,05	0,05	0,05	0,05	0,05
	3--4		0,05	0,05		0,05	0,05
	3--5			0,05	0,05		0,05
	3--6			0,05	0,05		0,05
	4--5						
	4--6		0,05			0,05	
	5--6				0,05	0,05	0,05

In the CG with CE IS on the subscales "Decreased activity", "Physical asthenia", "General asthenia" the indicators were higher compared to the subtypes of IS -AT and LI, the reliability of the indicators was revealed on the subscales – "Mental asthenia", "Physical asthenia" (p<0.05) (v.2).

Thus, in many examined patients with IS, asthenic disorders were observed, which had some differences depending on the stroke subtype and history of COVID-19.

Table 3.

Representation of anxiety disorders in groups depending on the subtype of PIS

			Phobic manifestations		Clinically manifest anxiety disorder		Subsyndromal anxiety	
			abc	%	abc	%	abc	%
MG	AT	1	12	28,6%	11	26,2%	19	45,2%
	CE	2	14	38,9%	8	22,2%	15	41,7%
	LI	3	8	17,8%	4	8,9%	5	11,1%
HC	AT	4	3	12,0%	3	12,0%	7	28,0%
	CE	5	2	8,0%	2	8,0%	6	24,0%
	LI	6	0	0,0%	1	5,3%	5	26,3%
p<	1--2			0,05		0,05		0,05
	1--3			0,005		0,001		0,005
	1--4			0,005		0,005		0,05
	1--5			0,001		0,05		0,005
	1--6			0,001		0,005		0,005
	2--3			0,005		0,005		0,005
	2--4			0,005		0,001		0,005
	2--5			0,001		0,001		0,001
	2--6			0,001		0,001		0,001
	3--4							
	3--5			0,005				0,05
	3--6			0,001		0,05		0,05

4--5		0,05				
4--6		0,001				0,05
5--6		0,001				0,05

In the group of patients with IS with a history of COVID-19, asthenic disorders were more pronounced compared with patients with PIS without a history of COVID-19. It is possible that the development of such disorders in COVID-19 can be associated with the primary lesion of the mid-located brain structures, where the limbic-reticular complex is located [4], as well as the negative effect of the infection itself (intoxication, oxidative stress) and psychogenic factors on the level of cerebral activation. , physical and mental activity of the individual [4].

In patients with MG, in contrast to CG, correlations were found between the indicators of general and mental asthenia and the level of depression (r = 0.37 and r = 0.33, respectively) and the polymorbidity index - PI (r = 0.39 and r = 0.31), which indicates a large role of somatic pathology in the development of depressive disorders and asthenia, possibly due to intoxication with COVID-19, patients experience mental stress and functional limitations, which, according to some researchers, exacerbate

asthenia [4]. The predominance of physical asthenia in patients with AT and CE is most likely related to the severity of these stroke subtypes.

Anxiety disorders according to the ICD-10 criteria were detected in 50.4% of the MG and in 42.1% of the CG (p<0.05). The spectrum of these disorders is presented in v.4.3. According to the data in this table, in the MG, the representation in % of patients according to the criteria "Phobic manifestations", "Clinically manifest anxiety disorder", "Subsyndromal anxiety" was higher compared to the CG and had significant differences. Moreover, in the MG in patients with CE, the indicators according to the criteria "Clinically manifest anxiety disorder", "Subsyndromal anxiety" were higher compared to AT and LI within the group itself (v.3).

According to the Spielberger scale, patients with MG, in comparison with CG, had significantly higher levels of personal and reactive anxiety, and, depending on the subtype of IS, the score severity of reactive anxiety (RA) and personal

anxiety (PA) was significantly higher in CE and AT

in both cases, groups (Table 4 and Fig. 1).

Table 4.4

Anxiety levels in groups depending on the subtype of PIS (in points, M±σ).

Spielberger scale			Reactive anxiety	Personal anxiety
MG	AT	1	49,9±1,9	54,1±1,5
	CE	2	46,6±1,4	49,9±1,3
	LI	3	41,2±0,9	44,1±1,0
CG	AT	4	42,5±1,8	43,9±1,6
	CE	5	42,7±0,9	46,8±0,9
	LI	6	36,1±2,3	37,2±1,6
p<	1—2			
	1—3		0,05	0,005
	1—4		0,005	0,05
	1—5		0,05	0,05
	1—6		0,005	0,005
	2—3		0,05	0,05
	2—4			0,05
	2—5			
	2—6		0,05	0,05
	3—4			
	3—5			
	3—6		0,05	0,05
	4—5			
	4—6		0,05	0,05
	5—6		0,05	0,05

But in the MG RT and PA in persons with AT and CE subtype IS was the highest. Thus, during CE, MG of RA and PA was 46.6±1.4 and 49.9±1.3 points, respectively, with AT - 49.9±1.9 and

54.1±1.5, respectively. Which is significantly higher than the indicators of RA and PA with LI MG 41.2±0.9 and 44.1±1.0, respectively (p<0.05). Significant differences were revealed when comparing the indices of RA and LT in the CG

(p<0.005). It should be noted that insomnia dominated in the structure of anxiety disorders, anxious mood and the cognitive component of anxiety were expressed to a lesser extent.
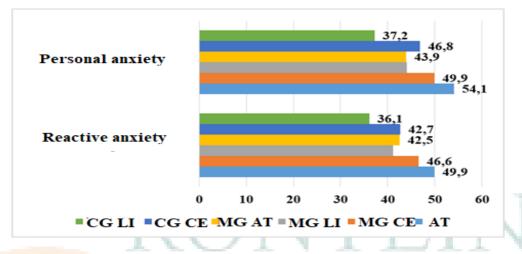

Figure 1. Levels of anxiety in groups depending on the subtype of PIS in points.

