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## CLINICAL AND PSYCHOPATHOLOGICAL FEATURES OF COURSE AND CORRECTION OF DEPRESSIVE DISORDERS IN PATIENTS WITH BRAIN TUMORS, PREVENTION AND REHABILITATION

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**Ключевые слова:** *мозговые опухоли, психические и депрессивные расстройства, экспериментально-психологическое исследование, психотерапевтическая коррекция, профилактика, реабилитация*

**Abstract. Clinical and psychopathological features of course and correction of depressive disorders in patients with brain tumors, prevention and rehabilitation. Ogorenko V.V., Kyrychenko A.G., Hnenna O.M.** *The article studies the psychological characteristics in patients with brain tumors of different localization which allows to reduce the diagnostic period and, as a result, minimize the time of early detection and the consequences of the surgical treatment of this pathology, and to cause a positive effect on preventing the development of psychopathological disorders at the hospital stage. Analysis of the clinical manifestations of depressive disorders of the subclinical level revealed their polymorphism: depression was accompanied by various variants of asthenic (prevalence of dyssomnias, psychalgia, adynamia and anxiety component) and anxiety (prevalence of senestopathies, hypochondria, phobia) states. The revealed symptom complexes of psychopathological and pathopsychological characteristics of the patient's condition were the clinical justification for the choice of methods of psychotherapeutic correction. Adjuvant psychological therapy, individual rational and family psychotherapy were used as the basic method of psychotherapeutic influence. Pharmacological correction included: anxiolytics, antidepressants, atypical mild antipsychotics in low doses. The results of the SCL-90-R test demonstrate the effectiveness of the comprehensive treatment aimed at preventing and reducing the manifestations of psychopathological symptoms. Comparison of the mean values of the SCL-90-R test revealed significant differences in such indicators as somatization ( $p < 0.05$ ), depressiveness ( $p < 0.01$ ), anxiety ( $p < 0.05$ ); high statistical significance is noted in the "index of symptom severity" integral indicator ( $p < 0.01$ ). Obtained results of psychological and psychiatric research became the basis for the development of differential diagnostic criteria for the diagnosis and prevention of the development of mental disorders.*

**Реферат. Клініко-психопатологічні особливості перебігу та удосконалення системи попередження і зниження розвитку депресивних розладів у пацієнтів з пухлинами головного мозку. Огоренко В.В., Кириченко А.Г., Гненна О.М.** *У статті наведено вивчення психологічних характеристик пацієнтів з пухлинами головного мозку різної локалізації, яке дозволило скоротити діагностичний період і, відповідно, мінімізувати терміни раннього виявлення та наслідки оперативного лікування цієї патології, сприятливо впливати на запобігання розвитку психопатологічних розладів на госпітальному етапі. Аналіз клінічних проявів депресивних розладів субклінічного рівня виявив їх поліморфізм: депресія супроводжувалася різними варіантами астеничного (переважання диссомнії, психалгії, адинамії і тривожного компонента) і тривожного (переважання сенестопатій, іпохондрії, фобії) станів. Виявлені симптомокомплекси психопатологічних і патопсихологічних характеристик стану хворих стали клінічним обґрунтуванням вибору методів психотерапевтичної корекції. В якості базисного методу психотерапевтичного впливу застосовувалася ад'ювантна психологічна терапія, індивідуальна раціональна й сімейна психотерапія. Фармакологічна корекція включала: анксиолітики, антидепресанти, атипів м'які нейролептики в малих дозах. Результати тесту SCL-90-R продемонстрували ефективність комплексного лікування, спрямованого на попередження та зменшення проявів психопатологічних симптомів. Порівняння середніх значень тесту SCL-90-R виявило суттєві відмінності в таких показниках, як соматизація ( $p < 0,05$ ), депресивність ( $p < 0,01$ ), тривога ( $p < 0,05$ ); висока статистична значущість відзначається в інтегральному показнику «індекс вираженості симптомів» ( $p < 0,01$ ). Отримані результати психолого-психіатричного дослідження стали основою для розробки диференційно-діагностичних критеріїв діагностики та профілактики розвитку психічних розладів.*

