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SURGICAL TREATMENT OF PATIENTS WITH CEREBROFACIAL INJURY

Алишер Шавкатович Ахроров,
Самаркандский Государственный Медицинский Университет,
к.м.н . кафедры челюстно-лицевой хирургии

Хаккулов Эъзозбек Комил угли
Студент Стоматологического факультета,
Самаркандский Государственный Медицинский Университет

Abstract
The syndrome of mutual aggravation of injuries, which occurs as a result of multiple trauma, leads to a significant increase in the overall severity of the victim's condition. To determine the time of each stage of CFT treatment, to reduce the number of complications, we have developed and introduced into clinical practice an algorithm for providing care for this injury. The tactics of treating patients with CFT, according to the developed algorithm, has an undoubted advantage over the previously used one - the percentage of inflammatory complications are reduced to a minimum: from 18% to 2%. Such an integrated approach increases the importance of triage of victims in order to achieve a therapeutic effect and economic result.

Keywords: Injuries of the midface, surgical tactics, cerebrofacial trauma.

Introduction

Fractures of the bones of the facial skeleton account for 30 to 40% of the number of dental diseases and up to 21% of all victims with injuries hospitalized in hospitals [1,4,5,6,8,9,10]. Disability due to the consequences of injury ranks third, people under 40 years of age account for 50% of all victims (Vinogradova N.G., Burdin V.V., Kuznetsova N.L. et al., 2017). Most often, injuries of the PHD are observed in people of working age from 18 to 50 years old - 92% (Vinogradova N.G., Stolbov I. Yu., Burdin V. V. et al., 2018) [2,3, 11,15]. In developed countries, where the provision of care to patients with injuries of the middle zone of the face is adequately organized, nevertheless, according to the well-known American surgeons L. A. Whitaker, M. J. Yaremchuk, expressed in 1990: "... sometimes deformities and defects occur even despite qualified surgical treatment" (Karayan A.S., 2008) [7,16,17,18].

The aim of the study was to improve the results of treatment in patients with trauma of the midface by optimizing surgical tactics based on clinical and physiological criteria

Materials and Methods of Research

The material for this work was the study of 160 case histories of victims with various types of injuries of the middle zone of the maxillofacial skeleton combined with brain injury, who were

treated in the department of the Emergency Hospital of the Samarkand Medical Association in the period from August 2019 to December 2020 inclusive. Depending on the type of damage, they are divided into 2 groups - concussion and damage to the middle zone of the face, brain contusion and fracture of the middle zone

To objectify the results obtained, modern research methods were used: clinical, physiological, laboratory, radiation and statistical.

To prove the advantage of the developed algorithm, a comparison of the immediate and long-term results of treatment was carried out, taking into account the number of complications

Results and Discussion

In order to optimize surgical tactics in patients with CFT (choice of time and method of treatment), we, based on the results obtained (immunological and physiological), have developed an algorithm for the treatment of victims with this type of injury.

In the treatment of cerebrofacial injuries, as well as in general traumatology, there are two positions regarding the timing and scope of surgical treatment. The first of them is "total early care", the essence of which is the earliest and maximum surgical treatment[13,15,116]. The main negative aspect of this tactic in CFT is the increase in cerebral symptoms, an increase in the likelihood of residual neurological symptoms, as well as the possible likelihood of developing complications such as delayed reduction and posttraumatic osteomyelitis.

The second concept is "Damage Control", which is based on the phased provision of assistance [12,14,18].

It is to determine the time of each stage of CFT treatment, to reduce the number of complications, that we have developed and introduced into clinical practice an algorithm for providing care for this injury.

Upon admission of patients with CFT to the clinic, an examination was carried out by a maxillofacial surgeon, a neurosurgeon, as well as an otorhinolaryngologist and an ophthalmologist, if necessary, and examinations by specialists were carried out in dynamics. X-ray imaging of the bones of the facial skeleton in direct and lateral projection at admission and in dynamics was mandatory. CT examination was carried out in all patients with injuries of the midface, which gave a more complete picture of the injury, and modern computed tomography scanners made it possible to "build" a 3-D image, which concretized the preoperative picture for the adoption of surgical tactics.

