ACUTE MANAGEMENT OF A BURN PATIENT.

Dr. Rose Alenyo

Senior Lecturer College of Health science Makerere University

Consultant Plastic Surgeon burns unit Kirrudu National Referral Hospital

Overview

- Introduction: Burns care in Uganda
- Assessment of Burns Patients
    - History taking
    - Examination
    - investigation
- Complications and management
- Experience with referral

Burn Care in Uganda

- Highest in children below 5 years -11% of injury overall 32% in the rural areas
- 85% occur at home so mostly children and women
- Occupational in men; fuel charcoal burning
- Arson on the rise : acid, house fire, petrol on people to sort out wrangles, domestic violence
- Crowded unplanned slums risk for children/women

- Burns Unit– only 1 at Kirrudu National referral hospital
- Bed capacity
- Sections – 2 operating rooms running Monday to Friday weekend is for emergency
- Burns Nurses, Anesthesia team, theater assistants, Fellows/Trainees Surgeons, physiotherapist, Nutritionist, occupational therapist.
- Partners support us; Interplast holland Resurge international etc
- Sometimes the general public donates to patients

HOW COMMON ARE BURNS

Acute care

- Starts from site/ pre-hospital;

Burn patients are trauma patients first.

The burn is addressed in the secondary survey!

- Primary Survey
  - ATLS(ABCDE)
- Secondary Survey
  - History (AMPLE)
  - Head to toe exam
  - Determination of the extent of burn
  - Radiology
  - Labs

Primary survey

- A – airway and C spine management assess for airway injury if cause is flames, i.e., soot swelling, hoarse voice etc
- B- is it effective- burns on chest or abdominal wall my restrict breathing and it becomes emergency
- C – check and monitor BP for fluid loss in the tissues.
- D – look for altered consciousness/ assess LOC – AVPU/GCS
- Alert, Verbal -response to verbal stimulus, Pain response to pain stimulus U is unresponsive,: asses for cause

- If patient of burns in a few hours presents with altered level of consciousness
- Assess also
- Alcohol
- Epilepsy
- Dm on insulin
- Trauma
- Infection, psychiatric illness, syncope

- E - expose in warm environment if reached in the 1sst one still do cooling, check for other injuries abdominal fractructures ie friction burn, escape from house on fire, mob justice or asault., any melted material or ring not removed.
- Assessment of the burn wound at this point
- H. SHORT HISTORY

History Taking

- What was the cause; electrical, flame, scald, frost bite, friction.
- Where it happened.
- Why it happened; arson, accident, epilepsy, assault, child abuse domestic violence, punishing a child etc
- What time.
- Who was around, who else is injured
- What treatment or 1st aid given
- Other health issues that could be the risk or will influence treatment.

Why Take Detailed History?

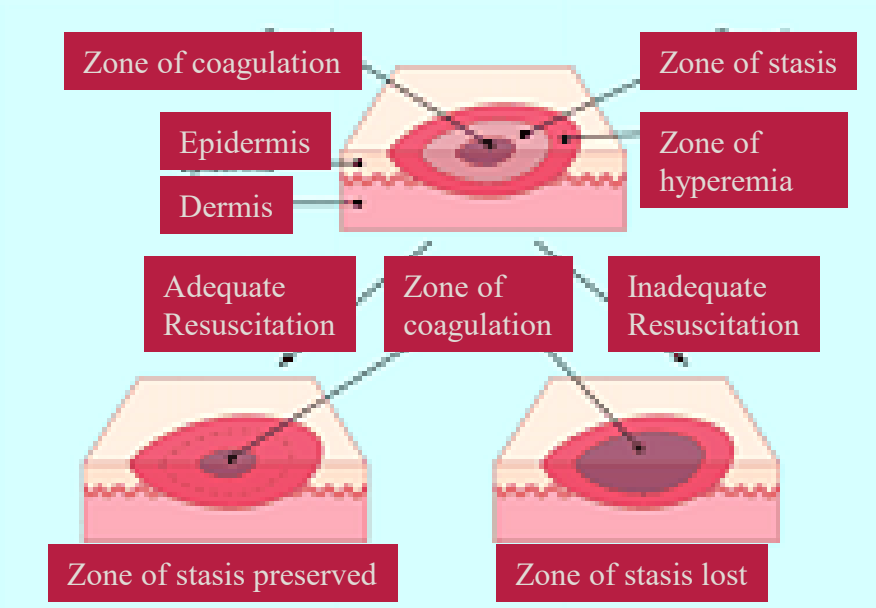
- Cause different burns have some risk of complication than others;
- Flame – inhalation injury and deep burns in a short time
- Electricity – arrythmias, entry and exit wound , small wound but extensive damage high risk to kidney damage.
- Lightening anxiety many people.
- Time is important for care and sometime to tell what happened.
- Onsite or pre-hospital care has effect on next plan and outcome of the burn