Brain tumors account for 6-8.5% of all human neoplasms and 6.1% of the total number of organic diseases of the central nervous system [4, 5, 7]. According to statistics, brain tumors take the second place among the causes of death due to malignant neoplasms in people aged 35 years and older. Over the past decades, there has been a clear tendency towards an increase in the incidence of primary and metastatic tumors. Brain tumors in men are more common than in women. This is especially obvious with increasing age [13, 14]. The diagnosis of a brain tumor is a powerful stressor and has an extremely powerful and long lasting psychotraumatic influence on the patient's personality [1, 10, 14].

In brain tumors of various localization, psychopathological symptoms are manifested in 40-90% of cases. Numerous studies reflect the incidence and variety of clinical and psychopathological manifestations that adversely affect the course of the disease, the degree of maladaptation, compliance

with traditional methods of treatment, quality and life expectancy of patients [1, 4, 5, 7, 10, 13, 14]. According to the literature, one in two patients suffers from various mental disorders, which in turn have an extremely negative impact on the course of most cancer diseases and contribute to premature death [5, 6, 8, 10, 11]. Therefore, many authors note the absolute need, along with using modern means of pharmacotherapy, to provide psychotherapeutic assistance to cancer patients in order to prevent the development of psychopathological disorders, and especially depressive states (due to the risk of suicidal behavior), as well as the formation of behavioral strategies that facilitate to optimize the treatment and rehabilitation process [3, 6, 8, 15].

The purpose of the study: to study the psychopathological structure and the possibility of psychotherapeutic correction of depressive disorders in patients with brain cancer pathology in order to

improve the prevention of their progressing and rehabilitation of this group of patients.

#### MATERIALS AND METHODS OF RESEARCH

250 patients with primary brain tumors were examined. Selection criteria for the study: 1) non-psychotic level of clinical psychopathological disorders; 2) absence of premorbid aggravation by mental and behavioral disorders (ICD-10 code F00-F99); 3) absence of concomitant diseases of the nervous system (ICD-10 code G00-G99) and somatic diseases that cause early damage to the nervous system; 4) absence of impaired consciousness, symptoms of hypertensive-dislocation syndrome at the stage of clinical and diagnostic examination; 5) no cognitive disorders reaching clinical levels of mild dementia; depressive disorders in patients with primary brain tumors (PBT) of various localization. A comprehensive clinical and psychodiagnostics examination of 250 patients with primary brain tumors was carried out, which included objective data from accessible medical records and voluntary consent of the patients. Standardized diagnostic and expert scales of the psychopathological symptom severity questionnaire (SCL-90-R) were used as assessment tools [9]. In the experimental psychological study, modified versions of the LOBI method and the Lüscher test (color choice) were used [2]. In the research process, short-term differentiated psychotherapeutic and psychopharmacological treatments were applied. Psychotherapeutic treatment included

different types of psychotherapy: rational, family and adjuvant psychological therapy.

Statistical processing of results was performed using methods of descriptive and analytical statistics that are implemented in the STATISTICA 6.1 software (by StatSoft Inc., SN AGAR909E415822FA). Hypothesis testing for normal distribution of quantitative traits was assessed using Shapiro–Wilk test and Kolmogorov–Smirnov test, and equality of variances was checked using Levene’s test. To describe the sample normal distribution of quantitative traits, the arithmetic mean (M) and standard deviation (SD) were used; for an asymmetric distribution, the median (Me) and the interquartile range of 25%-75% were used. The statistical significance of differences in mean values for quantitative traits in unrelated groups with normal distribution was assessed using the Student’s t-test, and using the Mann–Whitney U test with different distribution. The statistical significance of differences in quantitative traits was assessed using Pearson’s chi-squared ( $\chi^2$ ) test, including the Yates’s correction for continuity [12].

