Acute Burns in the Pediatric Emergency Department
EDAP Conference
9/27/3017
(MCI radio calls of burn patients)

1. Statistics / Mortality
2. Importance of Skin/ layers of skin
3. Types of Burns
   a. Thermal:
      i. Direct contact with heat
      ii. Frost bite
   b. Chemical
   c. Radiation
   d. Electrical
4. Classification of burns: Depth, type, and extent of injury
   a. Depth and type
      i. First degree
      ii. Second Degree
      iii. Third degree
      iv. Fourth degree
   b. Extent of Injury: Calculating BSA
      i. Rule of nines
      ii. Lund and Browder
      iii. Rule of palms
5. Pathophysiology
6. Initial Management in the Emergency Department (Will discuss using Algorithm below)
   a. Primary Survey:
      i. Airway; Indicators of airway compromise and management
      ii. Breathing
      iii. Circulation: Assess perfusion and fluid resuscitation
      iv. Disability: GCS
      v. Exposure: Burn care, remove clothing jewelry, cool burns, prevent hypothermia
   b. Secondary Survey:
      i. Burn assessment – type/depth/extent
      ii. Thorough examination to identify other injuries
      iii. Transfer (burn center criteria)
   c. Workup/Adjuncts: Labs/other studies/ lines/ chemoprophylaxis
7. Acute Complications
   a. Compartment syndrome
   b. Carbon Monoxide poisoning
   c. Cyanide toxicity
   d. RDS
8. Burn Center Criteria
9. Burns of Abuse
Algorithm for the Management of the Acutely Burned Patient

**Primary Survey**

1. **Airway**
   - Indicators of airway compromise
   - Cough, stridor, wheezing, hoarseness
   - Facial or circumferential neck burns
   - Singed nasal hair
   - Carbonaceous sputum
   - Inspiratory/additional or whistling
   - Hypercapnia, hypercapnea
   - Endotracheal intubation
   - Fiberoptic laryngoscopy
   - Surgical airway

2. **Breathing**
   - Mechanical restriction
   - Circumferential thoracic burns may warrant tracheostomy.
   - Smoke inhalation
   - Resultant bronchospasm may be treated with bronchodilators.
   - Carbon monoxide
   - ABG to evaluate for carbon monoxide/blood pH, treat with 100% O2.
   - Cyanide toxicity
   - Intravenous fluids, decreased ETCO2, treat with hydroxocobalamin.
   - Mechanical ventilation
   - Low Vt, FiO2 60% with positive end expiratory pressure maintain pH > 7.25.

3. **Circulation**
   - Access
   - Tet large bore IVs through unaffected skin.
   - Perfusion
   - Monitor extremity perfusion, mechanical injury may be indicated for circumferential burn.
   - Fluid resuscitation
   - Sustained fluid (warmed)
   - Maintain UOP 65cc/kg

4. **Disability**
   - GCS
   - Assess GCS for concurrent trauma, intoxication, ETCO2, hypoxemia/thoracostomy.

5. **Exposure**
   - Burn care
   - Remove clothing, jewelry, delta
   - Apply cido, sublimated iodine
   - Body temperature
   - Maintain core temperature > 36°C

**Workup/Adjuncts**

- Labs
  - CBC, BMP, ABG (CO2, CN), lactate
  - Citrate
  - CR, UA
- Other studies
  - CXR, ECG
  - ETCO2
- Lines
  - Urinary catheter (IV)
  - NNT (decompression, early enteral nutrition)
- Chemoprophylaxis
  - Tetracycline (CDS)
  - (I) (PII)

**Secondary Survey**

- Burn Assessment
  - Determine depth and extent of burn
- Through Examination
  - Identify and treat associated injuries
- Analgesia
  - Ensure adequate analgesia with opioids
- Transfer
  - Arrange expeditious and safe transfer to burn treatment center.

Tom Fadial editor of http://ddxof.com/