

Physical Injuries

Presented

By

Dr/Said Said Elshama

Professor of Forensic Medicine and Clinical Toxicology

Medical Education (DHPE)

College of Medicine - Taif & Suez Canal University

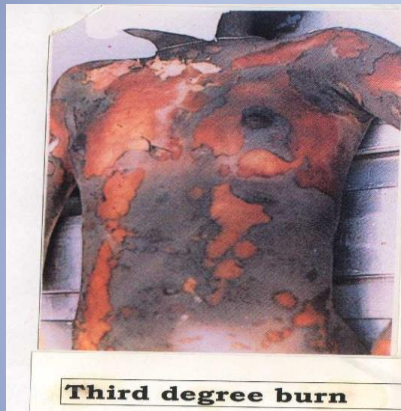
Learning Objectives

- 1- Types of physical injuries
- 2- Dry burn
- 3- Moist burn
- 4- Electrocution
- 5- Corrosive burn

Dry Burn

Definition

Tissues destruction produced by flame (open fire) application or hot solid



Degrees

1- Redness

2- Vesicles

3- Destruction of superficial skin (painful degree)

4- Destruction of whole skin

5- Destruction of subcutaneous tissues

6- Complete charring of tissues

Another Burn Classification

According to the depth , burn is classified into :-

1- First degree (superficial)

Redness- pain- no vesicles – no scar (sunburn)

2- Second degree (partial thickness)

A- Superficial (superficial dermis- red -pain)

B- Deep (deep dermis- red→ white -pain)

3- Third degree (full thickness)

All layers of skin- charred

Characters of Dry Burn

- 1- Spread from below upward
- 2- Vesicles at edges of burnt area
- 3- Singeing and clubbing of hair (coma shaped)
- 4- Soot in air passages
- 5- CoHb in the blood
- 6- Charred scalp and skull rupture (thermal fracture)
- 7- Shrinkage of brain
- 8- Extra-dural hematoma

Factors Affecting Gravity of Burn

1- Extent

Rule of nine (superficial + more $\frac{1}{3}$ of body surface = fatal)

2- Degree

Third degree is shocky because of sensory nerve endings exposing

3- Site

Face, neck, abdomen are than dangerous than limbs

4- Age and General health

Age Extremes tolerate burns more bad

Extent of Burn

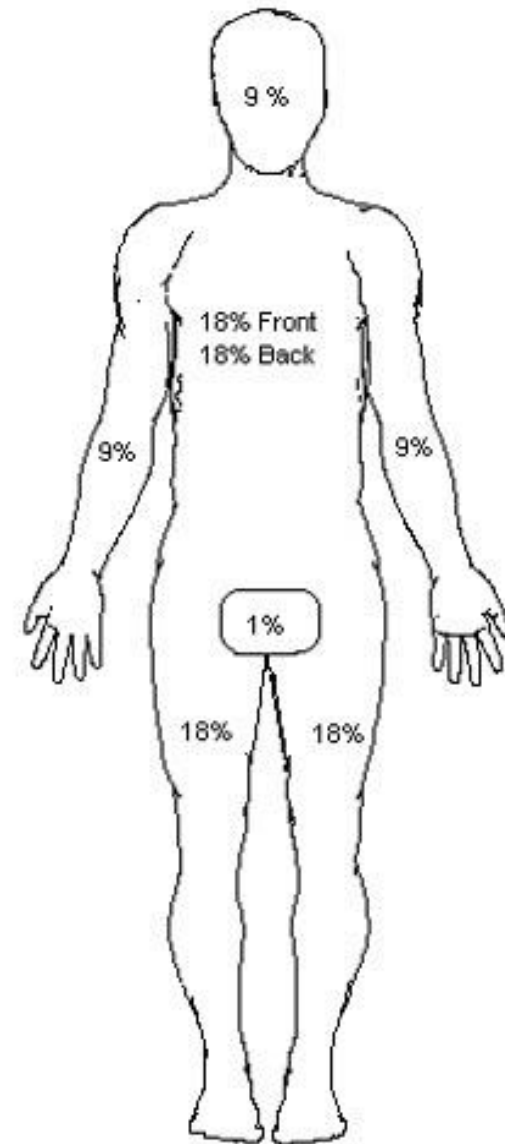
Rule of nine :-

- Head = 9%
- Two upper limbs = $2 * 9 = 18\%$
- Two lower limbs = $2 * 9 * 2 = 36\%$
- Trunk

Front $2 * 9 +$ Back $2 * 9 = 18 * 2 = 36\%$

- Genitalia = 1%

Total of all body = 100%



Cause of the death

1- Within 6 hours

- A. Primary neurogenic shock
- B. Vital organ injury
- C. Inhalation of Co, Co₂ and smoke
- D. Traumatic asphyxia