Effect of burn

- Local wound effect
- Systemic effect- when the burns is larger than 10/15 in children it's enough to trigger all organs in the body to respond. For adult 20/30 percent
- Skin; largest organ in the body with major functions that regulate other organs in the body.

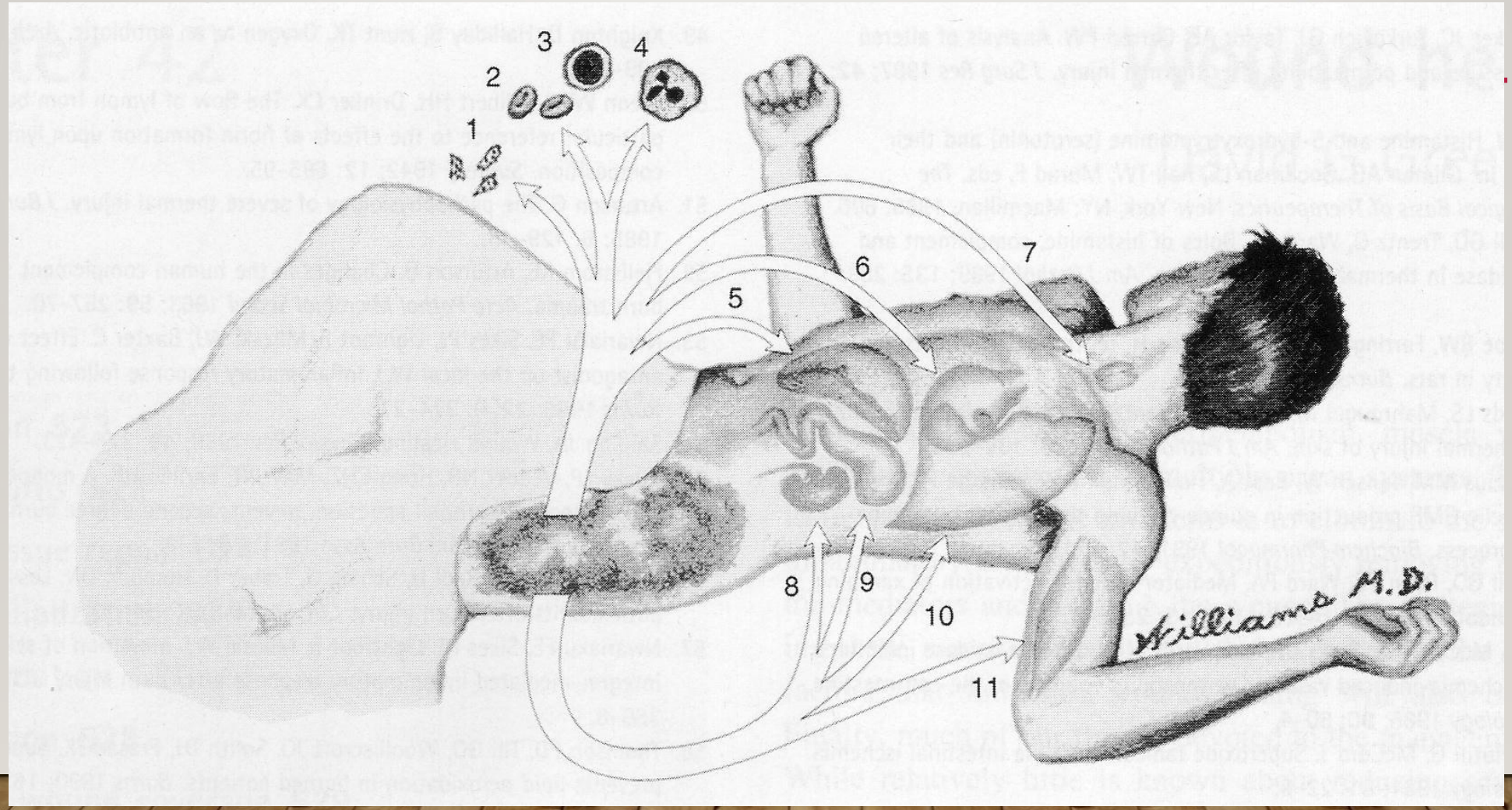
PATHOPHYSIOLOGY

- Coagulation necrosis occurs in the area of most immediate contact
- Denatures proteins and leads to a host inflammatory response
- Places tissues toward the periphery of the injury at risk for subsequent damage



