низьким рівнем соматичного здоров'я. Продемонстровано різний кореляційний взаємозв'язок між отриманими морфометричними показниками, а також виявлена пряма кореляційна залежність між ядерно-цитоплазматичних співвідношенням і досягнутим рівнем виконання човникового бігу.

Ключові слова: епітеліоцит, еритроцит, морфометрія, ядерно-цитоплазматичне співвідношення, соматичне здоров'я, загальна витривалість.

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ствию различных стресс-факторов при низком уровне соматического здоровья студентов. Продемонстрирована разная корреляционная взаимосвязь между полученными морфометрическими показателями, а также обнаружена прямая корреляционная взаимосвязь между ядерно-цитоплазматическим соотношением и достигнутым уровнем выполнения челночного бега.

Ключевые слова: эпителиоцит, эритроцит, морфометрия, ядерно-цитоплазматического соотношения, соматическое здоровье, общая выносливость.

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THE DEPENDENCE OF THE AFFECTIVE DISORDERS MANIFESTATION ON MORPHOFUNCTIONAL CONDITION OF THE BRAIN AFTER TRAUMATIC BRAIN INJURY

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The occurrence and degree of psychiatric disorders manifestation mainly depends on the morphofunctional state of the brain. Generally, the prevailing number of military personnel who took part in combat operations suffers from post traumatic stress disorder and sustained traumatic brain injury. The purpose of the present study was to determine the dependence of the affective disorders manifestation on the brain's morphofunctional state after traumatic brain injury. Once the informed consents were collected, 60 patients, aged 19 to 60 years, who participated in the combat operations and suffered from non-psychotic psychiatric disorders and received in-patient treatment at one of the units of the O.F. Maltsev Poltava Regional Clinical Psychiatric Hospital during the period from 2014 to 2016 were examined. The performed studies' results demonstrate that the manifestation degree of psychiatric disorders depends upon the morpho-functional condition of the brain. Patients with post-traumatic stress disorders and psychiatric disorders caused by the injured brain (due to craniocerebral injury) should receive the compulsory comprehensive psychotropic and vascular therapy.

Key words: morpho-functional condition of the brain, craniocerebral injury, post traumatic stress disorder

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Currently, Ukraine is experiencing complicated socio-political situation. Tens of thousands of people have been forced to leave their homes and temporarily move to other regions of our country, lost their houses and relatives; there are injured and lost. More and more people become combatants. Exposure to the life-threatening events inevitably leads to a variety of negative health-psychological and social-psychological sequelae. The clinical picture of mental pathology in such people is represented by a wide range of disorders of different structure and manifestation: from psychologically understandable reactions and pre-disease states to clinically defined forms of pathology, where posttraumatic stress disorders (PTSD) and adaptation disorders (AD) prevail. The predominant number of military personnel who took part in combat operations suffers from the above pathology following the traumatic brain injury (TBI) [1, 15, 7, 12]. However, unfortunately, the vast majority of them have not been provided with timely neurologic examination.

Recently, the incidence of traumatic brain injury has been increased from 25 to 80% of the total incidence of neurological diseases. Notwithstanding the significant achievements of the contemporary medicine and numerous scientific studies on this issue, traumatic brain injury is one of the leading causes of mortality and disability of the workable population in the industrialized countries. The contemporary researchers report that traumatic brain injury takes the leading place among the causes of mortality in young and adult population, leaving behind tumor and vascular diseases. 30 – 90% of individuals, who sustained TBI in the form of brain concussion or moderate and severe brain contusion, suffer from brain diseases [2, 10]. Following the TBI, the majority of individuals, as a consequence, have more or less manifested psychiatric disorders. The delayed referral to psychiatrists leads to worsening of the mental state and the absence of adequate and necessary specialized medical care can lead to the life-threatening sequelae. The mechanisms of brain damage at the time of injury are well elucidated in the contemporary scientific publications. The effect of the kinetic energy onto the skull causes acceleration- deceleration, shift and rotation of the brain, diffuse axonal injury. The factors of the secondary lesions of the brain

include bruises, cerebral edema, hydrocephalus, and systemic complications (hypoxia/hypercapnia, anemia, electrolyte disorders, infection, etc.) [9, 14].