2- From 6 hr to 48 hrs

- A. Hypovolaemic shock
- B. Toxic shock
- C. Acute odema of glottis
- D. Pulmonary fat embolism

3- More than two days

Kidney, liver, heart damage- suprarenal he, bronchopneumonia, septicemia and acute duodenal ulcer rupture

Ante-Mortem Burn

1. Hyperemia
2. Vesicles
3. Soot (carbon)
4. Co in the blood
5. Hemoconcentration
6. Sepsis or healing signs
7. Absence of any other cause of death

Postmortem burn

Characters of ante mortem burn are absent

Age of Burn

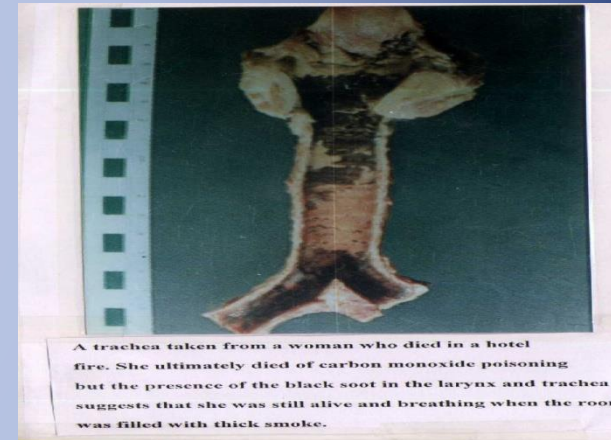
A. Erythema- 2 days

B. Vesicles one week to heal without scar

C. Sepsis – after 36 hours

Postmortem picture of death in Burn Cases

1. Pugilistic attitude (boxer)
2. Different degrees of ante mortem burn
3. Generalized redness (CoHb)
4. Soot in air passages (carbon)
5. Haemoconcentration
6. Generalized visceral congestion and hge
7. Thermal fissure in the skull



Moist Burn (scalds)

injury by hot liquids or steam

How to differentiate wet burn from dry burn?

Wet burn	Dry burn
Moist heat	Dry heat
Above downwards spread in lines of vesicles	Below upwards spread
First and second degree only, vesicles in all affected area	Any degree , vesicles at the edges of affected area
Wet clothes hair is not singed	Dry clothes hair is singed
No soot in air passages No Co in blood	Soot in air passages Co in blood
Healing with thin scar and less disfigurement	

Scalds



© Calcasieu Parish Sheriff's Office



Corrosives Burn

Acid Burn



Electrocution

Exposure to electrical energy may result in:-

1- No injury at all

2- Devastating damage

3- Death. Why ?

- 1. Type of current** (direct, alternating)
- 2. Amount of current** (voltage & resistance),
Less than 500 volt = No damage
More than 500 volt = Serious damage
- 3. Path of current** (vital organs “heart”)
- 4. Duration of current flow**
- 5. Wet surface** (dry skin has high resistance)

Electrocution

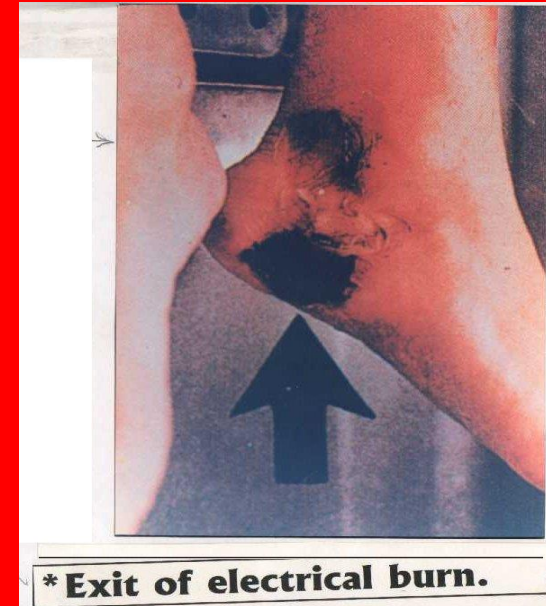
Symptoms

- 1- **little** external evidence of **injury**
- 2- **Burns** are usually most severe at the points of contact with the electrical source and the ground. The hands, heels, and head are common points of contact.
- 3- **Muscular contraction.** Muscle spasm
- 4- **Pain** in a hand or foot may indicate a possible **broken bone** resulting from the electric shock.
- 5- **Numbness and tingling**
- 6- **Seizures**
- 7- **Unconsciousness**
- 8- **Cardiac arrest**

Cause of death due to electrocution

1. Ventricular fibrillation
2. Central asphyxia
 - Central (higher centers) brain
 - Peripheral (chest) muscles

1. Electric burn



*** Exit of electrical burn.**

Postmortem picture

Entry and exit points of current

Electric Burn



Thank you