

BURNS

GENERAL

2 million people burned annually in the US

100,000 hospitalized

20,000 deaths annually

Second leading cause of death ages 0 to 12

PATHOPHYSIOLOGY

The skin is the largest organ and accounts for 15% of body weight

Functions:

Chief barrier to infection

Chief barrier to water loss

Regulates body temperature

CLASSIFICATION

First degree:

Involve only the epidermis and do not cause tissue death

Skin is red and painful, no blistering, sensation is intact

No *scarring*

Second degree:

Partial thickness, involves epidermis and deeper dermal structures

Tissue death and scarring can occur

Red painful with -blistering almost always present.

Third Degree:

Full thickness, death of all skin layers including sweat glands, hair follicles and nerve endings

Skin appears waxy, leathery and lifeless

Capillary refill is absent and thrombosed skin veins may be visible

Painless and insensitive to touch, charring may be present if there was exposure to flame

Fourth Degree:

Not only epidermis and dermis but also subcutaneous tissue muscle and sometimes bone

Charring is usually present

MANAGEMENT

AIRWAY

Inhalation injury likely if exposed to large amounts of smoke and heat especially if in enclosed

space

Early endotracheal intubation if. Facial burns, singed nasal hairs, wheezing, respiratory distress, hoarseness, stridor, pharyngeal edema, or cough with carbonaceous sputum.

BREATHING

100% humidified oxygen to all patients with significant burns or an inhalation injury

Frequent auscultation with inhalation injury

Escharotomy may be necessary for third degree burns around chest and trunk

CIRCULATION

Fluid requirements of burn victims often underestimated

Fluid loss is an early cause of death

Initial fluid requirements are based on body surface area burned

"Rule of Nines":

Head = 9 %

Arm = 9 %

Trunk = 36%

Leg=18%

(Children larger head surface area and smaller leg surface area)

Hand

The patient's hand (not yours) equals 1% of body surface area

Parkland formula:

4ml/kg of Lactated Ringer's Solution x percentage of body surface area burned =
fluid requirement for first 24 hours (half is given in the first 8 hrs, half over the next
16 hrs.

GENERAL MEASURES

Sterile technique

Remove clothing and jewelry

Apply cool sterile saline compresses to not more than 10% of BSA

Warmed IV fluids, cover with sterile sheets and blankets to maintain body heat.

IV sedatives and analgesics

Severe Burns:

Nasogastric tube to counteract ileus and gastric distention

Foley catheter to monitor output (50ml/hr adult 1ml/kg/hr child)

Pink or red urine = Hemolysis or myoglobinuria

Central venous pressure monitoring

Escharotomy

Circulatory or mechanical compromise from edema under the eschar

Extremity-bilateral, lengthwise incisions

Chest wall-2nd to 12th ribs along anterior axillary line, connect superior and inferiorly

Tetanus prophylaxis

Antacids and IV H2 blockers to prevent duodenal ulcers (Curling ulcers)

DIAGNOSTIC STUDIES

ABG's with carboxyhemoglobin levels, CBC, coagulation studies, electrolytes, BLJN, creatinine,
glucose. Blood transfusion unlikely.

Urine for free hemoglobin (hemolysis) or myoglobin.

CXR on all patients with severe burns to assess for infiltrates that are indicative of inhalation injury or acute respiratory distress syndrome, ET tube placement if indicated

TREATMENT

FIRST DEGREE

Cool compresses

Antiinflammatories, analgesics

Moisturizers

SECOND DEGREE.

Adaptic or other nonadherent dressing covered with sterile gauze to absorb exudate then wrapped with kling, change in 24 hrs then leave in place 2-4days.

or

Silvadene cream (silver sulfadiazine) every 12 hrs

After 5-7 days leave open to air

Epithelization usually takes 3 weeks, longer if deep 2nd degree burn (2-3 months)

CRITERIA FOR BURN CENTER ADMISSION

1. Second and third degree burns greater than 10% total body surface area (TBSA) in patients less than 10 or more than 50 years of age.
2. Second and third degree burns greater than 15% TBSA for other age groups.
3. Second and third degree burns of the face, hands, feet genitals, perineum, and major joints.
4. Third degree burns greater than 5% TBSA in any age group.
5. Electrical burns.
6. Chemical burns.
7. Burns with an associated inhalation injury.

8. Burns in patients with underlying medical disorders such as diabetes, peripheral vascular disease, immunosuppression, or cardiovascular disorders.

9. Burns in patients with sociologic problems that may prevent adequate outpatient burn care or predispose them to further injury (e.g., substance abuse, suspected child abuse, mental incompetence, elderly abuse).