It is known that pathogenesis of TBI-related structural and functional alterations in the brain are associated with mechanical factor. Under the effect of the injury, hydrodynamic forces and liquor wave affected the limbico-hypothalamic-reticular area [3, 6], leading to multiple neurohumoral exchange-endocrine and vegetovascular disorders. TBI triggers the secondary biochemical processes of both autodestructive and neuroprotective origin. Brain injury acts directly on the membranes, ion channels of axons, neurons and astrocytes, as well as on the cerebral blood flow and brain metabolism that can clinically be manifested by the various neurological disorders, including the complete disintegration of the brain activity. TBI induces violation of both oxygenation and perfusion of the brain. These impairments can be global, affecting the entire brain, and local, acting in the area of the intracranial or subdural hematoma and focus of contusion. TBI-induced direct damage of neurons causes a massive exit of ions and neurotransmitters into the extracellular medium, and, at the same time, trigger the compensatory processes, aimed at the recovery of ionic and neurotransmitting balance. The excessive flow of calcium ions into the cell occurs, followed by the edema of organelles and membranes, necrosis or apoptosis, leading to the death of nerve cells [11].

The sequelae of traumatic brain injury are extremely diverse, which occur in 30 – 96% of cases and depend on both the severity of the initial damage, and secondary damages, as well as the course of recovery [5, 8]. The process can last from several months to several years and be accompanied by the occurrence of new neurological and neuropsychological symptoms including cognitive and affective disorders. Notably, pathophysiological cascade of the TBI patients is based on the morphological, hemodynamic and metabolic changes [4], leading to the certain psychiatric disorders.

The **purpose** of the study was to determine the dependence of affective disorders manifestation on the morphofunctional condition of the brain after traumatic brain injury.

Material and methods. Once the informed consents were collected, 60 patients-combatants aged 19 to 60 years, who suffered from non-psychotic psychiatric disorders and received in-patient treatment at one of the units of the O.F. Maltsev Poltava Regional Clinical Psychiatric Hospital during the period from 2014 to 2016 were examined. During the examination and treatment all examined patients were divided into two clinical-diagnostic groups. The treatment mode was based on the unified clinical Protocol of the primary, secondary and tertiary medical care, called “The response to the severe stress and adaptation disorders. Posttraumatic stress disorder” (Kyiv, 2016), as well as on the current guidelines on the diagnosis, treatment and prevention of the combat-related medical and psychological sequelae (Kharkiv, 2014).

30 examined individuals with psychiatric disorders caused by brain injury (following traumatic brain injury) (F 06.32, 06.42 and 06.62 according to the ICD-10) were assigned into clinical Group I. 30 patients with posttraumatic stress disorder without TBI were assigned into Group II.

During hospitalization all patients underwent clinical-anamnestic, clinical- psychopathological and laboratory study, ECG, EEG, examination by the specialists (therapist, neuroscientist, ophthalmologist, surgeon). CT brain, abdominal ultrasonography, examination by the traumatologist, narcologist and other medical specialist upon recommendations was conducted. Special attention was given to psychodiagnostic method of examination, which was conducted both by the psychiatrist and medical psychologist. The Mississippi Scale for Combat-Related Posttraumatic Stress Disorders (M-PTSD) (military version) [19] was applied to all patients to assess the manifestation of the affective episode, and the Clinical Global Impression Severity Scale (CGI-S) was used to assess the efficacy of the therapy, as well as the Clinical Global Impression Scale-Improvement (CGI-I) to rate improvement in a subject's condition [11]. The PHQ-9 scale [9] was used to diagnose the level of depression, and the GAD-7 scale [10] was used to diagnose the level of anxiety. The Mississippi Scale for Combat-Related Posttraumatic Stress Disorders, PHQ-9 and GAD-7 scales were used twice: during the initial examination of patients and following the four weeks of treatment; the CGI-S scale was used twice: at the initial stage and following the four weeks of the therapy; CGI-I scale was used following the one, two and four weeks of the therapy.