- The three zones of a burn were described by Jackson in 1947:
  - ***Zone of Coagulation*** – occurs at the point of maximum damage. Irreversible tissue loss due to coagulation of the constituent proteins.
  - ***Zone of Stasis*** – decreased tissue perfusion. Potentially salvageable.
  - ***Zone of Hyperemia*** – increased perfusion. Will recover unless infection or hypovolemia.

SYSTEMIC EFFECTS OF A BURN WOUND



Examination

- Wound assessment; Size, site and location.

- Review all system to have baseline to follow up on

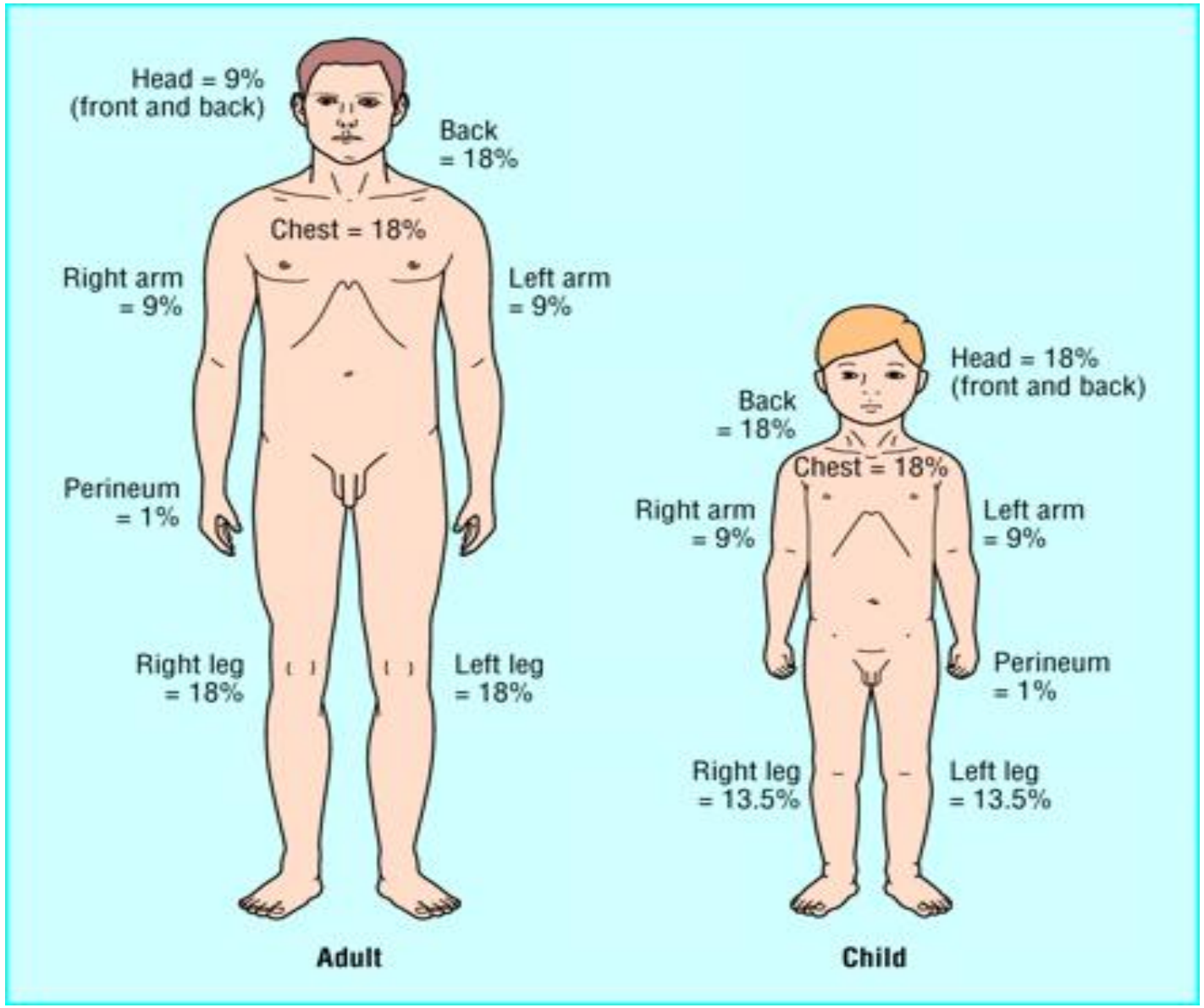
Assessment of Burn Area

- Only include areas that are 2nd and 3rd degree.
- Three commonly used methods:

  - **Palmar Surface**
    - SA of patient's palm (including fingers) is 1% TBSA

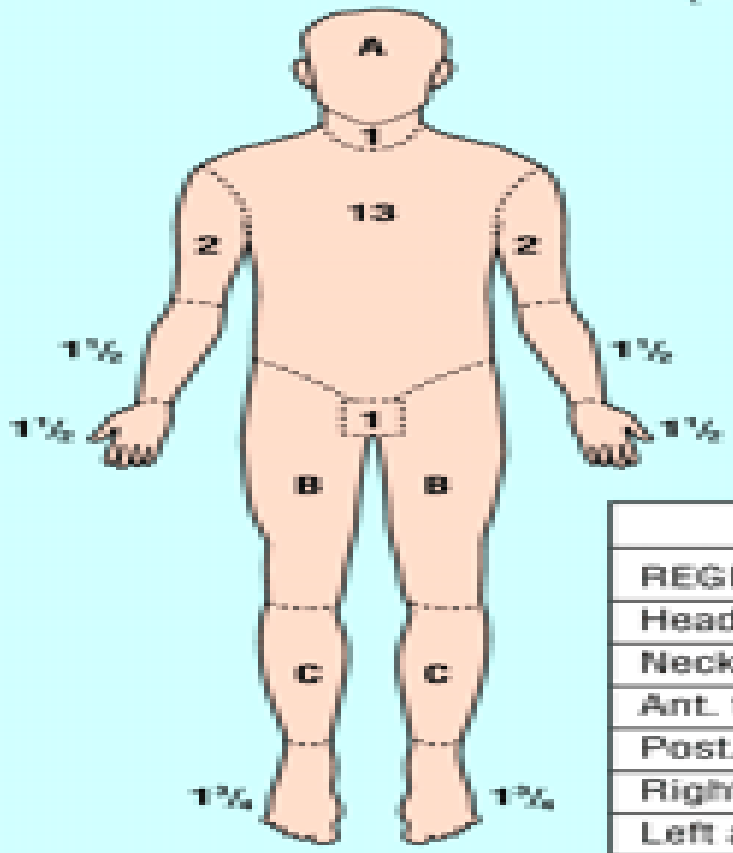
  - **Wallace Rule of Nines**
    - The body is divided into areas of 9%
    - Not accurate in children

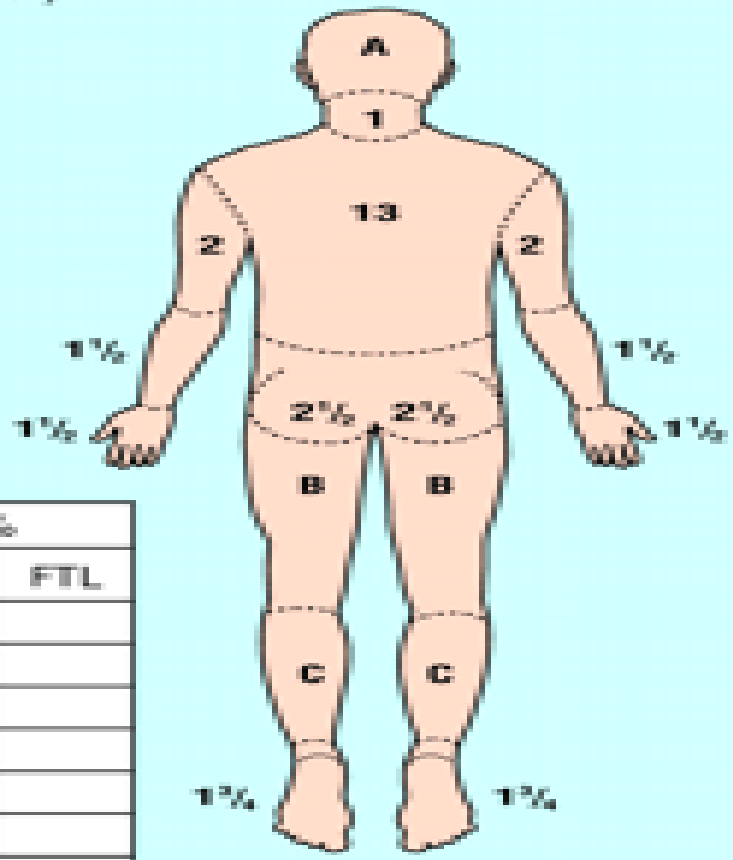
  - **Lund and Browder Chart**
    - Most accurate
    - Compensates for the variation in body shape with age


