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## **Peculiarities of psycho-emotional disorders in patients in the early recovery period of cerebral ischemic stroke**

*Abstract:* Stroke is one of the most urgent problems of modern medicine. Today, there are about 62 million people worldwide who have suffered a stroke, and about 6 million of them have a permanent disability. One of the most frequent consequences of this disease is psycho-emotional disorders. Therefore, the study purpose was to investigate the features of psycho-emotional disorders in patients in the recovery period of cerebral ischemic stroke. 116 patients and 30 clinically healthy persons of the appropriate age and sex participated in the study. According to the results of the conducted research, it was established that in the patients asthenic syndrome was a basic factor. Depressive disorders corresponded to a mild degree of severity according to the HDRS, and the level of reactive and personal anxiety according to the STAITA, STAISA – to moderate. The assessment of factors affecting depression in patients showed that its severity is influenced by: the severity of motor disorders, the patient's age, female gender, the severity of leukoaraiosis, extent of the stroke focus, the severity of reactive and personal anxiety.

*Keywords:* cerebral ischemic stroke, psycho-emotional disorders, asthenia, depression, anxiety.



### **Introduction**

Stroke is one of the most urgent problems of modern medicine. Today, there are about 62 million people worldwide who have suffered a stroke, and about six million of them have a permanent disability. One of the most frequent consequences of this disease is psycho-emotional disorders. Therefore, the purpose of this study was to investigate the features of psycho-emotional disorders in patients in the recovery period of cerebral ischemic stroke. 116 patients and 30 clinically healthy persons of the appropriate age and sex participated in the study. According to the results of the conducted research, it was established that in the patients asthenic syndrome was a basic factor. Depressive disorders corresponded to a mild degree of severity according to the HDRS, and the level of reactive and personal anxiety according to the STAITA, STAISA – to moderate. The assessment of factors affecting depression in patients showed that its severity is influenced by: the severity of motor disorders, the patient's age, female gender, the severity of leukoaraiosis, extent of the stroke focus, the severity of reactive and personal anxiety.

## The results of the study

Stroke is one of the most urgent problems of modern medicine. One person in the world has a stroke every two seconds, and about 15.3 million new cases are registered annually. Over the past 25 years, the number of new stroke cases has increased by almost 70% (*Fartushna & Vynychuk, 2014; WHO..., 2015*). About 1.7 million cases of strokes are registered in European countries every year (*Wolfe, 2000*). WHO data indicate that stroke ranks second in the mortality structure of the world's population (*World..., 2016*). According to experts' forecasts, by 2035 in Europe, the number of new cases of stroke will increase by 34%, and mortality due to them will increase by 45% (*Feigin, 2019*).

Today, there are about 62 million people who have suffered a stroke worldwide, and about 6 million of them have a permanent disability (*Jönsson et al., 2014*). It is known that the degree of disability of people with the consequences of a stroke directly depends on the degree of impaired functions and a person's ability to self-care (*Vera et al., 2011*). About 60% of such patients suffer from motor disorders, 20% of people have speech disorders, many patients have difficult swallowing, vision disorders, etc. (*Bernahard et al., 2015*). Also, one of the main causes of disability of these patients is cognitive and psycho-emotional disorders (*Fegin et al., 2015*). According to the conducted study, which included 220 people over the age of 65 with past stroke, it was established that 6 months after a stroke, 30% had depression (*Edwardson, 2023*).

It is known that psycho-emotional disorders in such patients are among the unfavorable prognostic factors for the recovery of neurological deficit. Psycho-emotional disorders in the form of depression or anxiety have a negative impact on physical recovery and significantly worsen a person's quality of life. Therefore, the purpose was to study the features of psycho-emotional disorders and to determine the factors affecting their severity in patients in the recovery period of cerebral ischemic stroke.