Results of the study and their discussion. During the initial examination all patients showed the M-PTSD (military version) score of 98-145, indicating about the presence of the signs of clinical posttraumatic stress disorder; the PHQ-9 score was 12-25, indicating about the presence of clinically manifested depression; the GAD-7 score was 8-20, indicating about the presence of clinically manifested anxiety.

During the investigation all patients received both individual and group psychotherapeutic treatment according to the rehabilitation program for military personnel. The outcomes of treatment have been evaluated on the 7th, 14th and 28th days of treatment using the psychodiagnostic scales. The analysis of the findings have shown that patients from Group I had symptoms, indicating about the key affective disorders, namely, anxiety, depressed mood, irritability, uncontrollable outbursts of anger, constant feeling tense, lack of interest in normal activities, as well as complaints of headache of different localization and intensity, dizziness, tinnitus. The main complaint of Group II patients was the major changes in sleeping habits with nightmares related to warfare, constant obsessive thoughts, memories and experiences of the psychotraumatic situation. Behavioral and affective disorders were not the leading morbid manifestations and were expressed far less than in patients from clinical Group I.

Pharmacotherapy was prescribed syndromologically to each of the two clinical groups; patients received comprehensive treatment, including antidepressants, anxiolytics, medications that improve blood circulation and metabolism in the brain blood vessels, drugs that stimulate the biosynthesis of structural elements of the membranes of neurons, as well as decongestants, neuroprotectives, hepatoprotectors, antioxidants and detoxicants. Comprehensive evaluation of the efficacy of therapeutic interventions was conducted in each clinical group separately. The resulting data of the clinical groups, using the abovementioned psychodiagnostic scales, are presented in tab. 1.

Table 1

The dynamics of the CGI-S and CGI-I scales scores

Clinical groups									
Group I					Group II				
CGI-S		CGI-I			CGI-S		CGI-I		
Weeks of the therapy									
BR	4th	1st	2nd	4th	BR	4th	1st	2nd	4th
4,37	1,54	3,88	2,34	1,75	4,64	1,35	2,08	2,04	1,48

Note. BR – base rate

The analysis of the efficacy of the similar therapy, provided for the both clinical groups (table 1) showed similar dynamics of reduction of the clinical symptoms in two study groups, tending to more rapid effect in patients of clinical Group II, where no TBIs were detected ($p<0.05$). This group showed better positive dynamics of mental status; no need in administration of additional psychotropic drugs was required. On the contrary, patients from clinical Group I, suffering from the TBI-related psychiatric disorders, showed slower dynamics of the recovery that was confirmed by the scores of the corresponding scales; administration of supplementary sleeping pills and normothymics was required.

Conclusion

In conclusion, the manifestation of psychiatric disorders are directly dependent on the morphofunctional state of the brain, i.e., the degree of intensity of psychiatric disorders is exacerbated by the occurrence of organic lesions of the central nervous system (traumatic brain injury); mental disorders, namely affective disorders, are the integral part of the clinical presentation of the sequelae of traumatic brain injury. All patients who experienced the crisis situations, namely warfare operations, have psychiatric disorders. Patients with post-traumatic stress disorders and psychiatric disorders, caused by the brain damage (following the traumatic brain injury) should be mandatory provided with comprehensive psychotropic and vascular therapy.

The study of therapeutic and rehabilitation strategies of the post-traumatic stress disorders and psychiatric disorders, caused by the brain damage (following the traumatic brain injury) is a promising aspect in the contemporary theoretical and practical medicine, since the prevalence of patients with this pathology is growing rapidly, and timely delivery of the adequate specific treatment enables preventing serious and even fatal sequelae for people's lives.