Head = 9%
(front and back)
Back
= 18%
Chest = 18%
Right arm
= 9%
Left arm
= 9%
Perineum
= 1%
Right leg
= 18%
Left leg
= 18%
Adult
Head = 18%
(front and back)
Back
= 18%
Chest = 18%
Right arm
= 9%
Left arm
= 9%
Perineum
= 1%
Right leg
= 13.5%
Left leg
= 13.5%
Child

% Total Body Surface Area Burn

Be clear and accurate, and do not include erythema
(Lund and Browder)

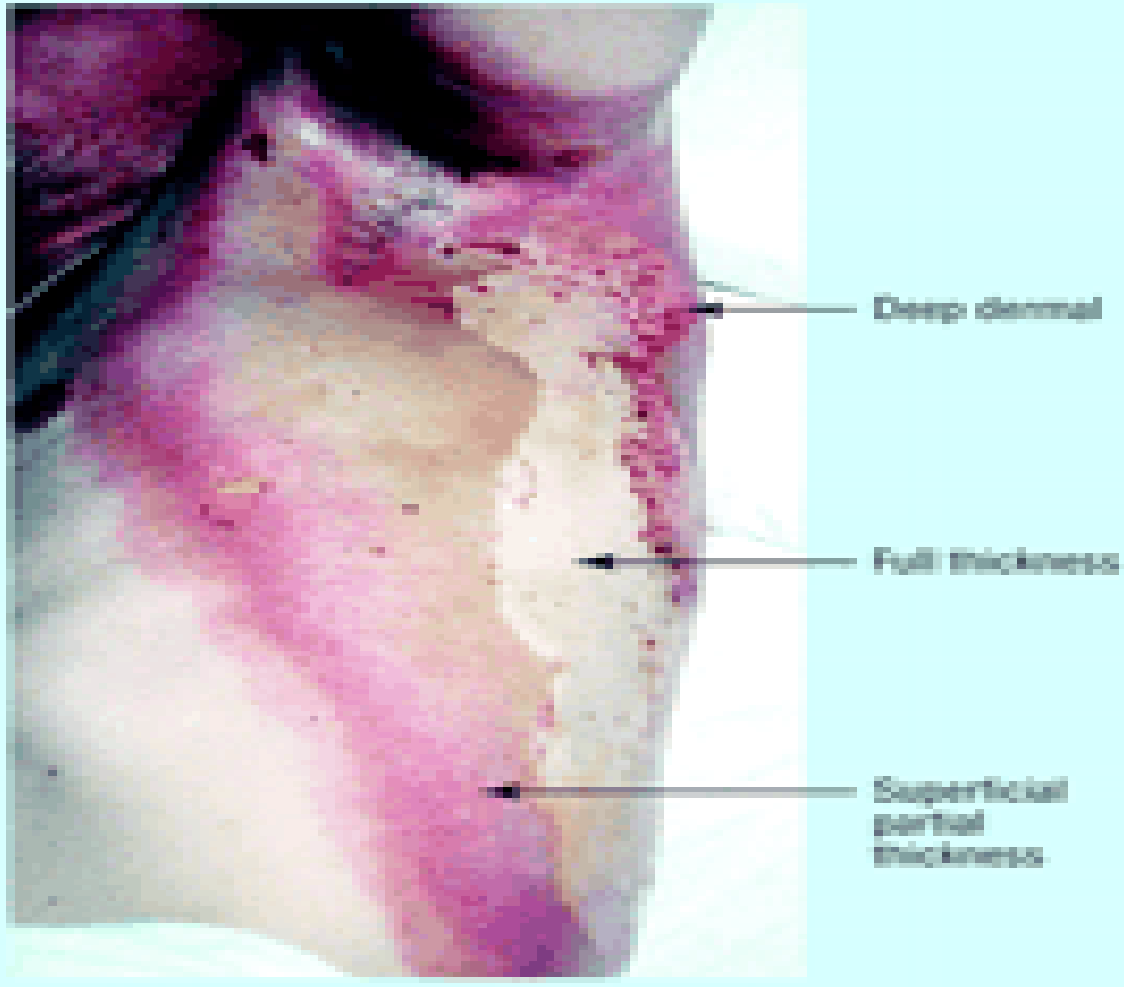




	%	
REGION	PTL	FTL
Head		
Neck		
Ant. trunk		
Post. trunk		
Right arm		
Left arm		
Buttocks		
Genitalia		
Right leg		
Left leg		
Total burn		

AREA	Age 0	1	5	10	15	Adult
A = ½ OF HEAD	9½	8½	6½	5½	4½	3½
B = ½ OF ONE THIGH	2¾	3¼	4	4½	4½	4¾
C = ½ OF ONE LOWER LEG	2½	2½	2¾	3	3½	3½

Wound assessment



PICTURES

SUPERFICIAL BURNS

PARTIAL THICKNESS BURNS

DEEP BURNS

Investigations

•

Full blood count, urea and electrolyte concentration, clotting screen, CO level

• Blood group, and save or crossmatch serum

Electrical injuries

• 12-lead electrocardiography

• Cardiac enzymes (for high tension injuries)

Inhalational injuries

• Chest x-ray

• Arterial blood gas analysis

Complication and management

- Pain – analgesia
- Wound; care and dressing topic * superficial will heal by 3 weeks.
- Hypothermia - warmer
- Hypovolemia –fluid resuscitation /and monitoring
- Tissue death excision of dead tissue and getting tissue cover
- High metabolic rate – increase protein intake less carbohydrate
- Sepsis/septicemia – proper wound care early excision and covering wound, controlled air in ideal setting
- Anemia – monitor transfusion

- Inhalation injury. – bronchoscopy oxygen therapy ICU
- Organ failure – ICU
- Anemia – monitor transfusion
- Contracture- Physiotherapy, early wound management
  - DVT prevention
  - GIT prophylaxis

Indications for Referral to A Burn Unit

