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PREVALENCE OF ANXIETY AND DEPRESSION IN PATIENTS AFTER BRAIN STROKE

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Summary

Introduction. WHO experts point to the urgency of the problem of cardiovascular diseases, among which the first places are occupied by cerebral strokes (CS). With CS there are significant changes in the socio-psychological activities of the patient and the personal psychological characteristics of the individual. Such changes provoke the development of certain psychological disorders, which are characterized by an oppressed state, a persistent depressive state, the development of anxieties and fears, obsessive fixation on the transferred disease and worries about one's future, etc. That's why, the study of psychological characteristics of patients after CS is a relevant problem of great importance, which determined the direction of our research.

The aim: To investigate and analyze the prevalence of anxiety and depression in patients after CS.

Materials and methods. Conducted a randomized controlled single-center prospective study case-control, which is based on the analysis of the results of psychological study of 300 patients after CS (main group) and 200 people of the control group for the period 2022-2023. The studied groups were randomized by age and gender. To study the psychological characteristics of patients after CS, we used two methods of diagnosing psychological conditions: the self-esteem scale of Spielberg Ch. D. and Khanin Yu.L. and the depression scale of Balashova T. I.

Results. Probably ($p < 0.001$) among the subjects of the main group compared to the control, a significantly higher frequency of occurrence of medium and moderate levels of reactive anxiety (RA), personal anxiety (PA) and levels of depression (LD) was determined, in contrast to low, which was more often detected among the persons control group. It was determined that the levels of RA, PA and depression were reliably significantly higher in the main group compared to the control group and characterized the presence of fairly significant moderate anxiety and mild depression of situational or neurotic origin.

Conclusion. It has been proven probable ($p < 0.001$) confirmation of the influence of an CS on the development of high levels of anxiety (both RA and PA) and depression.

Key words: cerebral strokes, reactive anxiety, personal anxiety, levels of depression.

INTRODUCTION

WHO experts point to the urgency of the problem of cardiovascular diseases, which have high levels of prevalence and provoke the development of high rates of incapacity, mortality and disability. Cardiovascular diseases account for about 18 million annual premature global deaths [1] (mainly due to diseases of the circulatory system: ischemic heart disease and cerebral strokes (CS)). Annual global mortality due to CS is about 15.2 million premature deaths [2] (11.9% of total global mortality) [3].

After ischemic heart disease, CS ranks second in global prevalence, disability, and mortality [4]. The global prevalence of CS is up to 30 million new cases annually [5]. According to WHO forecasts, the prevalence of CS will constantly increase due to high levels of risk factors [6] and will reach an increase of 34.0% by 2035, among EU countries [3].

Scientists determine that with CS there are significant changes in the socio-psychological activities of the patient and the personal psychological characteristics of the

individual due to certain forced processes (a forced change in the relationship of the individual with the surrounding society, a significant social and physical activity decrease of the patient, loss of many social contacts, violation of the integral system of social relations, a certain «isolation», change of perspectives and socio-life orientations, etc.). All this provokes the transformation of the entire psychosocial sphere of the patient and requires certain psychosocial rehabilitative influences.

Such changes provoke the development of certain psychological disorders in the patient, which are characterized by an oppressed state, a persistent depressive state, the development of anxieties and fears, obsessive fixation on the transferred disease and worries about one's future, etc. Thus, Albus C. et al [7] determined that psychosocial factors such as low socioeconomic status, acute or chronic stress, depression or anxiety are significantly prevalent among cardiac patients and are associated with behavioral and biological risk factors, which provokes adverse course of the disease [8]. They indicated the importance of psychosocial factors in coronary heart disease, chronic heart failure, hypertension and other cardiovascular diseases [7].

Therefore, the study of psychological characteristics of patients after CS is a very relevant and important problem, which determined the direction of our research.

THE AIM

To investigate and analyze the prevalence of anxiety and depression in patients after CS.

MATERIALS AND METHODS

We conducted a randomized controlled single-center prospective study case-control, which is based on the analysis of the results of psychological study of 300 patients after CS (main group) who received rehabilitation services on the basis of the state enterprise «Clinical sanatorium «Roshcha» of the private joint-stock company «Ukrprofzodorovnytsia» and 200 people of the control group for the period 2022–2023. The average age of patients of the main group was 56.66 ± 10.37 years; persons of the control group – 57.16 ± 10.79 years. The studied groups were randomized by age and gender.

