



BURN SHOCK IN PEDIATRIC AFTER THERMAL INJURY AND MULTIPLE ORGAN FAILURE SYNDROMES

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Article history:	Abstract:
<p>Received: January 10th 2022 Accepted: February 10th 2022 Published: March 24th 2022</p>	<p>Burns covering more than one-third of the total body surface area lead to the unique derangements of cardiovascular function known as burn shock. Burn shock results from the interplay of direct tissue injury, hypovolemia, and release of multiple mediators of inflammation. The course and treatment of 56 pediatric patients with burn shock have been analyzed. With the purpose of investigation all patients with burn shock were subdivided into 2 groups: The first (control) 23 children and was treated according to traditional antishock infusion-transfusion therapy without inotropic therapy. The second (basic) group included 33 patients with burn shock and underwent a complex, antishock infusion-transfusion therapy with employment of inotropic and organoprotective therapy depending on dysfunction of vitals and systems. The victims of burns - material prove high spread POI in patients with burns, that requires complex, purposeful conservative (local and general) and surgical treatment for its reduction and prevention of unfavorable results.</p>

Keywords: Burns shock, treatment, antishock infusion-transfusion.

INTRODUCTION.

Burn injury is a leading cause of unintentional death and injury in children until 14 years of age (1). While many of these injuries are minor and can be treated as outpatients, approximately 5% are considered moderate to severe injuries and require hospitalization (2,11). It is generally believed that burns larger than 15% total body surface area (TBSA) lead to the initiation of the systemic inflammatory response syndrome requiring IV fluid resuscitation to prevent burn shock and death, while smaller burns are able to be treated with oral rehydration alone (3,4,10,15).

Prompt resuscitation is critical in pediatric patients due to their small circulating blood volumes. Delays in resuscitation, even as short as 30 min, due to difficulty with IV access or failure to recognize size or severity of the burn can result in increased rates of complications such as acute renal failure, increased hospital length of stay, and increased mortality (5,7,12,13). The basic principles of resuscitation are the same in adults and children; however, children are not simply "little adults". They have unique physiologic needs that must be adequately addressed to successfully care for burn-injured children (8-10). In this review, we will discuss

the history of fluid resuscitation, current resuscitation practices, and future directions of resuscitation for the pediatric burn population.

MATERIAL

The course and treatment of 56 patients with burn shock have been analyzed. All of them were treated in Samarkand branch of RSCUMA during the period of 2013- 2018. With the purpose of investigation all patients with burn shock were subdivided into 2 groups. The first (control) group included 23 pediatric patients and was treated according to traditional antishock infusion-transfusion therapy without inotropic. The second (basic) group included 33 pediatric patients with burn shock and underwent a complex, antishock infusion-transfusion therapy with employment of inotropic and organoprotective therapy depending on dysfunction of vitals and systems.

METHODS AND RESULTS

All patients with burn shock underwent general clinical examinations of: cardiovascular and respiratory systems, functions of the liver, kidneys and gastrointestinal tract for revealing of polyorgan



insufficiency (POI). Clinical analyses of blood and urine were carried out. Taking into account the traumas of this type, careful control of arterial pressure level in dynamics, temperature reaction, respiratory and pulse rate, measuring of hourly and daily diuresis were of particular significance.

The most severe disturbances in the shock period are observed in cardio respiratory system of patients with burns. Thermal inhalation injury severity can be determined not so much by airway burns but by toxic inhalation damage to the lungs and whole body with high toxic gaseous and vaporized chemical components of smoke. Impairments of central hemodynamic due to extra and intracardial distress are characteristic for acute period of burn trauma first of all.

There is traditional orientation in combustiological practice on routine criteria in shock diagnosis – RSS, AP, All over index and clinical estimation of the victim's condition. The study of body systems impairments in the observed patients with burn shock shows that POI occurred in all patients with burns – 56 (100%), with this in the majority of cases – 44 combinations of three and more organs and systems dysfunctions was revealed. In 28 (50%) patients with POI syndrome and burn shock, damage of central nervous system as encephalopathy syndrome, (ES) was revealed; it proves its principal role in regulation of vital function of the body.

High capability of the central nervous system, for injuries develops in patients with burns the conditions for dysfunctions and then decompositions of the systems providing vital activity in the body and further development of POI syndrome in patients with burn shock. (excitation, inhibition, sopor, coma). With the same high frequency impairment of respiratory system (56,1%) and gastrointestinal tract (43,4%) developed in patients with burns, resulting in hypoxia, impairment of metabolic processes and water – electrolyte metabolism which are most significant in development of severe course in burn shock (5,7,10,14).

High incidence of abnormalities in the central nervous system, respiratory system and GIT in the structure of polyorgan insufficiency syndrome proves a response of the patient's body of the same type to the effect of the burn trauma. Syndrome of impairment of cardiovascular system usually developing in early stages of burn shock were revealed in more than half (50, 4%) patients and it had hypoxic – metabolic genesis. Syndrome of renal inefficiency developed in (42, 3%) patients and hepatic insufficiency in (24, 2%) patients. The most actual in POI peak is syndrome of intestinal insufficiency (SII). Insufficiency of GIT organs was marked by toxic paresis of the stomach and intestine, development of acute erosions and ulcers

of the esophagus, stomach, duodenum, small intestine often complicated by bleeding.

The feature of the burn trauma is complete or partial anorexia that resulted in cachexia in a short period in early stages of combustiology development and developing hyper metabolism cause delay healing, for a long time, injuries and stable course of polyorgan dysfunction. Analyses of intestinal dysfunction manifestations in patients with severe thermal trauma made it possible to separate 4 main symptoms: repeated vomiting, development of Kurlings stress ulcers, gastrointestinal tracts paresis with appearance of congestive discharge from the stomach and repeated watery stool.

CONCLUSIONS

The above – mentioned material prove high spread POI in pediatric patients with burns, that requires complex, purposeful conservative (local and general) and surgical treatment for its reduction and prevention of unfavorable results.

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