- Extremes of age – under 10 or over 50 years with > 10% TBSA
- Site of injury
  - Face, hands or perineum
  - Feet
  - Any flexure, particularly neck or axilla
  - Circumferential or full thickness burn of limb, torso or neck
- Inhalational injury
- Mechanism
  - Chemical > 5% of TBSA
  - High tension electrical injury
  - Non accidental mostly in children
- Size
  - > 20% TBSA any age group
  - 3rd degree > 5% TBSA
- Coexisting conditions (premorbid or concomitant)

Common Pitfalls

- Inaccurate calculation of extent of burn
  - Only 2nd and 3rd degree burns
- Under-resuscitation
  - Renal failure
  - Shock
- Over-resuscitation
  - Pulmonary edema
  - Compartment syndrome
  - Conversion at zone of stasis
  - Increased mortality

Leaking pipes

Challenges

- We need to establish regional centers for burn with dedicated team
- We need to get the skin bank working
- Better referral and referral system
- Train and absorb the trained into the system to improve care
- More referrals are now coming
- Referral is still delayed, no referral system so most arrive unplanned, documentation of what was done very sketchy, very little is being done in many centers before referral.

- Some time 100 percent is rushed, and 40 percent is left behind.

Summary

1. Burn Patients are trauma patients, and ATLS priorities apply
2. The most immediate threat to mortality is inhalation injury to the upper airway and early intubation is often indicated
3. Resuscitation must be balanced to maintain tissue perfusion but not produce tissue edema
4. A systematic approach should be applied to the burn patient
5. Circumferential burns to an extremity can result in significant functional impairment, and escharotomy may be indicated

Acknowledgement

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