Initial Assessment and Fluid Resuscitation of Burn Patients

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KEYWORDS

• Burns • Inhalation injury • Resuscitation

KEY POINTS

- The management priorities (ABCs) for burn patients are the same as for other types of patients, but their application reflects the unique features of thermal injury.
- The goal of fluid resuscitation is to maintain end-organ perfusion at the lowest possible physiologic cost, which requires meticulous attention to detail, frequent reassessment, and a strategy to manage both fluid resuscitation and the resultant edema.
- The initial assessment and resuscitation of a patient with burns of greater than 20% total body surface area is the first in a long series of steps, which includes critical care, wound healing, and rehabilitation.

INTRODUCTION

For the physician or surgeon practicing outside the confines of a burn center, initial assessment and fluid resuscitation will encompass most of his or her exposure to patients with severe burns. The importance of this phase of care should not be underestimated. Successful management during the first 24 hours post-burn sets the stage for successful wound closure and survival, whereas errors in initial management may be unsalvageable. The purpose of this article is to highlight what needs to be done for a patient with life-threatening thermal injuries on arrival in the Emergency Department or Trauma Center and during the first 24 hours after injury in the intensive care unit, while

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awaiting transfer to the regional Burn Center. Pearls, pitfalls, and recent evidence will be addressed.

INITIAL ASSESSMENT

Referral Criteria

This article focuses on life-threatening injuries. The first step in management of a burn patient is to determine whether the patient presents with a big problem or a small problem. To be sure, even small burns may be incapacitating, to include, for example, burns of the hand. However, indicators of major (potentially life-threatening) injuries include the following. These patients merit rapid referral to a burn center:

- Large burn: greater than 10% of the total body surface area (TBSA). Shock sets in at about 20% TBSA and can occur at 10% to 20% TBSA in medically fragile patients.
- Inhalation injury.
- Associated mechanical trauma: initial stabilization of such patients at the Trauma Center, followed by transfer to the Burn Center, may be appropriate if the mechanical injury is the more life-threatening problem.

Although patients with lesser degrees of injury may be candidates for outpatient management, the following categories of patients may have functionally or cosmetically complicated injuries and merit referral to a burn center:

- Burn on specific areas: face, hands, feet, perineum, genitalia, major joint
- Full-thickness (third-degree) burns of any size

Patients with special types of injuries who merit burn center referral include

- Electric
- Chemical
- Lightning

Finally, special types of patients who merit referral include

- Children (who should be transferred to a facility equipped and staffed appropriately)
- Preexisting medical problems
- Special social, emotional, or rehabilitative needs

The Burn Center Referral guidelines from the American Burn Association mentioned above are intended to encourage early, frequent, and detailed communication between referring hospitals and the regional burn center.[1] Regional trauma systems should establish a means to facilitate such communication.

History

An accurate history should be obtained from the patient, the next of kin, other witnesses, and/or Emergency Medical Services. A history of the injury and its aftermath will help identify factors that may influence care (and may play an important role in those cases that come to legal attention). The following questions should be addressed:

- Cause and mechanism of injury
- Date and time of injury
- For electric injury: voltage
- For chemical agents: identify; obtain Safety Data Sheet (formerly, Material Safety Data Sheet); prehospital decontamination

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