#### RESULTS AND DISCUSSION

In all patients, primary supratentorial intracerebral tumors of the frontal, temporal and parietal localization were diagnosed and verified by magnetic resonance or computer tomography (Fig. 1). The histological structure of the tumors was verified by examination of the surgical material.



Fig. 1. MRI of a supratentorial primary tumor of the frontal localization on the left

The cohort consists of 175 patients with mental disorders of non-psychotic level. Accordingly to histological data, primary supratentorial intracerebral single malignant neoplasms (MBT) were diagnosed in 72 patients and 103 patients were diagnosed with benign neoplasms (BBT).

Differential diagnostic period (from the appearance of psychopathological disorders to the diagnosis of the neoplasm) in the average for the group was from 7.2 up to 7.4 months (8.4-9.2 months for the group of patients with BBT and 2.9-5.6 months with MBT). At the time of diagnosis of brain tumors, a depressive register of psycho-

pathological disorders was remained in 134 patients aged 21 to 56 years, among whom women prevailed by gender indicators (71 persons; average age is  $41.4 \pm 11.5$  years and  $44.6 \pm 12.3$  years respectively).

Depressive disorders of the subclinical level, as clinical manifestations of brain tumors (BT) and the formation of initial psychopathological disorders were revealed in 78.3% of cases (n=137). Analysis of the clinical manifestations of psychopathological disorders revealed their polymorphism: during this period, various types of asthenic and anxiety states were most often observed at the same time as the depressive ones (Table 1).

Table 1

**Frequency distribution of psychopathological components of depressive states at the initial stage of the diagnostic period of BT in groups of patients with BBT (n=75) and MBT (n=62)**

Psychopathological components of depressive states	% of cases		p
	BBT	MBT	
<b>Asthenic</b>			
Asthenic with prevalence of dyssomnias	27.7	34.4	<0.001
Asthenic with psychalgic component	23.2	10.5	<0.001
Asthenic with adynamic component	25.3	35.8	<0.001
Asthenic with an anxiety component	23.8	19.3	<0.001
<b>Anxiety</b>			
With the prevalence of cenestopathies	33.8	28.6	<0.001
With a hypochondriac component	38.0	45.7	<0.001
With a phobic component	28.2	25.7	0.006

Commenting on the table data, it should be noted that at the BBT of different localization, asthenic conditions indicated the progress of depressive symptom complexes and prevailed in comparison with other disorders. Asthenic conditions as initial manifestations of psychopathological disorders were detected in 56 patients (90.3%) with MBT.

In MBT, other proportions of the analyzed components of asthenic disorders were detected: the adynamic component (35.8%) and the dyssomnial disorders (34.4%) prevailed; asthenic states with anxious and psychalgic components (19.3% and 10.5%, respectively) were less presented.



Anxiety disorders that were combined with depressive states were found in 92 patients with BT (59.4%); at the same time in 96.7% of cases the transformation of asthenic reactions into an anxiety symptom complex was observed.

An analysis of the results of a survey of the severity of psychopathological symptoms confirmed the prevalence of depressive and anxiety spectrum disorders in the studied sample with their expressed somatization and interpersonal sensitivity in the studied sample (Table 2).

A comparative analysis of the results of the Lüscher color selection test revealed a significant ( $p < 0.05$ ) prevalence of brown and gray in I and II choice positions; violet and yellow in the VII and VIII positions in patients with BBT; dark blue and red in the I and II positions of choice, yellow and gray in the VII and VIII positions in patients with MBT (Table 3). Such combination of colors in the choice of patients with BBT indicated a state of anxiety, worrying, feelings of conflict, fatigue and mental strain.

