NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY [IJIERT]
ISSN: 2394-3696
VOLUME 7, ISSUE 4, Apr.-2020

THE EFFECT OF PLASMA THERAPY ON THE GENERAL CIRCULATION OF BLOOD IN PATIENTS WITH EXTENSIVE DEEP BURNS

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ABSRACT
When conducting this work, we based the study of the results on the evaluation of hemorrhagic complications in burned patients. Complex therapy in severely burned patients, which includes: anticoagulation, transfusion, antithrombotic, necrectomy, alloplastic and antishock therapy, reduces the severity of exhaustion, effectively corrects the negative state and helps restore blood microcirculation, which contributes to a saturated trophic, energy and building blocks in the affected area, speeding up the regeneration process. Providing a sufficient amount of plastic material makes it possible to reduce the number of complications of burn disease and improve the results of surgical treatment.

KEY WORDS: Thermal trauma, hemodynamic disorders, homeostasis system, implant, burn shock, necrectomy, transfusion therapy, autodermoplasty, disseminated intravascular coagulation syndrome**.**

INTRODUCTION

Burns are one of the most destructive types of skin damage and its appendages. Burns and burn disease, according to various authors, account for from 6.1 to 38.4% of all injuries [1,2], and mortality remains high, especially in the stages of toxemia and septicotoxinemia. The main causes of mortality in the stage of acute burn toxemia are purulent-septic complications combined with endogenous intoxication of metabolic and microbial origin. They firmly hold the first place among the reasons. At the same time, the risk of developing early sepsis (on the 4th-5th day after the injury) increases to 75-90% with deep burns on an area greater than 10-15% of the body surface. Despite extensive experience in treating burns in domestic and foreign kombustiologiya, more than 40% of victims become disabled [3,4], so they are a serious medical and social problem.

After receiving a burn, not only platelet aggregation increases, but also red blood cells. Such patients accelerate blood clotting, inhibit fibrinolysis, and often develop a chronic form of DIC syndrome [4]. The tendency to hyper coagulation in old age, which worsens after a burn, in combination with a decrease in blood flow during the shock period, significantly increases the risk of thromboembolic complications. Acute disorders of cerebral circulation, thrombosis and embolism of the pulmonary arteries, iliac and other arteries of the great circle of blood circulation are a frequent complication in these patients [6, 7, 8, 9, 10, 11, 12].

With extensive deep burns, various pathological processes are triggered immediately after injury, forming the pathogenesis of burn disease. One of the first to destabilize the hemostatic system in the form of DIC-syndrome with thrombosis and bleeding [5].

The problem of prevention, diagnosis and treatment of disorders of the hemostatic system remains one of the most urgent today. In kombustiologiya, it is particularly acute, since hemorrhagic complications are the main cause of deaths, severely burned due to gastrointestinal bleeding [2,3].

MAIN PART

Goal: Study of the state of the hemostatic system under the influence of a thermal agent on the body during periods of shock and toxemia.

Materials and methods. The data on the total number of victims with burn injuries who were treated in the Samarkand branch of the encamp in the period 2016-2019 were implemented. The informative significance of homeostasis disorders in terms of severity was assessed, followed by the development of predictive algorithms and verification of their effectiveness. It should be noted that all patients had deep burns from 10% to 45% of the body surface. These victims made up the main array, which was used to solve the problems of assessing information significance and developing a predictive algorithm. To solve these tasks, this array was divided into groups: group I – 105 patients were patients without homeostasis correction and prevention of operational blood loss, and group II – 112 patients – patients with deep burns who received homeostasis correction and prevention of operational blood loss. In accordance with the prognostic index Frank (if), which characterizes the severity of the burn injury and determined in arbitrary units (1% of burn surface I-II-IIIA degree is accepted as 1 unit (unit), 1% deep burn IIIB-IV St. 3 units) and taking into account the severity of inhalation injury (if it I-II degree further summarized 15 units, when it III-grade IV – 30) the patients were divided into 4 groups: I group – if < 30 units in 21 cases (9.67 per cent). II – if 30-60 units – 153 (70,51%), III – if 61-90 units – 32 (14,75%), IV – if > 90 units – 11 (5,07%) (table 2.4). Burned with a favorable prognosis (if up to 60 units) was 80.18%, with doubtful and unfavorable (if over 60 units) - 19.82%.

The most common burns were localized in the torso and extremities (32.5% of patients), the head and extremities (27.22%), and the trunk (14.62%). Isolated lesions of the face and lower extremities were typical for contact burns. In the structure of burns of the upper and lower extremities, only the right parts were affected more often than the left.

DISCUSSION OF RESULTS

In patients with severe burns, hemostatic disorders are manifested by disseminated intravascular coagulation (DIC) syndrome. At the same time, according to V.G.Lycheva (1993), DIC-syndrome is either not recognized at all, or is diagnosed at the stage of clinical manifestation, which is manifested by hemorrhage and/or organ dysfunction.

