DEFINITION
Damage to tissues due to the passage of electrical current is called electrical injury’. The injury is also commonly called as ‘ELECTROCUTION’
The current **enters** at one point and then **leaves** the body at an exit point.

Most dangerous pathway is with entry through right hand, exit through the feet.
FACTORS AFFECTING ELECTRIC INJURY

VOLTAGE

DEATH IS UNCOMMON BELOW 100 V

AMPERAGE:

50-80 mA ACROSS HEART IS FATAL IN FEW SECONDS.

RESISTANCE:

THE MAJOR BARRIER TO ELECTRIC CURRENT IS SKIN
• DURATION OF CONTACT

• DIRECTION OF PATHWAY OF CURRENT

• ANTICIPATION OF SHOCK
VENTRICULAR FIBRILLATION is the most common mode of death in electric injury.

RESPIRATORY ARREST due to spasm of muscles of respiration.

Rarely BRAIN-STEM ARREST also occurs.
• **INJURIES**
  
  • Due to falls from height
  • Extensive burns
  • Fractures due to muscle spasm

• ‘**HOLD ON’ EFFECT**
TYPES OF ELECTRICAL INJURIES

• CONTACT BURNS OR JOULE BURNS
• SPARK BURNS
• FLASH BURNS
• ‘GROUNDING’ OR ‘EXIT’ INJURIES
• VASOSPASM
• CONVULSIONS: (MUSCLE SPASM)
CONTACT BURNS OR JOULE BURN S

The mark of blister will be with raised grey or white edges, an area of blanching around it which is pathognomonic of electric injury, and an outer hyperemic border.

Fatal electrocution may occur without any skin mark.
SPARK BURNS

There is no actual contact
Temperature is very high which causes the keratin to melt lesion’.
Over a small area which gets the shape of a hard brownish nodule usually raised above the surrounding skin surface.
The surrounding area is blanched or pale.
FLASH BURNS

These occur due to arcing (jumping) of current from high tension wires. All types of burn may occur.

Typical lesion is “Crocodile skin” lesion
GROUNDING’ OR ‘EXIT’ INJURIES

• Not seen commonly

• Exit injury may have a split or lacerated appearance
VASOSPASM

GANGRENE OF THE AFFECTED LIMB
POSTMORTEM APPEARANCES

EXTERNAL CONTACT MARKS/BURNS
INTERNAL APPEARANCES;

• Brain
  – Focal petechial hemorrhage around small blood vessels
    • Tear in white matter

• Heart
  – Wavy appearance of myocardial fibers and fragmentation
  – Contraction bands within fibers

• Muscle
  – Zenker’s degeneration
  – Heat coagulation of muscles
  – Spiralling and fragmentation of muscle
MEDICOLEGAL SIGNIFICANCE

• GENERALLY ACCIDENTAL
• OCCASIONALLY SUICIDAL
• RARELY HOMICIDAL OR AS TORTURE
LIGHTNING IS ELECTRICAL DISCHARGE OF A HIGHLY CHARGED THUNDER CLOUD TO THE GROUND. IF ANYTHING COMES IN THE PATH WILL BE DAMAGED.

ELECTRIC CURRENT IS DIRECT WITH MILLIONS OF VOLTS.
INJURIES/EFFECTS OF LIGHTNING

PHYSICAL DAMAGE IN FATAL CASES MAY VARY FROM VIRTUALLY NILL TO GROSS BURNING, FRACTURES, AND TISSUE DESTRUCTION.
BURNS:

First degree burns (i.e. Redness) may follow skin ceases along the path.
FERN LIKE OR ARBORESCENT MARKS

Also called as Lichtenberg Figures Keraunographic markings
HEAD INJURY

Due to Lightning Strike or Due to Fall on Ground.
DAMAGE TO CLOTHING AND SHOES

(FROM INSIDE TO OUTSIDE)
FUSION AND MEGNATIZATION

Of metals of wrist watch, spectacles etc.
MOLTEN NYLON ARTICLES

BUTTONS ETC
FORENSIC SIGNIFICANCE

• VIRTUALLY A NATURAL DISASTER

• cases may be confused with homicide
  Evidence of thunderstorm
  Death of some other animal in vicinity
  Characteristic features.