

BURNS

EPIDEMIOLOGY

description of burn wound and surrounding tissue

Classical description of burn wound and surrounding tissue

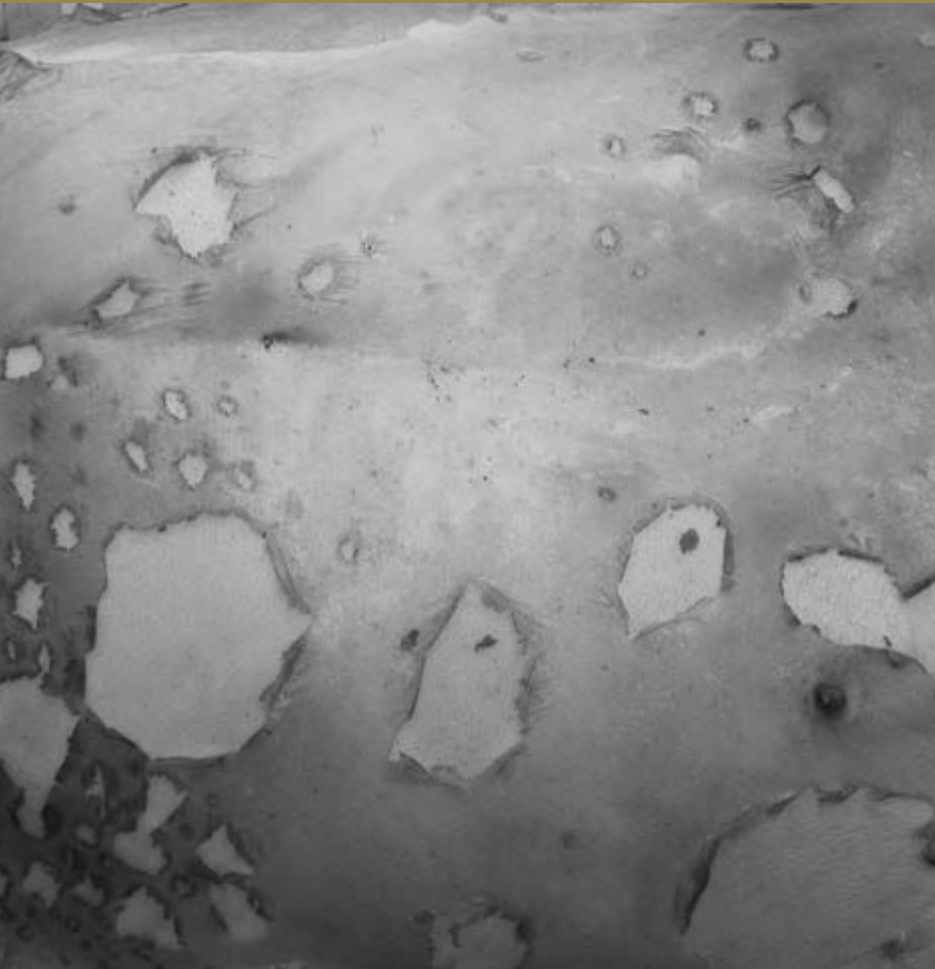
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1. Zone of coagulation (non viable tissue) 2. Zone of stasis . 3. Zone of hyperemia

Estimation of the size and extent of burn wound

- Rule of nine
- head and neck 9%
- Ant. trunk 18%
- post. Trunk 18%
- Each upper limb 9%
- Each lower limb 18%
- genitalia 1% —

Estimation of burn depth



management

systemic evaluation :1.maintenance of patent •
airway .2.effective ventilation
support of systemic circulation .4.diagnosis.3 •
and treatment of concomitant life threatening
injuries ,like pneumothorax ,thoracic and
abdominal injuries ,pelvic and long bones
fracture

Indications for admission to burn unit

• **Burn CENTER REFERRAL CRITERIA**

- The American Burn Association has identified the following injuries as those usually requiring a referral to a burn center. Patients with these burns should be treated in a specialized burn facility after initial assessment and treatment at an emergency department
- Questions about specific patients can be resolved by confirmation with the burn center
- Second and third degree burns *>10% body surface area* in patients *<10 or >50 years old (BSA)*
- Second and third degree burns *>20% BSA in other groups*
- Second and third degree burns with serious threat of functional or cosmetic impairment that involve face, hands, feet, genitalia, perineum, and major joints
- Third degree burns *>5% BSA in any age group*
- Electrical burns, including lightning injury
- Chemical burns with serious threat of functional or cosmetic impairment
- Inhalation injury with burn injury

Inhalational injury

- to 80% of burn mortality now result from 20%
: pulmonary pathology Treatment
- Early intubation 2-In co poisoning ...give 100%-1
. oxygen
- Clearing airway by treated bronchoscopy-3
. .4-Adequate ventilatory support
- Documented infection should be aggressively-5
treated with appropriate antibiotic (using
antistaph.and G negative organisms)

Escharotomy



Further management

: Further management •

After securing large bore intravenous line samples-1 •
taken for Hb ,urea ,electrolytes, blood cross matching
,blood gas and blood analysis for co and cyanide in
unconscious patient

Nasogastric tube for burn over 20-25% because of-2 •
. paralytic ilius

Intravenous analgesics and sedatives .4-Asses-3 •
tetanous immunization status

Antiacid to prevent curling ulcer (gastric and-4 •
.duodenal ulcer) may result in acute haematemesis