The study of the state of the BCC and its components showed that the severity of changes is directly proportional to the degree of burn shock. Upon admission to the hospital, patients with deep burns had a statistically significant decrease in the total BCC index of 67.5±0.4 ml / kg to 53.9±0.4 ml / kg, respectively, of the I - and III-degree of shock.

The BCC deficit also varied according to the severity of the burn shock, amounting to 10.9±0.4% at grade I, 22.0±0.3% at grade II, and 32.9±0.7% at grade III. Structural indicators of BCC in patients with I-degree shock did not differ significantly from those in the control group, although there is a statistical difference between them. These changes were most clearly expressed in the group of patients with moderate and severe shock. This is evidenced by a decrease in the CPR and GO, respectively, to 28.4±0.2 ml/kg and 26.5±0.3 ml / kg in patients with s-degree shock. Along with this, there was a decrease in the OCB from 3.3±0.1 g/l to 2.28±0.04 g/l ($P < 0.05$).

It should be noted that after the treatment tactics aimed at both correcting homeostasis disorders and complex antishock therapy, significant changes were observed in the direction of improving the BCC indicators. This favorable trend was most characteristic of patients with mild to moderate burn shock. There was a decrease in the BCC deficit in patients with I - and II-degree, respectively, to 4.3±0.1% and 10.2±0.3% ($P < 0.05$). The positive trend was mainly based on an increase in the CPR and GO indicators, which amounted to 38.3±0.2 ml/kg and 33.7±0.3 ml/kg, respectively, 37.9±0.1 ml/kg and 32.1±0.4 ml/kg with a moderate degree of shock. However, despite the positive dynamics of indicators, in the group of patients with severe shock, even after the measures, the worst indicators of BCC remained.

Thus, the deficit of BCC in this group of patients was 12.7±0.3% in the shock period. Along with this, the statistically significant low values of the CPR (34.7±0.2 MD/kg, p <0.05), the BCC (8.9±0.04 g/l, P <0.05) and the GO (31.5±0.2 ml/kg, P <0.05) were preserved.

When patients with deep burns of 20-25% of the body surface are admitted to the clinic, there is a slight activation of the blood clotting system, which is expressed in an elongation of the PTI to 92.3±1.5% (P<0.05), and IBS to 82.1±2.9 seconds. Also, there is a slight decrease in the hematocrit index and suppression of fibrinolytic activity of blood from 15.4±0.6 to 10.7±0.27% (P<0.05) in the study group. In contrast, patients with grade II shock experienced increased blood clotting when admitted to the clinic, along with continued inhibition of fibrinolytic activity.

This is evidenced by an elongation of the PTI index to 94.6±3.8% (P <0.05) and a decrease in plasma tolerance to heparin to 256.3±11.8 seconds (P <0.05). Fibrinolysis is statistically significantly reduced to 8.09±0.42% (P <0.05), and hematocrit to 33.1±1.4 due to intensive loss of the blood form and hemoconcentration.

Microscopic examination of the internal organs most often revealed hyaline microthrombs, completely objurgating the lumen of the micro vessel. Consisting of a homogeneous eosinophilic mass resembling hyaline, in which no fibrous structures were visible. According to the literature, the composition of hyaline blood clots includes, in addition to fibrin, also fibrinogen.

We believe, however, that these are not purely protein structures, but blood clots, the formation of which involves stasis, agglutinated and hemolized red blood cells, cemented with fibrin and fibrinogen. In addition to hyaline blood clots, we often encountered globular formations in small veins and less often in capillaries, which, like hyaline blood clots, consist of a homogeneous eosinophilic material. These are so-called globular blood clots.

They can have different diameters the smallest ones only slightly exceeded the size of the red blood cell, the largest ones were much larger. The morphological manifestation of DIC syndrome, which develops as a result of thermal trauma, is non-specific manifestations in the form of mainly plasma coagulation and the formation of fibrin microthrombs of various structures in the microcirculatory bed of internal organs. As for sludge, this phenomenon was found in larger intra-organ vessels in almost all victims of thermal trauma, so we do not attribute it to any typical manifestations of DIC syndrome.

CONCLUSIONS

With deep burns, the vast majority of patients have an average degree of plasma loss, which is manifested with a deficit of BCC up to 30%, a violation of the volume of circulating plasma protein, and a decrease in the globular volume of blood. With plasma loss in patients with extensive deep burns, there is a violation of the blood clotting system and suppression of fibrinolytic activity, which correlates with the degree of burn shock**.** Carrying out adequate preoperative measures allows improving the indicators of both the BCC and the coagulation system in patients with mild to moderate plasma loss.

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