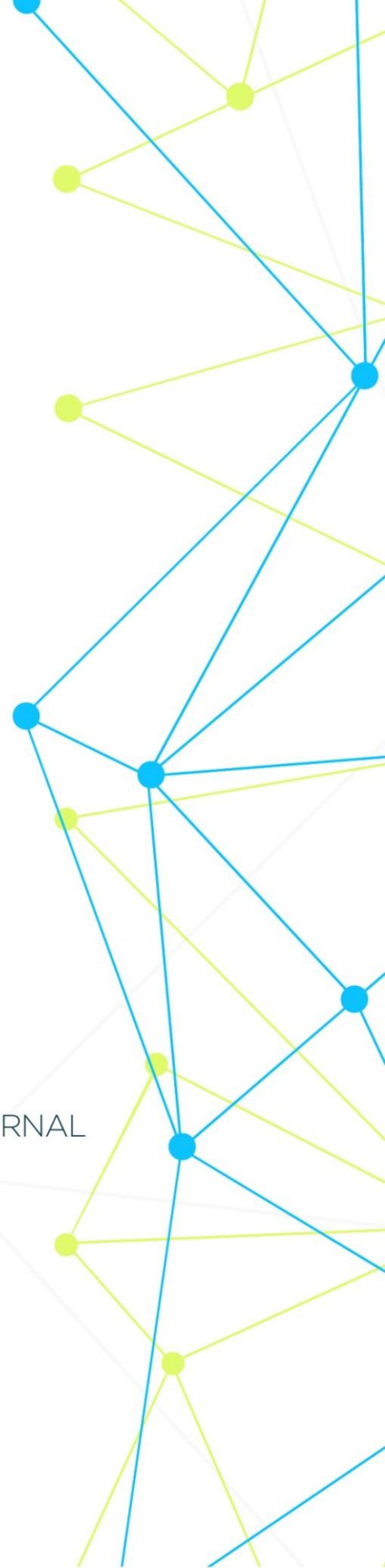




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CLINICAL AND PARACLINICAL FEATURES OF CEPHALGIA FORMED AS A CONSEQUENCE OF CRANIO-BRAIN INJURY

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Abstract: Chronic cephalalgia in recent years have become companions of the modern lifestyle, stress, depression, a huge number of gadgets, the speed of the city, all this reflects the overload of the brain. But most often, it is post-traumatic complications that leave an imprint in the form of persistent headaches. Post-traumatic cephalalgia in 30 % of cases persist from six months to several decades (1, 3, 7).

Keywords: persistent headaches, traumatic cephalalgia, diabetes mellitus, renal failure,

To make a diagnosis, it is enough to have a history of traumatic brain injury and the fact of a headache. But not everything is so clear. Important points are the level and severity of the injury, age and gender characteristics of the brain for the period of injury, comorbid the background of the injured patient (diabetes mellitus, renal failure, for example) and finally, the level of socioeconomic residence, whether the patient had a headache before the injury. The question remains open, the period of formation of complications in the form of cephalgia, from the time of injury (2, 4, 6). The severity of headache does not always depend on the clinical picture of the acute period of traumatic brain injury (TBI) (5, 7, 8). In addition, the whole syndrome complex of headache after TBI is difficult to put into one single frame, since the signs are multifaceted, according to subjective and objective sensations. Doubly, this problem is exacerbated if it is associated with early childhood; difficulty to understand the complaint by the level of cephalalgia, difficulty in diagnosing age-related. All of the above confirms the relevance of the chosen research topic, the study of which will make a certain contribution to the development of rehabilitation measures.

Target. To study the clinical and neurological features of chronic cephalgia in children associated with the consequences of a traumatic brain injury .

Material and research methods. The object of the study was children aged 8 to 10 years, in the amount of 60 patients who are on inpatient treatment in the Department of Pediatric Neurology and Neurosurgery of the Samara State Medical University for the period 2021-2022 ; the gender ratio of boys and girls was approximately 3:1. The children were divided into 2 groups based on the trauma they suffered . Group 1 (37) children with brain concussion, Group 2 (23) children with

brain contusion. The duration of the trauma suffered ranged from 6 months to 2 years. Parents agreed to the examination in writing. Traditionally, children who were examined by a neurologist and a neurosurgeon, only the presence of a headache was a criterion for inclusion in the study. Also, traditionally, the level of pain intensity was assessed using the VAS scale. The indicator of brain electrical activity was studied using an EEG apparatus. Neuroimaging (as well as EEG) was carried out in dynamics, using MRI. Additionally (selectively), TKDG was performed for older children (the reason for the examination was persistent cephalgia, drug resistance of treatment drugs). Statistical data were processed on an individual computer using standard Student's scores.