All respondents before the start of the study were fully informed about the voluntariness of their participation in this study and the complete confidentiality of the information received from them, and had comprehensive written information about the main purpose and objectives of our study and its duration and substance. The respondents surveyed by us took part in the study entirely of their own free will, which was confirmed by their personal signature in the relevant informed consent. Each of the research subjects was personally

fully informed about his responsibilities and rights in the conducted research and the complete possibility to end his participation in the research at any time without any consequences for him and explanation of the reasons for his actions. Inclusion criteria were: reaching 18 years of age, presence (main group) or absence (control group) of CS, consent to participate in the study. Exclusion criteria were: not reaching 18 years of age, absence (main group) or presence (control group) of CS, absence: diffuse and focal diseases, diabetes and other endocrine pathology, allergic reactions, systemic connective tissue diseases, acute and chronic inflammatory diseases of internal organs, severe decompensated somatic pathology, psychiatric and oncological diseases, acute cardiovascular disorder, thyrotoxic crisis, acute and significant decompensation of carbohydrate metabolism; availability: unsatisfactory physical condition, pregnancy and breastfeeding, chronic alcoholism, refusal to participate in the study and refusal to comply with all prescriptions.

To study the psychological characteristics of patients after CS, we used two methods of diagnosing psychological conditions: the self-esteem scale of Spielberg Ch. D. and Khanin Yu. L. [9] and the depression scale of Balashova T. I. [10].

The self-esteem scale of Spielberg Ch. D. and Khanin Yu. L. diagnoses the level of anxiety in a given period of time (reactive anxiety (RA) as a state and personal anxiety (PA) as a stable personality characteristic). PA characterizes a persistent tendency to perceive a wide range of situations as threatening, to react to such situations with a state of anxiety. RA is characterized by tension, anxiety, nervousness. Testing is carried out with the help of a questionnaire, which consists of two parts (40 statements) that are evaluated separately – RA (items 1–20) and PA (items 21–40). The obtained results were evaluated according to the author's suggestions: up to 30 points – low anxiety; 31–45 – moderate anxiety; 46 and more – high anxiety.

Depression scale of Balashova's T.I. diagnoses existing levels of depression (LD) using a questionnaire consisting of 20 statements. The obtained results were evaluated according to the author's proposals: up to 50 points – a state without depression; from 50 to 59 points – mild depression of situational or neurotic origin; from 60 to 69 points – subdepressive state or masked depression; more than 70 points – a valid depressive state.

Medical-statistical calculation. The distribution of qualitative and quantitative signs was carried out graphically visually and with the help of the Kolmogorov-Smirnov and Lilliefors test for normality and Shapiro-Wilk's test of normality. During the assessment, it was established that there were significant differences from the normal nature of the distribution, so further calculations were carried out using non-parametric medical and statistical methods.

Thus, when characterizing the central tendency and variability of quantitative (continuous or interval) traits, the mean value (M) and standard square deviation (SD, σ) were determined: $M \pm SD$. Categorical variables were presented in absolute and percent values (with 95,0% confidence interval [CI]). The probability of differences in the obtained quantitative characteristics in two mutually independent groups was determined using the Mann-Whitney U-test, and in mutually dependent groups – the Wilcoxon matched-pairs signed-ranks T-test. Fisher's F-test probability calculation was also used.

The threshold value of the level of probability of all calculated features was taken as 0.05 ($p=0.05$) with the indication of the exact value of the level of reliability «p» with three decimal places. When carrying out multiple comparisons of the obtained characteristics, the Bonferroni correction was applied to correct the confidence level. Statistical calculations were performed in IBM SPSS 25.0 for Windows.

The work is a fragment of research work The Department of Public Health and Healthcare Management

Kharkiv National Medical University: «Medical and social aspects of quality of life of the young age with excess weight and obesity», deadline: 2021–2023, project leader – Head of the Department of Public Health and Healthcare Management Kharkiv National Medical University, Doctor of Medical Sciences, professor Victor A. Ognev.

RESULTS

According to the results obtained by us on the levels of anxiety and depression, we obtained reliable confirmation of the influence of the transferred CS on the development of psychological disorders. Thus, patients with CS had high levels of anxiety, which probably ($p<0.001$) greatly exceeded the levels of the control group and characterized the presence of fairly significant moderate anxiety both according to the levels of RA (42.8 ± 6.32 points) and according to the levels of PA (39.60 ± 6.23 points). The values of the control group were at the lower limit of moderate anxiety and amounted to 32.53 ± 7.53 and 33.61 ± 8.73 points (RA and PA, respectively) – Table 1.

Table 1

Psychological disorders of patients after CS and control group individuals, $M \pm SD$

Indicator	Research groups		P
	main (n=300)	control (n=200)	
RA, points	42.8 ± 6.32	32.53 ± 7.53	<0.001
PA, points	39.60 ± 6.23	33.61 ± 8.73	<0.001
LD, points	52.6 ± 7.46	47.56 ± 6.88	<0.001

LD indicators were probably ($p<0.001$) slightly higher in the control group (47.56 ± 6.88 points) compared to the main group (52.6 ± 7.46 points) and determined the presence of mild depression of situational or neurotic origin – Table 1.