116 patients in the recovery period of cerebral hemispheric ischemic stroke who underwent inpatient treatment at the Institute of Neurology, Psychiatry and Narcology of the National Academy of Medical Sciences of Ukraine took part in the study. The average age of the patients was  $60.8 \pm 0.63$  years. The control group consisted of 30 clinically healthy individuals who had no signs of a previously experienced acute cerebrovascular event, according to the anamnesis and neurological examination. The average age of control group patients was  $61.07 \pm 0.75$  years. When comparing groups by age and gender, no statistically significant differences were found. All patients were assessed for the nature of psycho-emotional disorders using international standardized scales and tests (Hamilton Rating Scale for Depression (HDRS), State-Trait Anxiety Inventory (STAI SA, STAI TA)). Processing of research results was performed using MS Excel 2016 and SPSS Statistics 23.0 software. Descriptive statistics is presented in the form of arithmetic mean (M) and root mean square error (m) for quantitative indicators and in the form of absolute (abs.) and relative (%) values for categorical variables. Comparison of quantitative indicators between 2 groups was performed using the T-test for connected groups.

According to the results of the conducted psychodiagnostic study, it was established that all patients had manifestations of asthenia. Thus, 116 patients (100.0%) had undue tiredness, 115 patients (99.1%) – general weakness, 114 patients (98.2%) – a decrease in work capacity and energy potential, 112 patients (96.5%) – loginess and a decrease in motor potential. Also, 84

(72.4%) patients complained of emotional lability and irritability, 106 (91.4%) patients noted a steady decrease in mood, 105 (90.5%) patients – feeling of anxiety, 43 (37.1%) – affectability.

Revealed clinical psychopathological disorders in patients in the recovery period of cerebral stroke, peculiarities of their clinical structure and dynamics made it possible to identify leading clinical syndromes. Thus, the asthenic syndrome was diagnosed in 116 (100.0%) patients, the astheno-hypochondriac syndrome – in 28 (24.1%) patients, the astheno-depressive syndrome – in 102 (88.0%) and astheno-anxiety syndrome – in 111 (95.7%) patients.

Thus, in patients in the recovery period of cerebral ischemic stroke, the basic asthenic syndrome acquired a depressive, hypochondriacal or anxious colour.

Asthenic syndrome was manifested in the form of increased fatigue, irritability, general weakness, reduced work capacity and mood instability. Characteristic features of the astheno-hypochondriac syndrome were a combination of asthenic manifestations with excessive concentration of patients on their sensations and their exaggeration. The astheno-depressive syndrome in the examined patients manifested itself in a lowered, depressed mood, retardation, a decrease in intellectual and general activity, worsening of well-being in the evening hours, sleep disturbance. The astheno-anxiety syndrome was characterized by the appearance of irresistible fears, doubts, ideas with a critical attitude against the background of pronounced clinical asthenic manifestations.

Non-verbal characteristics such as facial expression, posture, stiff, sad, anxious facial expression, quiet monotonous voice, etc. took a significant place in the diagnosis of the depressive state in patients.

The results of the HDRS study showed that all patients had different depressive symptoms. Mild depressive disorders were diagnosed in 105 (90.5%) patients, and depressive symptoms of moderate severity in 11 (9.5%) patients. Control group patients had no signs of depression. The average HDRS score in patients with the consequences of cerebral stroke was  $11.69 \pm 0.26$ , in the control group –  $5.33 \pm 0.26$ . These results indicate the absence of depressive disorders only in persons of the control group ( $p < 0.001$ ).

Thus, the analysis of the study results of depressive disorders in patients in the recovery period of cerebral ischemic stroke showed that in the main group patients with a mild depressive disorder prevailed.

The STAI SA and STAI TA scales were used to determine the level of anxiety in patients and control group individuals. The results of the examination of patients with the consequences of cerebral stroke showed that a low level of reactive anxiety was observed in 5 (4.3%) people and 8 (6.9%) people had a low level of personal anxiety. The vast majority of patients were diagnosed with a moderate level of reactive and personal anxiety. A moderate level of reactive anxiety was diagnosed in 111 people (95.7%) and personal anxiety – in 108 (93.1%) people. The average score of reactive anxiety according to STAI SA in patients of the main group was  $37.08 \pm 0.34$ , which corresponds to a moderate level of anxiety. In the control group patients this indicator was equal to  $17.28 \pm 0.83$  points, which indicated a low level of anxiety and a significant difference from the subjects of the main group ( $p < 0.001$ ).