Research result. Taking into account the set goal, at the initial stage of the study, there was a need to determine the clinical and neurological features of cephalgia in children with traumatic brain injury. Pain intensity in the study groups was assessed using the VAS scale, which averaged 5 ± 1.0 points. The duration of pain, patients noted from 3 to 5 hours and on average the number of attacks of cephalgia per month from one to 6 episodes. These indicators were obtained during the primary preliminary (routine) examination. And since the reliability of the children's expressed feelings was questionable, it was decided to additionally form a group of children of identical age and gender, healthy, children with no history of TBI. Such a group was formed from 30 children who underwent preventive examinations in polyclinics at the place of residence, and were included in the comparison group. Gender difference turned out to be paramount in the comparative aspect. So, if post-traumatic pain was more often detected in boys, then in the comparison group of children, headache was noted more in girls. According to the nature of the headache, in the comparison group there was a different (combined) nature of the pain, then in the main groups, in the 2nd group - aching or pressing in 45% of cases. cephalgia syndrome was more often accompanied by nausea and vomiting in the comparative group (SG) up to 70% of cases. at the same time, a certain level of localization was not noted in the SG, in contrast to group 1, where localization in the parieto-occipital region was observed in more than 20% of cases; for group 2, diffuse localization was characteristic in up to 90% of cases. for children with a consequence of TBI, the symptomatology was not typical or very rare in SG. So, for example, aggressiveness or psychological individuality according to the type of "closedness", lack of communication skills, such children were noted in 50 % of cases of the main group (MG). In many cases, parents whose children were injured complained of lack of attention, poor concentration, learning difficulties, in other words, a tendency to cognitive dysfunction in 79% of cases, in children without injury, such deficiencies were noted in 18.4% of cases in comparison. Another distinguishing symptom between the groups was dizziness, which is characteristic of OH in 68% of cases, where in the group SG was noted only in 11.3% of cases. Thus, the pattern of headache after TBI had a polymorphic character, differing in duration, localization, intensity, and concomitant symptoms from headache associated with another etiology. During the examination of children, in more depth, with the

formulation of the final diagnosis, neurological symptoms were determined, in varying degrees of severity. Nystagmus, mostly attunement, was noted in both groups (1 and 2) in children after TBI in 67% of cases. Close to this percentage, in 70% of cases, smoothness of the nasolabial fold (either side), violation of the signs of convergence in 41.1% of cases. All these signs did not differ significantly from each other in groups 1 and 2, respectively, without concentrating, the indicators were combined into one main group. From the side of motor function, asymmetry of tendon reflexes was noted, with a slight brisk component on one of the sides in 52% of cases. The second important symptom was a violation of static balance, where in children with a consequence of TBI it was noted in 50% of cases. Almost all children have OH; A characteristic vegetative disorder was noted in 93% of cases, in the form of altered dermatographism, increased sweating, redness of the face. That is, the capabilities of the child's body, adaptation, after the received TBI is quite high and is associated with the level of vegetative disorders.

A great emphasis, at the time of routine examination, is represented by complaints from parents about the psycho-emotional state of children. In this regard, a more detailed study was carried out by questioning and filling out scales to determine an adequate analysis of the psycho-emotional level in children with post-traumatic headache. According to literary sources (Kolosov O.A., 2010, Belonosov 2001), in 80% of cases, children with a consequence of TBI, even in a mild form of injury, note cognitive dysfunction, emotional lability, the pathomechanism of disorders are based, as a result of damage to axons responsible for communication between brain structures, mainly the limbic system and the reticular system. Using a questionnaire-scale, mainly astheno-neurotic syndrome was revealed in 38% of cases, the signs of which were manifested in the form of tearfulness, aggressiveness, lack of desire to contact others, in some cases, parents were manipulated, hysteria and hyperexcitation were manifested in 19% of cases. Cognitive poverty in most children is reflected in the form of a decrease in school performance, deterioration in attention, concentration during games. Thus, attention is reduced in 39%, operational thinking in 30% of cases, a decrease in concentration up to 50% in children with a more distant period of trauma (≥ 1 year).

