FACTORS FOR IMPROVING THE QUALITY OF CARE FOR PATIENTS WITH SEVERE BURN INJURIES REQUIRING MEDICAL AIR EVACUATION

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Relevance: The most severe period of burn disease is burn shock. The patient’s subsequent outcome largely depends on the timely initiation and adequacy of anti-shock therapy. Therefore, the key factors contributing to rapid recovery from a critical clinical condition are the timely transportation of the patient to the hospital, accurate assessment of the severity of the patient’s general condition, and the selection and implementation of appropriate, high-quality therapeutic measures.

Aim of the Study: To improve the quality of anti-shock treatment in patients with severe burn injuries and concomitant inhalation injury during the pre-hospital and early hospital stages of care.

Materials and Methods: Our study included 376 patients treated during the period from 2021 to 2026, aged from 4 months to 12 years. The total burn surface area ranged from 10% to 50% of the total body surface area (TBSA), with the extent of deep burns ranging from 5% to 50%.

As the initial stage of treatment, the thermal exposure was eliminated, and the burned skin areas were cooled. Pain was relieved using non-opioid analgesics, opioid analgesics, neuroleptics, and antihistamines. Whenever possible, wound treatment procedures were postponed, and the wounds were covered with a sterile sheet. Particular attention was paid to maintaining psycho-emotional calmness and initiating anti-shock therapy as early as possible. These measures were considered among the most important principles of initial treatment.

It should be emphasized that the initiation of infusion therapy for burn shock during patient transportation was an important initial step toward achieving a favorable outcome. Initial therapeutic measures included the administration of crystalloid and electrolyte solutions (0.9% sodium chloride solution, 25% magnesium sulfate, and 5% glucose), glucocorticoid preparations, warming of the patient, and administration of humidified oxygen.

Results: Emergency management of burn shock consists of several stages. Initially, the “three-catheter rule” should be followed:

1. Airway and respiratory support: insertion of a nasal catheter for oxygen therapy and removal of obstructing soot and debris from the airways.

2. Vascular access: catheterization of a major peripheral vein to ensure adequate fluid administration.

3. Urinary catheterization: catheterization of the urinary bladder to monitor urine output and renal function.

4. If nausea and vomiting are present, insertion of a nasogastric tube into the stomach is recommended.

Treatment of burn shock should begin with regular and adequate analgesia, which is an essential component of therapy. Intensive fluid resuscitation is then initiated under monitoring of central venous pressure (CVP) to correct the hypovolemic state as rapidly as possible. The volume of administered fluids should be determined with consideration of the patient’s age, body weight, concomitant diseases, and the time elapsed before initiation of anti-shock therapy.

If delayed initiation of infusion therapy is identified or inhalation injury is present, the volume of administered fluids may be increased by up to 40%. In cases of impaired cardiac or renal function, both the volume and rate of fluid administration should be reduced accordingly.

5. Hormonal therapy: dexamethasone at a dose of 4–8 mg, or prednisolone at a daily dose of 0.5–1 mg/kg in children and 1–2 mg/kg in adults.

6. Antibiotic therapy: antibiotics are generally not routinely administered during the initial anti-shock treatment period. However, if wound contamination is present, antibiotic therapy may be initiated on the second day of anti-shock treatment.

7. The use of isotonic sodium chloride solution in combination with magnesium sulfate is considered an important component of the treatment regimen.

8. Maintaining the temperature of the treatment room at +27 to +28°C is an important factor contributing to the patient’s earlier recovery from burn shock.

All injured patients were admitted to the “red zone” of the emergency department of the district medical association. Trauma surgeons and intensive care specialists were connected in real time via Telegram or WhatsApp, allowing them to remotely assess patients admitted with burn injuries and recommend immediate, life-saving interventions that could not be delayed until the arrival of a specialist in combustiology.

This protocol has been implemented in the emergency departments of all district medical associations in the Samarkand Region. Using this approach, intensive anti-shock therapy was continued for 48–72 hours and, in some patients with severe burn trauma, for 4–7 days, until their general condition stabilized. Treatment was provided either in the emergency department of the district medical association or in an interdistrict polytrauma department.

The treatment strategy described above demonstrated high effectiveness in emergency situations occurring in remote districts, particularly by enabling timely initiation of specialized anti-shock therapy and stabilization of patients before their transfer to specialized burn care facilities.

The analysis conducted during the study identified the following deficiencies:

1. Inadequate analgesia;
2. Insufficient volume of infusion therapy;
3. Failure to adhere to the three-catheter rule;
4. Early primary wound treatment during the shock stage, which may further aggravate the patient’s shock condition.

Conclusion.

Accurate assessment of the severity of patients’ condition at the pre-hospital stage, combined with timely communication with specialists from specialized centers and coordinated, adequate, and high-quality anti-shock therapy, is an important factor in achieving early hemodynamic stabilization, improving the survival prognosis, and promoting recovery in patients with severe burn injuries.

Prior to the implementation of this approach, the mortality rate among patients with extensive deep burns was 23.2%. Following the introduction of the intensified treatment principles, the mortality rate decreased to 5.5%, demonstrating the effectiveness of this treatment strategy.