Table 2

**Mean severity of psychopathological symptoms  
(according to the SCL-90-R questionnaire) (n=175)**

Psychopathological symptoms	M(mx)
Somatization	0.75 (0.53)
Obsessive-compulsive disorders	0.42 (0.34)
Interpersonal sensitivity	0.85 (0.55)
Depression	0.98 (0.58)
Anxiety	0.55 (0.46)
Hostility	0.50 (0.48)
Phobic anxiety	0.58 (0.51)
Paranoiac symptoms	0.45 (0.45)
Psychoticism	0.38 (0.42)
Global Severity Index	0.75 (0.46)
Positive Symptom Distress Index	1.28 (0.34)

Revealed disorders characterized the presence of anxious fears for their health and for the destruction of social contacts, fear of the future, the need for understanding, rest and relaxation.

The analysis of test results clearly indicates the stress caused by a lack of interpersonal relationships, which is characterized by a lack of intimacy,

empathy, love and understanding, especially in the presence of this pathology.

The study of type of attitude towards the disease (TATD) (Table 4) in a sample of patients with BT revealed the following features. In the group of patients with benign brain tumors (BBT) only "pure" types of attitude to the disease were diagnosed.

Among them, anxious (25.0%) and anosognosic (14.5%) TATD prevailed. Hypochondriac TATD was diagnosed in 12.1%, ergopathic in 8.1%, apathetic and sensitive in 11.2% of patients, neurasthenic in 3.2%, a harmonious type of attitude to the disease was observed in 2.8% of patients. In the MBT group

of “pure” TATD, anosognosic (24.6%) and ergopathic (15.1%) types of attitude to the disease prevailed. Apathetic, sensitive and paranoiac TATD are equally represented (by 5.5%), neurasthenic TATD was diagnosed in 4.8%, ergopathic – in 1.8% of patients with BN.

Table 3

**Amount of color choice according to Lüscher method in patients with BT and depressive spectrum mental disorders**

Colors Groups	Position I-II								Position VII-VIII							
	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	0
BBT (n=81)	8	5	11	7	4	24	9	22	8	9	6	26	19	10	5	7
MBT (n=53)	14	5	12	4	4	7	3	5	2	7	3	16	4	4	6	12

The study of the types of attitude to the disease revealed a slight prevalence of types with impaired social adaptation: in 36.6% – intrapsychic type of social maladjustment orientation (SMO), in 34.3% – extrapsychic type of SMO; in 29.1% TATD without

significant disruptions of social adaptation was identified. Thus, the internal picture of the disease is a complex structured reflection of the influence of personal qualities of the patient in attitude to the disease.

Table 4

**TATD frequency distribution in groups with BBT and MBT according to social maladjustment orientation**

Social maladjustment orientation	Type of attitude to the disease	MBT	BBT	p
Intrapsychic orientation	Anxious	4,8(4,8; 9,6)	25,0(17,8; 32,2)	0.001
	Hypochondriacal	–	12,1(6,7; 17,5)	0.002
	Neurasthenic	4,8(4,8; 9,6)	3,2(0; 6,4)	0.287
Extrapsychic orientation	Apathetic	5,5 (1,8; 6,2)	5,6 (2; 9,2)	0.756
	Sensitive	5,5 (1,8; 6,2)	5,6 (2; 9,2)	0.876
	Paranoiac	5,5 (1,8; 6,2)	–	0.001
No significant disruption of social adaptation	Egocentric	1,6 (0; 3,2)	–	0.001
	Harmonic	–	2,8 (0; 5,6)	0.001
	Ergopathic	15,1 (10,5; 19,7)	8,1 (4,5; 11,7)	0.002
	Anosognosic	24,6 (16,2; 33)	14,5 (10; 19)	0.002
	Mixed harmonic	9,5(4,8; 14,2)	–	0.001



Obtained results of the evaluation of syndromes and symptom complexes of psychopathological and pathopsychological characteristics of the patients' condition were the clinical rationale for the choice of methods of psychotherapeutic correction. Selected targets allowed to determine the appropriate methods of psychocorrection and tactics of psychotherapy. In particular, the limited time characteristics and the preoperative stage of the clinical diagnostic period served as the criteria for selecting intervention methods. During the study, patients of the considered group were provided with differentiated psychopharmacological and psychotherapeutic treatment. Taking into account the dynamics, polymorphism and syndromic incompleteness of psychopathological symptoms, during the pharmacological correction mainly anxiolytics, antidepressants of the SSRI group, as well as atypical mild antipsychotics in small doses were used.