The distribution of the examined patients according to the rank values of psychological disorders also reliably determined the impact of the transferred CS on the development of anxiety and depressive manifestations – Table 2.

Table 2

Rank values of anxiety-depressive disorders in patients after CS and persons control group, abs. (%)

Indicator	main (n=300)	Research groups		P
		control (n=200)		
RA	Low	25 (8.3)	97 (48.5)	$\chi^2 = 145.036$ $p<0.001$
	Average	151 (50.3)	96 (48.0)	
	Moderate	124 (41.3)	7 (3.5)	
PA	Low	43 (14.3)	104 (52.0)	$\chi^2 = 83.212$ $p<0.001$
	Average	188 (62.7)	64 (32.0)	
	Moderate	69 (23.0)	32 (16.0)	
LD	Low	107 (35.7)	136 (68.0)	$\chi^2 = 55.347$ $p<0.001$
	Average	110 (36.7)	48 (24.0)	
	Moderate	83 (27.7)	16 (8.0)	

Among the subjects of the main group, in comparison with the control group, average and moderate levels of RA, PA and LD were probably recorded much more often, in contrast to the low level, which was more often detected among the examined subjects of the control group – Table 2.

Thus, a low level of RA was probably ($\chi^2=145.036$; $p<0.001$) more often determined in the control group

(48.5%) compared to the main group (8.3%). In contrast, the average level RA of authentically ($\chi^2=145.036$; $p<0.001$) was noted almost equally in both the main (50.3%) and control (48.0%) groups. The moderate level of RA probably ($\chi^2=145.036$; $p<0.001$) was almost 12 times higher in the main group (41.3%) compared to the control (3.5%) – Table 2.

PA prevalence levels had the same trends as RA levels. Authentically ($\chi^2=83.212$; $p<0.001$) that the low level was more common among individuals of the control group (52.0%) compared to the main group (14.3%). The average level of PA was probably ($\chi^2=83.212$; $p<0.001$) almost two times more common among patients who underwent CS (62.7%) compared to controls (32.0%). A moderate level of PA probably ($\chi^2=83.212$; $p<0.001$) was also more common among people of the main group (23.0%) compared to the control (16.0%) – Table 2.

Prevalence of LD probably ($\chi^2=55.347$; $p<0.001$) had the same prevalence trends as RA and PA. Thus, a low level of LD probably ($\chi^2=55.347$; $p<0.001$) was almost twice as common in the control group (68.0%) compared to CS patients (35.7%). The average level of LD was probably ($\chi^2=55.347$; $p<0.001$) more frequent in the main group (36.7%) compared to the control (24.0%). A moderate level of LD probably ($\chi^2=55.347$; $p<0.001$) was also three and a half times more frequent in the main group (27.7%) compared to the control (8.0%) – Table 2.

DISCUSSION

Our results regarding significant psychological disorders after CS are confirmed by other conducted studies. So, Rafsten L. et al [11] determined that anxiety is common during the first year after a stroke. The overall cumulative prevalence of anxiety disorders was 29.3% (95.0% CI 24.8-33.8%; $I^2=97\%$; $p<0.00001$) during the first year. Frequency of anxiety disorders 0-2 weeks post-stroke was 36.7%; 2 weeks to 3 months – 24.1%; and 3-12 months – 23.8%.

Schöttke H. and Giabbiconi C. M. [12] examined 289 patients in the first weeks after a stroke for a range of mood and anxiety disorders using a structured clinical interview. This assessment was carried out over two periods: for the post-stroke period and throughout life. The prevalence of post-stroke depression was 31.1%, the prevalence of post-stroke anxiety was 20.4%. The authors also found a significant correlation between depression and anxiety in the post-stroke period and throughout the life of the patient.

Cumming T. B. [13] et al. conducted a case-control study that included 149 stroke survivors (20 months post-stroke) and 745 age- and sex-matched participants from the general population. A comprehensive psychiatric evaluation was conducted to diagnose anxiety-depressive disorders according to the DSM-III-R criteria. They proved that patients in the main group (after a stroke) were significantly more likely than those examined in the comparison group to have generalized anxiety disorder (27% vs. 8%), phobic disorder (24% vs. 8%), and obsessive-compulsive disorder (9% versus 2%). Multivariate regression showed that stroke group, female gender, and presence of depression were significant independent factors associated with having an anxiety disorder.