In general, depressive disorders were more pronounced in the MG compared to the HC (v.5). Among the subtypes of MG, the scores were significantly higher for the CE subtype of IS compared with the LI, with AT, no significant differences were found. Thus, according to the Beck and Hamilton scales in CE MG, the following indicators were in points - 17.6 ± 0.8 and 13.9 ±

1.1, respectively; 10.8±1.5, respectively (p<0.05). In the HC, the scores on the Beck and Hamilton scales were much lower compared to the MG and amounted to 11.8±0.5 and 9.6±0.8 in AT, CE, and LI; 11.8±0.9 and 11.9±1.4; 7.1±0.8 and 9.1±1.2 points, respectively, there were significant differences in almost all indicators in comparison with the MG.

Table 4.5

Representation of depressive disorders Level of depression (in points, M±σ).

Scales			Beck	Hamilton
MG	AT	1	15,5±0,7	12,7±1,3
	CE	2	17,6±0,8	13,9±1,1
	LI	3	12,7±0,5	10,8±1,5
HC	AT	4	11,8±0,5	9,6±0,8
	CE	5	11,8±0,9	11,9±1,4
	LI	6	7,1±0,8	9,1±1,2
p<	1--2			
	1--3		0,05	
	1--4		0,005	
	1--5		0,005	0,05
	1--6		0,005	
	2--3		0,005	0,05
	2--4		0,005	
	2--5		0,005	0,05
	2--6		0,005	0,005
	3--4			
	3--5			
	3--6		0,05	
	4--5			
	4--6			
	5--6		0,05	

In general, in the MG, according to an objective assessment on the Hamilton scale, depression was observed in 76.4% of patients and reached 15.63±1.3 points. Of these, 52.1% had a minor depressive episode, 24.5% had a major depressive episode in accordance with the Hamilton scale.
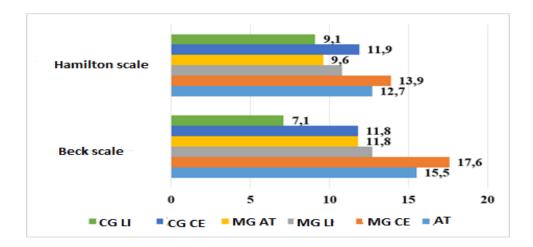
Figure 2. Representation of depressive disorders

In general, in the MG, an increased level of anxiety was found in 64.25% of patients (14.51±1.9 points on the Hamilton anxiety scale), among them, 51.9% of patients had individual symptoms of anxiety, and 21.5% had clinical symptoms. The structure of depression was dominated by symptoms of hypothymia, hypochondria and anergy. The level of depression according to the Beck questionnaire and the Hamilton scale (depression) in the MG was statistically significantly higher than that in the HC (p<0.05).

And among the patients of MG-1, the majority are patients with mental disadaptation on a scale of autonomic disorders, but the differences between the groups are statistically insignificant (χ^2=1.19, p>0.01). In persons MG-1, a greater number of maladjusted patients was statistically significantly expressed on the scales of neurotic depression (χ^2=7.12, p<0.05), asthenia (χ^2=8.23, p<0.05. Differences on the scale of the hysterical type of response (χ^2=1.9, p>0.01) statistically significant differences in the mean values between MG-1 and HC-1 on the scales of neurotic depression and asthenia in the category of psychological maladaptation are statistically significant (t=5.21, p<0, 01; t=43,84, p<0,05). Other differences in this category are not statistically significant.

Thus, anxiety and depression were detected in the majority of examined patients in the COVID-19 group, significantly more often in females. According to the "vascular" concept, depression is presented as one of the manifestations of cerebrovascular pathology. The pathogenesis of

depression is explained by the presence of a "disconnection phenomenon", which consists in a violation of the connections of the dorsolateral frontal cortex with the area of the striatal complex and the limbic structures of the brain. Normally, the above areas of the brain are involved in the formation of positive emotional reinforcement when the goal of any activity is achieved (depression can also develop as a psychological reaction to COVID-19, in which the patient's life is limited (the quality of life decreases), and also as a manifestation in the form a side effect of certain medications that are included in complex treatment with COVID-19. It can be said that depression negatively affects the course of the disease, as it leads to a violation of neuroplasticity and an increase in structural changes in the brain according to MRI [6].

CONCLUSION

Asthenia, anxiety and depressive disorders were almost obligately present in the examined patients with COVID-19, especially in women. The high incidence of these clinical syndromes in patients with COVID-19, their definite pathogenetic relationship with morphological changes in the brain during COVID-19, as well as

psychogenic experiences experienced by patients [4], allows us to consider them as comorbid conditions of this disease.

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