As a basic method of psychotherapeutic influence, adjuvant psychological therapy (APT) was used, as well as methods of individual rational and family psychotherapy. The advantage of selected methods in the studied sample of patients was their eclecticity and the ability to cause limited but significant positive changes in a short time.

Rational psychotherapy was carried out both individually, using explanation, persuasion, distraction, as well as using a directive technique with the involvement of the authority, prestige and knowledge of a doctor. The main goal of rational psychotherapy is to help the patient go through five main stages of the psychological reaction associated with information about the diagnosis of a brain tumor.

Family psychotherapy was carried out taking into account the family microclimate, being aimed at overcoming the feeling of powerlessness and guilt in the relatives due to the inability to help the patient and irrational psychological detachment from the patient. Considering the time factor and the stage of the diagnostic process, the main task of family psychotherapy was the psychotherapeutic correction of destructions in family relationships and contacts, as well as the impact on maladaptive patterns of attitude to the disease, manifested, in particular, in demoralization. Assistance in coping with the diagnosis, transition of roles, the formation of a less catastrophic image of the disease, allowed us to form an adequate medical position focused on the adoption of medical recommendations, develop a joint solution in such a psychotraumatic situation as the necessity for surgical intervention and prepare relatives for the resolving of numerous psychological problems related with the further life of patients.

APT as a short-term, problem-focused cognitive-behavioral group program was aimed at ensuring that the patients, firstly, were able to revise their ideas about the disease and, secondly, to change the maladaptive style of behavior. Following APT techniques were used: 1. Learning to identify and write down negative thoughts that come to mind as if "automatically" and replace them with more realistic ones, which contribute to adaptation; 2. Reproduction of possible stressful events and how people will deal with them in the imagination and in role-playing games; 3. Planning of various behavioral strategies that will give a feeling of control over various aspects of your life; 4. Relaxing training in case of extremely manifested anxiety; 5. Learning to express your feelings openly; 6. Emphasizing personal strengths, increasing self-esteem, helping to overcome feelings of helplessness.

Positive dynamics of changes in the structure of psychopathological symptoms was detected in 130 patients (97.0%) as a result of psychotherapeutic influence. It was observed that the majority of patients had reduction in melancholy-depressive and anxious-depressive states, 48 cases were able to achieve regression phobic, hypochondriacal, cenesthopathic and hypochondria components; 29 patients showed positive dynamics in the reduction of depressive disorders, which were combined with somatoform symptom complexes.

Minor dynamics was observed in patients with depersonalization-derealization states in the structure of anxiety and depressive disorders. The lack of results of psychotherapeutic influence was observed in patients with the prevalence of adynamic depression (all observations refer to further verified malignant BT mostly of frontal localization).