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Реферати

ЗАЛЕЖНІСТЬ ВИРАЖЕНОСТІ АФЕКТИВНИХ РОЗЛАДІВ ВІД МОРФО-ФУНКЦІОНАЛЬНОГО СТАНУ ГОЛОВНОГО МОЗКУ ПІСЛЯ ПЕРЕНЕСЕНОЇ ЧЕРЕПНО-МОЗКОВОЇ ТРАВМИ

Гринь К.В., Гринь В.Г., Федорченко І.Л., Ющенко Ю.П.

Наявність і ступінь вираженості психічних розладів багато в чому залежить від морфо-функціонального стану головного мозку. Переважна кількість бійців, які приймали участь у бойових діях, страждає на посттравматичний стресовий розлад, перенесли черепномозкові травми. Встановлення залежності вираженості афективних розладів від морфо-функціонального стану головного мозку після перенесеної черепно-мозкової травми.

За умови отримання інформованої згоди було обстежено 60 пацієнтів, віком від 19 до 60 років – учасників бойових дій, які страждали психічними розладами непсихотичного характеру і проходили стаціонарне лікування в одному з відділень Полтавської обласної клінічної психіатричної лікарні ім. О.Ф. Мальцева в період з 2014 по 2016 рр. Усім пацієнтам проводилося комплексне клінічне обстеження, проводилося КТ головного мозку та інші дослідження, огляди фахівців. Результати проведених досліджень демонструють, що вираженість психічних порушень залежить від морфо-функціонального стану головного мозку. Порушення психічної сфери, а саме афективні розлади, є невіддільною складовою частиною клінічної картини наслідків черепно-мозкових травм. Пацієнти з посттравматичними стресовими розладами та психічними розладами, обумовленими ушкодженням головного мозку (внаслідок черепно-мозкової травми) повинні в обов'язковому порядку отримувати комплексну психотропну та судинну терапію.

Ключові слова: морфо-функціональний стан головного мозку, черепно-мозкова травма, посттравматичний стресовий розлад.

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ЗАВИСИМОСТЬ ВЫРАЖЕННОСТИ АФФЕКТИВНЫХ РАССТРОЙСТВ ОТ МОРФО-ФУНКЦИОНАЛЬНОГО СОСТОЯНИЯ ГОЛОВНОГО МОЗГА ПОСЛЕ ПЕРЕНЕСЕННОЙ ЧЕРЕПНО-МОЗГОВОЙ ТРАВМЫ

Гринь Е.В., Гринь В.Г., Федорченко И.Л., Ющенко Ю.П.

Наличие и степень выраженности психических расстройств во многом зависит от морфо-функционального состояния головного мозга. Подавляющее количество бойцов, принимавших участие в боевых действиях, страдает посттравматическим стрессовым расстройством, перенесших черепно-мозговые травмы. Установление зависимости выраженности аффективных расстройств от морфо-функционального состояния головного мозга после перенесенной черепно-мозговой травмы. При условии получения информированного согласия были обследованы 60 пациентов в возрасте от 19 до 60 лет – участники боевых действий, которые страдали психическими расстройствами непсихотического характера и проходили стационарное лечение в одном из отделений Полтавской областной клинической психиатрической больницы им. А.Ф. Мальцева в период с 2014 по 2016 гг. Всем пациентам проводилось комплексное клиническое обследование, КТ головного мозга и другие исследования, осмотры специалистов. Результаты проведенных исследований показывают, что выраженность психических нарушений зависит от морфо-функционального состояния головного мозга. Нарушение психической сферы, а именно аффективные расстройства, являются неотъемлемой составной частью клинической картины последствий черепно-мозговых травм. Пациенты с посттравматическими стрессовыми расстройствами и психическими расстройствами, обусловленными повреждением головного мозга (вследствии черепно-мозговой травмы) должны в обязательном порядке получать комплексную психотропную и сосудистую терапию.

Ключевые слова: морфо-функциональное состояние головного мозга, черепно-мозговая травма, посттравматическое стрессовое расстройство.

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