Assessment of the degree of damage and dynamics of the processes of restoration of cerebral blood flow autoregulation was carried out in patients of the study group and the comparison group at admission, on the 5th, 7th and 10th days after injury using rheoencephalography with the Rean-Poli device. The study was carried out in the "6 – FM-OM" lead and the parameters obtained from the frontal, mastoidal and occipital electrodes were studied. The functional state of cerebral blood flow was assessed by comparing the obtained mean values of rheovasographic parameters with the established ranges of their normal values (Medikom program, 2005).

To confirm the effect of brain injury on the sympathetic innervation of the microcirculatory bed in the injury area, perfusion, saturation, and red blood cell velocity were compared in

patients with isolated and concomitant injuries. Laboratory testing was carried out using the ELISA method. To assess the immunological status, pro- and anti-inflammatory cytokines – IL-6, 8, 10, TNF in the blood of the victims were determined on the 1st, 3rd, 7th and 10th days after the injury.

All patients in the study and comparison groups were used, depending on the type of injury, the necessary methods of conservative and surgical treatment. Statistical analysis of the obtained experimental and clinical data was carried out using the Statistics 7 software.

The results of treatment were compared according to clinical, radiographic, physiological, signs, the duration of the recovery period, complications in the postoperative period of both groups of patients, and the basic criteria of the scale "Questionnaire of a patient who has suffered a cerebrofacial injury"

REG monitoring revealed disruptions in the mechanisms of cerebral blood flow autoregulation of varying degrees of severity in all clinical cases. The tendency to restore blood flow was observed from day 4-5, but this process was less intensive in groups with concussion.

Neurological examination of patients in both groups revealed a longer persistence of residual neurological symptoms in patients in the comparison group, where surgical treatment was carried out without taking into account the monitoring of REG parameters.

During the study of the microcirculatory bed in the area of injury, more severe and long-term disorders were also revealed in patients with concussion of the brain in comparison with isolated injuries and in combination with brain contusions. Most likely, the revealed facts are due to the neurogenic stem influence with a change in the amplitude-frequency characteristics of the LDF. The most optimal characteristics were recorded after 4 days. The dynamics of perfusion and saturation recovery directly correlated with the restoration of cerebral blood flow autoregulation.

In the preoperative period, in the first three days after injury, patients of all groups showed the same pattern of changes in IL-6, 8, 10, TNF, according to the biological law of stress reaction with a significant increase in the concentration of pro-inflammatory cytokines and a tendency to normalize from the fourth day. The dependence of the increase in the titer of IL-6 and IL-8 on the severity of the injury was not revealed. Monitoring of anti-inflammatory cytokines revealed two fundamentally different behavior profiles – with and without a peak rise in the concentration of IL-10 and TNF by day 7. This was an indicator of the preclinical picture of the development of complications, as evidenced by their number in the comparison group.

In the treatment of patients with CFT of the main group, according to the proposed algorithm, surgical treatment was carried out in time, taking into account the data of monitoring the cytokine status in combination with the study of the state of the cerebral and local blood flow of the area of damage to the bones of the facial skeleton. This made it possible to reduce the total number of complications to 1.5% (there was practically no delayed consolidation of fragments and one case of osteomyelitis in the study group).

In the comparison group, surgical treatment was carried out without taking into account the parameters of cerebral and local blood flow in combination with immunological parameters, which was reflected in the number of inflammatory complications and cases of delayed consolidation.

Thus, the tactics of treating patients with CFT, according to the developed algorithm, has an undoubted advantage over the previously used one - the percentage of inflammatory complications is reduced to a minimum: from 18% to 2%. That is why the algorithm proposed by us can be considered the most optimal for the diagnosis and successful treatment of patients with CFT.

Findings:

1. One of the main factors leading to complications (phlegmons, delayed consolidation, osteomyelitis) in the short and remote period in patients with cerebrofacial injury is the lack of a unified approach to surgical tactics.
2. Clinical and physiological criteria for the restoration of autoregulation of cerebral blood flow (RI – 0.1-0.15 Ohm), correlating with the normalization of microcirculation, oxygenation in the areas of bone injuries of the facial part of the skull (perfusion – 19.2±2.1 Pf.u., saturation – 90.1±3.5%, Vr – 14.7±1.8 mm/s) are basic and clinically significant for the adoption of optimal surgical tactics in patients with cerebrofacial injury.

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