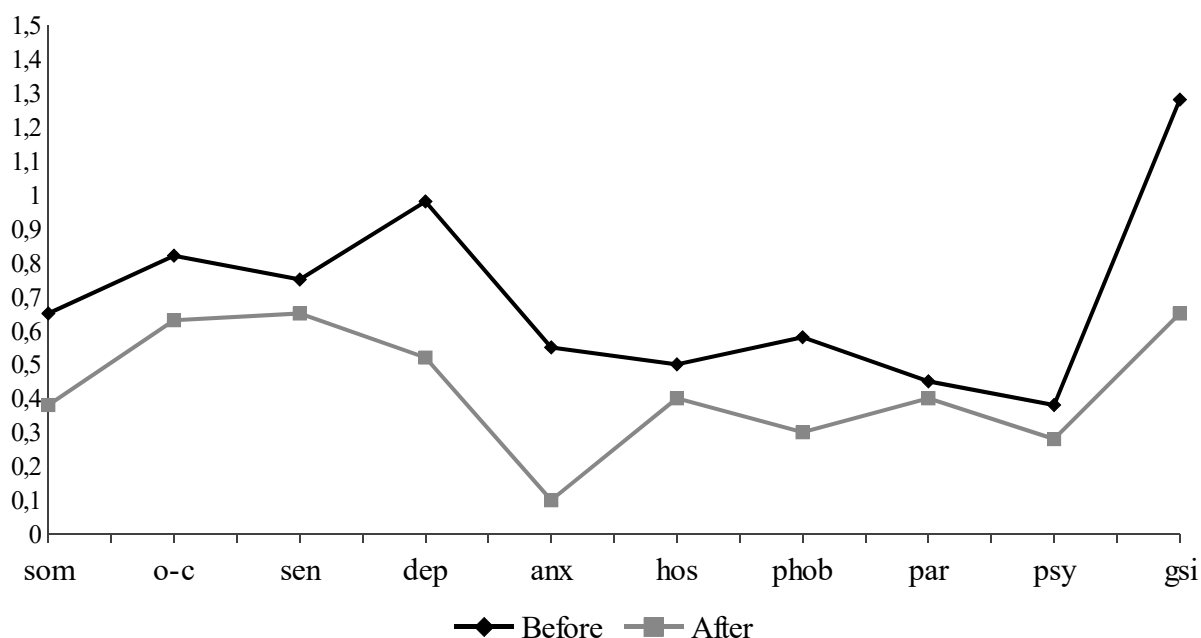
Clinical assessment of the mental state of the study group is confirmed by indicators of the SCL-90-R psychodiagnostic test (figure 2), which indicate the effectiveness of the complex treatment aimed at preventing and reducing manifestations of psychopathological symptoms.

Comparison of the mean values of the SCL-90-R test revealed significant differences in such indicators as somatization ( $p < 0.05$ ), depressiveness ( $p < 0.01$ ), anxiety ( $p < 0.05$ ); high statistical significance is noted in the "symptom severity scale" integral indicator ( $p < 0.01$ ).

Thus, the obtained clinical diagnostic criteria formed the basis for the development of an interdisciplinary treatment and diagnostic algorithm, which is aimed at the timely detection and correction of maladaptation with subsequent improvement in the quality of life of this category of patients. To prevent the development of depressive disorders

regular, not only individual, but also family counseling are required. Prevention should be integrated, taking into account the individual characteristics of each patient, the conditions and possibilities of special methods of psychological correction.

In this regard, the study of risk factors for the formation of personal maladaptation of patients, and quality of life in general, acquire a special diagnostic and preventive value in neurooncology.



**Fig. 2. Syndromic profile of patients with BT before and after complex psychopharmacological and psychotherapeutic treatment**

## CONCLUSIONS

1. The developed algorithm of clinical and psychopathological research using optimal psychodiagnostic tools, which are characterized by validity, multiplicity, ease of processing results, versatility, enables diagnostic use not only for screening but for assessment of the condition and course, as well as for prevention of mental disorders in patients with brain tumors.

2. Principles of the organization of psychotherapeutic care for neurooncological patients imply not only an individual-personal approach, but also a

family one. Conducting adjuvant psychological therapy and other psychotherapeutic interventions, as well as psychopharmacotherapy, helps to reduce the development of depressive disorders by 25-30%.

3. The inclusion of the structure of psychopsychiatric care in the unified neurooncological service is especially important at the stages of early detection of brain tumors with subsequent correction of mental disorders.

Conflict of interests. The authors declare no conflict of interest.

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