Fluid management and pathophysiology

Parkland formula

THE PARKLAND FORMULA FOR FLUID RESUSCITATION •

Formula: $4 \text{ cc/kg/\%TBSA} = \text{total fluid to be administered}$ •
in the first 24 hours •

of fluid should be given in the first 8 hours 50% •

of fluid should be given in the next 16 hours 50% •

Fluid should be lactated Ringer solution •

Sample calculation: 70-kg person with a 50% TBSA burn •

L of fluid $14 = 50 \times 70 \times 4$ •

L in the first 8 hours (875 cc/hr) 7 •

7L in the next 16 hours (437 cc/hr) •

The formula is only a guideline. Fluid administration •
should be titrated to urine output of 30 cc/hr for adults •
.and 1 cc/kg/hr for children •

Prophylactic antibiotics

Deep wounds become rapidly colonized in 24 • hr by G positive cocci and after 3-7 days by G negative aerobes(pseudomonas) .So so we use in the 1st 3 days anti-streptococcal (pencillin group) to prevent cellulitis and we give 3rd generation cephalosporine and aminoglycosides (gentamycin) to decrease the risk of septicemia caused by G negative after . 4th day

Local antibiotics

Silver sulfadiazine :broad spectrum antibiotic ,apply every 12-24hr used with or without dressing ,after its application (can form pseudoeschar lead to confusing of inexperienced examiner attempting to determine wound depth •
•.Leukopenia is not infrequently seen after 2-3 days of . without discontinue the drug treatment usually resolves •

Mafenide :broad spectrum applied every 12 hr, it has best eschar and cartilage penetration so it used in burn of ear and nose .Can lead to acid-base abnormalities causing hyperchromic metabolic acidosis when applied to more .than 20% of surface area ,so limited apply to small size area •

Recognition and management of infection

Because of immunocompromised state of these patients as well as to long lasting hyper-metabolism, they don't exhibit the usual clinical parameters of infection, the burn wound may change in appearance with development of sepsis, it may exhibit softening of the eschar, surrounding cellulitis, purulent material or once healthy granulation tissue begin to deteriorate. Careful serial clinical and laboratory monitoring is the most sensitive method of diagnosing sepsis before disastrous haemodynamic instability occur •

Clinically: unexplained hypotension, tachycardia, tachypnea, new onset ileus, spiking fever, altered mental status, hypothermia, decrease urine output •

Laboratory tests: hypoxia, thrombocytopenia, hypo. or hyperglycemia, twice weekly eschar biopsy, wound colonization more than 100000/gram. Swabs taking from endotracheal tube, bladder catheter chest tube. (urinary and respiratory tracts are the •

Management of clinically septic patient

Support of cardiopulmonary and.1 •

G.I. system. 2.adequete fluid must be given to maintain intravascular volume and urine output

.3.Antibiotics according to cultures (some combination to cover stoph.aureus and G negative rods

.4.Systemic amphotericin B in candida fungal infection .5.Consideration should be given to eschar debridement

physiotherapy

Respiratory exercises .Musculoskeletal care: •
and mobilization of joints in their full range
,usually during dressing .Splinting :neck and
elbow (extension) ,Hand and fingers in
functional position (extension of wrist ,flexion
of MPJ and extension of IPJ ,ankle joint ,hip
.and mouth

Nutrition in burned patient

Children+ ./ average diet comprised of 25% to 40% fat •
,essential free fatty acids must be supplied as well
.Vitamins and mineral requirement are probably
increased , vitamin C and A necessary co-factors for
wound healing ,copper zinc and iron requirement
,have not been defined Serum albumin has a long
half-life and therefore insensitive to acute changes in
nutritional status .The mainstay for our clinical
monitoring is a weekly nitrogen balance study ,which
is calculated in standard fashion from 24hr urine
. collection for urinary urea nitrogen

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Surgical treatment in burn



Surgical reconstruction of burn injury



Electrical burn



Management of electrical burn

- Hospital evaluation
- Adequate ventilation and maintenance of cardiac perfusion-1
- Estimation of the extent of associated surface burn-2
- The extremities are evaluated for neurovascular compromise (deep-3 tissue injury and the relative absence of surface wound)often cause compartment syndrome and frank deep tissue necrosis that may need
 - escharotomy or fasciotomy
 - ECG ,continuous monitoring if the current traversed the heart-4
 - X-ray :especially of the cervical and lumbo-sacral spine and long bone-5
 - Urine evaluation for the presence of hemochromogens ,in the presence-6 of myoglobinuria ,it become essential to maintain a high urine volume to prevent pigment precipitation in tubules and subsequent renal failure ,it is essential that a diuresis of 100 cc urine per hour in adult and 1.5-2 ml/kg/hr in the child is maintained ,using mannitol (osmotic diureses)if
 - necessary
 - Prophylactic antibiotic (high dose penicillin) in high voltage electrical-7

Cold and chemical injury

Cold injury :the injury cause acute cellular damage with possibility of either partial thickness or full thickness burn .Severe cooling cause cellular disruption .Freezing injury seem to be less damaging to the connective tissue matrix than heat injury .Frost bite is due to prolonged exposure to cold and there is an element of . ischaemic damage due to vasoconstriction •

Chemical injury :tissue damage depends on strength and quantity of the agent and the duration of the contact .Some agents penetrate deeply or may have specific toxic effect. Chemicals cause local coagulation of proteins and necrosis and some also have systemic effect (liver ,kidney).The harmful effect will continue until the chemical is diluted or neutralized .The most . important initial treatment is diluted with running water •

Thank you