The result of the analysis of bioelectrical (BE) activity showed a difference for the worse, in children with a consequence of TBI, almost 2.5 times. Asymmetry of biopotentials in all areas of the brain in 72% of cases turned out to be frequent signs. Children with a history of injury more than a year old recorded epileptic activity on the EEG in 47% of cases, which indicates changes in the brain, the formation of a pathological process (Table 1). Signs of BEA in the form of changes in the comparison group took place, for this reason, the establishment of factors of pathological signs was forced to return to the issue of obstetric and gynecological history of mothers. Accordingly, paroxysmal activity in the SH was detected in children, and it turned out that these children had a perinatal disorder (preeclampsia of pregnancy in the mother, prolonged difficult labor, incorrect standing of the fetus during childbirth, twins, etc.). The same changes were found in children with TBI.

Thus, the level of the EEG index is affected not only by the severity of the trauma, the statute of limitations, but also by the residual adverse anamnesis (hypoxic consequences of severe maternal pregnancy and childbirth).

Table 1

EEG data of examined children

Indicators	Main group		SG n =30
	1 group n= 3	group 2 n= 3	
Diffuse changes in BE activity	43%	100%	12%
Epileptiform (convulsive) activity	25%	100%	6%
Asymmetry of biopotentials in the zones of the hemispheres	66%	98%	3%
Amplitude indicators	42%	100%	ten%

results of the analysis during the TKDG turned out to be interesting . Changes in blood flow were noted in 80% of cases of OH, where a decrease in LBF was most often found in 70% of cases, where pathology was noted in the vertebral artery system in 42%, and in the ICA basin in 60% of cases. in addition, the percentage of venous disorders was noted in 82% of cases. therefore, in children with a history of TBI, changes in hemodynamics were revealed. The data are confirmed by literature sources, where the authors note changes in cerebral blood flow, depending on the level of the injury and the timing (2, 5, 6, 8). Having studied the data of the examined patients, signs of blood flow asymmetry were noted in 37 % of cases, and pronounced asymmetry was detected in 29.9% of cases, mainly in group 2 and was associated with a violation of the neurological mechanism (musculoskeletal system). Thus, after evaluating the results of the examination of children with a consequence of TBI , the pathomechanisms of headache formation were determined: residual background before injury, vascular-liquorodynamic pathology, threshold of vegetative status violation. All these indicators, with insufficient drug control, exacerbate the process, slowly with the transition to a chronic form. Accordingly, the choice of the drug as an addition to the standard symptomatic treatment was necessary, as the owner of the antioxidant, neuroprotective action, microcirculatory action and antidepressant at the same time. The drug of choice is Glycine , a metabolic regulator that reduces psycho-emotional stress and enhances the antiepileptic effect of anticonvulsants, increases mental capacity, reduces and corrects vegetative disorders, has an antioxidant effect, and regulates the work of glutamate receptors. The drug was prescribed at 100 mg (1 tab.) 2-3 times a day for 1 month. Observation and control was carried out in dynamics in a month. Since, in the work, the cephalgic syndrome was purposefully studied , it is this indicator that is decisive for monitoring the effectiveness of treatment. The frequency of headache decreased in 64.9 % of cases in the MG, in 90% in group 1 (with brain concussion), in 38.5% of cases in group 2 (with brain contusion). The intensity of cephalalgia decreased by 80%, in group 1 by 86%, in group 2 by 45%. The duration of cephalalgia in the

consideration of the entire main group by 82%, in group 1 by 90%, in group 2 by 36.6%. The nature of the psycho-emotional state, in a positive direction, increased in the MG by 73%, in group 1 by 86%, in group 2 by 28%, in terms of attention, emotional lability, etc. Bioelectrical activity after additional treatment in both groups was changed in terms of efficiency by 70% in MG, in terms of diffuse changes, convulsive activity decreased, slow-wave activity decreased, in group 1 by 32%, in group 2 by 18% (taking into account short treatment period).

Thus, headache is a common syndrome in children with a consequence of TBI (concussion, brain contusion). Headache tends to progress and become chronic. Despite the fact that children have a high percentage of compensatory mechanisms, a residual unfavorable background during the period of a burdened obstetric history or during childbirth can aggravate the process of the pathomechanism of post-traumatic headache. Post-traumatic cephalgia in children is clearly manifested by concomitant symptoms in the form of autonomic disorders, psycho-emotional disorders, and cognitive dysfunction. Patients of childhood need a dynamic origin of paraclinical examinations and examinations by specialists of a neurologist, psychiatrist, psychologist. Taking into account the polymorphism of clinical signs of headache in children with traumatic brain injury, an additional, long-term treatment with Glycine is recommended, as a drug that simultaneously normalizes the central nervous system, ANS, reduces psycho-emotional stress, increases mental abilities, and regulates metabolism and the activity of glutamate receptors.

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