Mitchell A. J. et al. [14] conducted a meta-analysis that examined the prevalence of major depression, minor depression, dysthymia, adjustment disorder, any depressive disorder and anxiety disorders after stroke. Depression was studied in 147 studies from 2 days to 7 years after stroke (mean 6.87 months, $n=33$ in the acute stage, $n=43$ in the rehabilitation period and $n=69$ in the outpatient period). In an analysis of 128 studies involving 15573 patients with major depressive disorder, the point prevalence of depression was 17.7% (95% CI=15.6% to 20.0%). In the analysis of the remaining studies of 9720 patients, they determined that major depressive disorder was present in 13.1% (95% CI=10.9% to 15.8%), dysthymia was present in 3.1% (95% CI=2.1% to 5.3%), adjustment disorder in 6.9% (95% CI 4.6% to 9.7%) and anxiety in 9.8% (95% CI=5.9% to 14.8%). Any depressive disorder was present in 33.5% (95% CI=30.3% to 36.8%).

CONCLUSIONS

Thus, when studying the prevalence of anxiety and depressive states in patients after CS, probable ($p<0.001$) confirmation of the influence of an CS on the development of high levels of anxiety (both RA and PA) and depression was determined, which significantly exceeded the levels of the control group and characterized the presence of fairly significant moderate anxiety and mild depression of situational or neurotic origin. Probably ($p<0.001$) among the subjects of the main group compared to the control, a significantly higher frequency of occurrence of medium and moderate levels of RA, PA and LD was determined, in contrast to low, which was more often detected among the persons in the control group.

COMPLIANCE WITH ETHICS REQUIREMENTS

The ethical approval was obtained from Bioethics Committee of the Kharkiv National Medical University. All patients provided written consent to participate in research in accordance with the recommendations of the Ethics Committees for Biomedical Research, Ukrainian Health Legislation and the Declaration of Helsinki of 2000, European Community Directive 86/609 On Human Participation in Biomedical Research.

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*Резюме***ПОШИРЕНІСТЬ ТРИВОЖНИХ І ДЕПРЕСИВНИХ СТАНІВ У ХВОРИХ ПІСЛЯ ПЕРЕНЕСЕНОГО МОЗКОВОГО ІНСУЛЬТУ****Марина М. Міщенко¹, Віктор А. Огнєв¹, Олександр М. Міщенко², Володимир І. Пономарьов²**¹ – Харківський національний медичний університет, м. Харків, Україна² – Навчально-науковий медичний інститут Національного технічного університету «Харківський політехнічний інститут», м. Харків, Україна

Вступ. Експерти ВООЗ вказують на актуальність проблеми серцево-судинних захворювань, серед яких перші місця посідають мозкові інсульти (МІ). При МІ відбуваються істотні зміни соціально-психологічної діяльності хворого та особистісно-психологічних особливостей особистості. Такі зміни провокують розвиток певних психологічних розладів, які характеризуються пригніченим станом, стійким депресивним станом, розвитком тривоги та страхів, нав'язливою фіксацією на перенесеному захворюванні і занепокоєнням за своє майбутнє і т.д. Тому, дослідження психологічних особливостей хворих після МІ є дуже актуальною та важливою проблемою, яка й визначила напрям наших досліджень.

Мета: дослідити та проаналізувати поширеність тривоги та депресії у пацієнтів після МІ.

Матеріали та методи. Проведено рандомізоване контрольоване одноцентрове проспективне дослідження випадок-контроль, яке базується на аналізі результатів психологічного обстеження 300 пацієнтів, які перенесли МІ (основна група) та 200 осіб контрольної групи за період 2022-2023 рр. Досліджувані групи були рандомізовані за віком і статтю. Для вивчення психологічних особливостей пацієнтів після перенесеного МІ ми використовували дві методики діагностики психологічних станів: шкалу самооцінки Спілберга Ч. Д. та Ханіна Ю. Л. та шкалу депресії Балашової Т. І.

Результати. Вірогідно ($p < 0,001$) серед обстежених основної групи порівняно з контрольною визначено значно вищу частоту середнього та помірного рівнів реактивної тривожності (РТ), особистісної тривожності (ОТ) та рівнів депресії (РД) на відміну від низького, який частіше констатувався серед осіб контрольної групи. Визначено, що рівні РТ, ОТ та РД були достовірно вірогідно вищими в основній групі порівняно з контрольною та характеризували наявність досить значної помірно тривоги та легкої депресії ситуативного або невротичного походження.

Висновок. Було доведено вірогідне ($p < 0,001$) підтвердження впливу МІ на розвиток високих рівнів тривоги (як РТ, так і ОТ) та депресії.

Ключові слова: мозкові інсульти, реактивна тривожність, особистісна тривожність, рівні депресії.