The average score of personal anxiety according to STAI TA in patients of the main group was  $34.16 \pm 0.42$ , which corresponds to a moderate level of anxiety. In the control group, this indicator was  $14.56 \pm 0.92$ , which corresponded to a low level of anxiety and indicated a

significant difference from the patients of the main group ( $p < 0.001$ ).

Thus, the analysis of the results of the assessment of the state of reactive and personal anxiety showed that among the patients with the consequences of a cerebral stroke, individuals with a moderate level of anxiety prevailed.

For the purpose of a more detailed study of psycho-emotional disorders in patients, the relationship between post-stroke psycho-emotional disorders and functional and motor disorders was determined.

The dependence of the degree of severity of depressive disorders according to the HDRS and the degree of disability according to the Rankin scale was analyzed. The results of the study showed that there is a direct correlation of medium strength between the severity of depressive disorders and the score on the Rankin scale ( $R = +0.635$ ,  $p < 0.001$ ), which indicates an increase in the severity of depression at disability increase.

The study also analyzed the dependence of depressive disorders severity on paresis severity according to the muscle strength rating scale, spasticity severity according to the mAS, the degree of impaired mobility and independent functioning according to the Barthel ADL Index. According to the results of the statistical analysis, it was established that in patients with the consequences of a cerebral ischemic stroke, there is a dependence of the severity of depressive manifestation on the indicated indicators. The highest correlation index was established between the degree of severity of paresis and severity of depressive symptoms, namely the inverse correlation of medium strength ( $R = -0.643$ ,  $p = 0.038$ ), which indicates an increase in severity of depression with increasing severity of paresis. A positive correlation of medium strength was also obtained between the severity of the depressive syndrome and the degree of impaired mobility and independent functioning ( $R = +0.574$ ,  $p < 0.001$ ), and between the severity of the depressive syndrome and the degree of spasticity ( $R = +0.385$ ,  $p < 0.001$ ), which points at more pronounced depression in patients with a higher degree of impaired mobility and spasticity.

The relationship between depression indicators according to HDRS and reactive and personal anxiety according to STAI SA, STAI TA was evaluated. The analysis showed that the patients of the main group had a strong positive correlation between the indicators of depressive disorders and reactive anxiety ( $R = +0.798$ ,  $p < 0.001$ ), just like a medium-strength positive correlation between the indicators of depressive disorders and personal anxiety ( $R = +0.513$ ,  $p < 0.001$ ). We also analyzed the dependence of the severity of depressive disorders in patients with the consequences of cerebral ischemic stroke according to the HDRS by the following indicators: the age of the patients, the extent of stroke focus, the presence of foci of leukoaraiosis and their severity, and the number of risk factors. It was established that there is a dependence of depressive disorders severity on the named indicators. A positive correlation of medium strength was found between the severity of depressive symptoms and the patient's age ( $R = +0.405$ ,  $p < 0.001$ ), which indicates a worsening of the psycho-emotional state with aging. A moderate positive correlation was also found between the severity of depressive symptoms and the extent of stroke focus ( $R = +0.463$ ,  $p < 0.001$ ) and the number of risk factors ( $R = +0.416$ ,  $p < 0.001$ ), just like a weak correlation with the degree of leukoaraiosis ( $R = +0.223$ ,  $p = 0.016$ ), which confirms the role of cerebral stroke in the occurrence of the specified affective disorder. It was also established that the average value of the HDRS score for men was  $10.96 \pm 0.26$ , and for women it was  $12.22 \pm 0.34$ . The obtained data confirm that depression is more pronounced

in women ( $p=0.006$ ).



### Conclusion

Thus, in the research, it was established that in patients in the recovery period of cerebral ischemic stroke, the basic asthenic syndrome acquired a depressive, hypochondriacal or anxious color. The asthenic syndrome manifested itself in the form of increased fatigue, irritability, general weakness, reduced work capacity, and mood instability. Depressive disorders corresponded to a mild degree of expression according to the HDRS, and the level of anxiety according to STAITa, STAISA – moderate level. The study of factors that affect depression in patients showed that its severity is affected by the severity of motor disorders, the patient's age, female sex, the severity of leukoaraiosis, the extent of stroke focus, and the severity of anxiety.

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