

CONVULSIVE SYNDROME IN VICTIMS OF SEVERE TRAUMATIC BRAIN INJURY

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Abstract: A retrospective analysis of the results of clinical and instrumental studies and surgical treatment of victims operated on for severe traumatic brain injury in the neurosurgery department of the Multidisciplinary Clinic of the Samarkand Medical University was conducted. Epileptic seizures were registered in 140 patients (7.9%)

Keywords: epileptic seizures, severe traumatic brain injury.

Relevance. Convulsive syndrome in the clinical picture of severe traumatic brain injury (TBI) most often manifests itself as epileptic seizures (ES) (1). The time of occurrence and frequency of ES development depend on the type, location and volume of the brain damage focus, the premorbid background of the patient (the presence of cerebrovascular diseases, repeated TBI in the anamnesis, genetic predisposition, chronic alcoholism, etc.) [1, 6, 7, 10]. In victims with severe TBI, generalized ES are most often observed, which lead to increased intracranial pressure, impaired cerebral perfusion, ischemia and increased cerebral edema, which contributes to the deterioration of the patient's condition and an increase in the number of adverse outcomes (5). Identification of risk factors for the development of EP in severe TBI will allow us to determine the group of victims who require prophylactic administration of anticonvulsants, as well as to clarify the impact of EP on treatment outcomes and the course of the recovery period in individuals who have suffered TBI.

The aim of our research: to study the structure of EP in severe TBI and the factors contributing to their development.

Materials and methods. A retrospective analysis of the results of clinical and instrumental studies and surgical treatment of victims operated on for severe TBI was performed. All patients underwent clinical and neurological examination upon admission and over time, and computed tomography (CT) of the brain was performed. Based on CT and MRI data, the localization, type and volume of the brain injury, the magnitude of transverse dislocation, and the degree of compression of the basal cisterns were determined. Dislocation syndrome in TBI was assessed according to the modified classification of F. Plum, JB Posner (1982). EPs were registered in 140 patients (7.9%). There were 86.4% men and 13.6% women. The average age was 46.5 years. EPs were classified according to Barolin et al. (1962) as immediate EP (developed within the first 24 hours from the moment of injury), early EP (debuted within 1 to 7 days from the moment of injury) and late EP (occurred 7 or more days from the moment of injury). According to CT of the brain, subdural hematomas were detected in 77 of 140 victims (55.2%) with EP. Multiple brain injuries (combinations of subdural, intracerebral hematomas and foci of brain contusion) were noted in 34 patients (24.3%), intracerebral hematomas and brain contusions - in 17 (12.1%), epidural hematomas - in 4 (2.8%), depressed skull fractures - in 8 (5.6%). In the overwhelming majority of patients - 114 (81.4%), EPs occurred in the first 24 hours from the moment of injury (immediate EPs), in 22 (15.7%) - in the period from 1 to 7 days (early EPs) and in 4 (2.9%) - after 7 days or more (late EPs). The relationship between the presence of EPs and the data obtained during the clinical and instrumental examination of the victims upon admission and over time was determined (2,3,4).



Fig. 1. Early CCT

Results. Among all victims, the level of wakefulness decreased to the point of coma (4-8 points according to the GCS) was observed in 628 patients, of which EP developed in 56 (8.9%). The level of wakefulness decreased to the point of stupor (9-12 points according to the GCS) was observed in 242 patients, of which EP developed in 19 (7.9%). Among 900 victims in clear consciousness or stupor (13-15 points according to the GCS), the incidence of EP was 7.2% (65 patients). No reliable relationship was found between the level of wakefulness and the occurrence of EP in victims with TBI ($p > 0.05$). EP was recorded more often in victims of working age - in the age group from 41 to 60 years. A relationship was found between the development of EP and the presence of purulent-inflammatory complications of the central nervous system (CNS) (meningitis, (11.2%)). Among patients with purulent-inflammatory complications of the CNS ($n = 198$), EP developed in 28 (14.1%), in the absence of purulent-inflammatory complications - in 112 (7.1%). The pathogenesis of the development of early and late EP in TBI is different. The occurrence of early seizures is due to cytotoxic and metabolic changes in the focus of brain damage, as well as the compressive effect of the traumatic focus on the brain structures. Late EP is associated with the gradual formation of an epileptic focus (post-traumatic cyst, scar or cortical atrophy). As a rule, in victims of TBI, in whom EP first occurred several weeks or months after TBI, PTE subsequently develops; seizures are stereotypical and recur with different frequencies. A number of authors Immediate EPs are singled out separately (developing in the first 24 hours after the injury), emphasizing their important role in determining the prognosis for the development of PTE. Thus, according to NR Temkin (2003), the risk of developing PTE in victims with TBI and a history of immediate EPs is 28%. Risk factors for the development of EP in victims with TBI are: severe injury, depression of the level of wakefulness to the point of coma (3-8 points on the GCS), duration of the comatose state for more than 7 days, penetrating TBI, the presence of depressed skull fractures, intracranial hematomas, cortical foci of brain contusion (mainly the frontal and temporal lobes), the presence of anisocoria in the neurological status.

Conclusions. EPs occur in 7.9% of patients with severe TBI. Immediate EPs develop in 81.4% of patients, early EPs in 15.7% and late EPs in 2.9%. Immediate EPs are typical for intracranial foci of brain damage accompanied by dislocation syndrome. Early and late EPs occur mainly in patients with severe TBI and concomitant small focal contusions of the brain in the frontal and temporal localization. Risk factors for the development of EPs in patients with severe TBI are: age of the victims 41-60 years, the presence of the most severe types of brain damage (acute subdural and intracerebral hematomas, contusion foci and multiple brain injuries) accompanied by dislocation syndrome, development of purulent-inflammatory complications of the central nervous system in the postoperative period.

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