Management and safety of burned patient in pre-hospital care in Slovakia

Zuzana Kecerová [1 A]; Matúš Baran [2 A]

[1] MD, Doctoral Student, e-mail: ibritchenko@gmail.com
[2] MD, MBA, MPH, Doctoral Student, e-mail: ibritchenko@gmail.com

[A] University of security management in Košice, Slovakia

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Abstract

Mass disasters with multiple thermal injuries are an actual topic of safety management of patients in an actual safety situation in Eastern Europe. Availability of highly specialized burn centers complies with geographic borders of countries, but from an international perspective it is reasonable usage of nearby burn centers in neighboring countries. The aim of the report is to describe the actual needs of coordinating national programs for mass burn disasters. Actual situation reflects recommendations of WHO and European Union authorities and allows to ratify them to national plans. But it is also needed step-back coordination of individual national plans to set the highest possible safety of management of burned patients in the European Union despite geographical borders of countries.

Key words: risk burn, coordination, safety.

Introduction

Damage to the skin and subcutaneous tissue in case of a large-scale burn can be life-threatening and affects all other organ systems. Due to its complexity, an injury requires multidisciplinary cooperation of several medical specialties in connection with lay first aid, components of an integrated rescue system, transport, stabilization, treatment and rehabilitation of the patient in a medical and social context. As a rule, the highest workplace with the competence of caring for a burn patient is a burn center. Since the first hours already have a significant impact on the patient's perspective it is essential for the safety of the burned patient to follow the sequence of steps immediately connected to each other in the health care system. The current security situation in the area of Eastern Europe in connection with the war in Ukraine necessarily creates space for a revision of the set mechanisms for managing burn injuries not only individually, but also in the area of a mass disaster or a war conflict with the possible injury of a large number of civilians.

Results

First aid for burns

Whatever factor caused the burn, the first step is to shut down the patient's tissue and body from this source. Subsequently, the most important element is effective cooling, at least 10 minutes with running cold water, when it is necessary to eliminate all heat absorbed tissue. It is necessary to protect the whole organism from hypothermia and cool a maximum of 30% of the body surface while at the same time paying attention to the specifics of the etiology of the injury, when for example, a chemical burn with a powder agent is initially removed from the wound with a cloth and up to then cool and rinse with water. After it has cooled down enough, cover the surface with a sterile cloth or in pre-hospital care with sterile water-gels.

Contacting the rescue system

The basic idea of using the rescue system is to transport a burned patient for hospital treatment in cases where there is a risk of delay in transport the patient by his own. This is mainly a situation of the extent of burns and injuries of specific areas where delayed professional care may decrease healing of burns or decrease the compensation of the shock state and lead to permanent consequences or death. In general, it is recommended to contact the rescue system in case of burns, which can induce shock circulation (burnt area in an adult patient over 15-20% of the total body surface in grade IIa at least) or do not meet the criteria of depth and extent, but can be risky for the patient due to its location (burns of the face, respiratory tract and genitals) or other factors on the part of the patient are present, which even if the scope and depth criteria are not met and risk areas can cause an increased risk in the patient (young and senior age, severe comorbidities). By contacting the rescue system and providing comprehensive and sufficient information, it is possible to maximize the correctness of the rescue system operator's decision-making with the choice of the right crew, mode of transport and direction of the patient.

Possibilities of further management of the burned patient in the territory of the Slovak Republic

If the burn patient's condition after the initial assessment and administration of first aid requires further treatment and self-transportation is not possible or is risky, components of the integrated rescue system of the Slovak Republic allow ground or air transport. Although air transport is usually the fastest, the meteorological and geographical conditions are not always suitable for this type of transport. In addition, another determining element is always the current utilization of the air rescue system and, in the event of a mass disaster, the logistical possibilities of its use. the second option is ground transportation in the form of an ambulance crew with a qualified paramedic or an ambulance crew with a doctor. The element of time availability of the burn center and the availability of the nearest medical facility also enters into the transport management. In the period of the so-called of the initial transport window up to 6 hours after the injury) the patient is transported directly to the burn center, in case of unavailability the deshock stabilization of the patient is indicated in the nearest anesthesiology-resuscitation department or a department with an intensive care unit in the 9 surgical department and subsequent transport after 48 hours of stabilization of the patient's general condition. There are specific cases, such as the care of a severely burned pediatric patient who requires the provision of resuscitation care in the Department of Pediatric Anesthesiology and Intensive Care Medicine, where a team of burn surgeons with surgical burn treatment follows the patient in a reverse manner.

Access to an event with a mass disability of a large number of individuals due to thermal injury

In 2020, the author collective Smržová, Bakalář and Zajíček created a scheme of approach to an accident with a large number of burn patients entitled "Concept for solving an emergency with a large number of patients with thermal injury in the Czech Republic". Following the national and European burn plan, they prepared a document with localization for the Czech Republic and the current situation of burn centers in the Czech Republic and other components of the health system. For easier orientation in the event of a mass disaster, they adapted the perception of the extent of the burn injury and the conditions of health care provision to the specific conditions of the home environment. For this purpose, extensive thermal injury is assessed as damage to more than 50% of the body surface in an adult, and 20% of the total body surface in a child patient in the age range of 0-15 years regardless of the depth of the burn. Care capacity was divided into immediate, i.e. how many burn patients the burn centers are able to receive within 6 hours of the injury, and delayed, i.e. how many burn patients the burn centers are able to receive in the following window of 48-96 hours after the injury. The total capacity of burn centers was set at 50 patients. The concept classifies the provided care into 3 levels, primary triage by emergency medical services, secondary triage by the

nearest medical facility and tertiary triage by specialists in burn medicine. The individual floors are elaborated in the chapters classification, therapy, transport and communication. In primary triage, triage is recommended only on the basis of the rule of thumb or the 9% rule, while in medical facilities the use of Lund-Browder tables is recommended. The chapters gradually pass through the individual floors and follow up on the complex information in the chapters with schematic diagnostic and therapeutic procedures developed for the relevant floors and chapters with the possibility of identification and implementation for a specific individual.

Conclusions

Thermal injuries are by their nature life-threatening injuries, which, however, are rare in statistical evaluation, requiring a multidisciplinary complex specialized approach. Therefore, they are focused in highly specialized burn centers. With the increasing risk of the presence of a civilian or military mass casualty, the urgency of updating the national protocols for solving a mass casualty also increases. In the EU, however, we have the possibility of coordination between national protocols and the geographical distribution of burn centers in order to ensure the highest possible health care for patients, regardless of the nationality of the territory where the mass casualty occurred.

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