

SPECIAL TYPES OF BURN:-

Circumferential burns.

These cause such shrinkage of the skin as to create severe problems of general and local anoxia. If involving the neck or throat there is serious embarrassment to respiration and if the arms or legs be affected, venous congestion or ischaemia and even gangrene can occur. Immediate release is necessary by making longitudinal incisions down to healthy and yielding sub-cutaneous and sub-facial layers.

Pulmonary burns.

Burns around the nostrils and lips do not necessarily presage burns of the trachea and bronche, neither does an X-ray of chest help in diagnosis. Degrees of severity encountered include oedema of the glottis, bronchial spasm becoming so intense in some cases to be tantamount to status asthmaticus and pulmonary odema. A definitive diagnosis is by fibre optic bronchoscopy and xenon lung scan if available. Management depends upon good physiotherapy breathing humidified air and oxygen, bronchodilator drugs and the culture of the sputum so that the appropriate antibiotics can be used as required. When necessary nasotracheal intubation is preferred to tracheotomy, steroids, are contra-indicated unless used as a single bolus in a status asthmaticus situation.

Electrical burns:-

They are localized and often very deep, and if the patient survives the electric shock, it may need a complicated repair.

Eye burns

a. Radiational:

The commonest ocular burn is radiational, after an arc-welding flash; symptoms of intense pain and photophobia develop in both eyes some hours after exposure to the ultra violet radiation, but healing rapidly occurs.

b. Thermal:

In thermal burns, rapid lid closure usually protects the eye itself, but full thickness burns involving the eyelids will lead to scarring and deformity, resulting in corneal exposure, and early reconstructive surgery is indicated. A direct thermal burn of the eye follows a splash of molten metal, causing, intense localised necrosis. Treatment consists of prevention of infection with antibiotic ointment, combined with atrophine deeps, and prevention of adhesions developing between the burnt eye and conjunctiva by daily separation with a glass rod. Scarring of cornea may permanently impair vision.

c. Chemical:- These burns are associated with considerable pain and shock.

They are the most serious, particularly alkali burns, which can penetrate deeply into the eye and cause ischaemic necrosis. The most important treatment is immediate irrigation, which should be continued for 30 minutes before seeking expert advice. In lime burns particulate matter may be trapped up under the lids, requiring manual removal, followed by irrigation with a chelating solution. Subsequent treatment of chemical burns is along the lines indicated for molten metal burns but the prognosis is worse.

Classification:-

It may be classified into 3 degrees.

1. Epidermal
2. Dermo-epidermal
3. Deep.

Epidermal burns:-

The affected part is red (erythema) usually, there is a blister covered by pale avascular epidermis and surrounded by a thin bright red area of inflammation. Singering of hair is present. These burns are very painful but repair is complete without scar formation.

Dermo-epidermal burns:-

The whole thickness of skin is destroyed. There is coagulation necrosis of epidermis and dermis. The lesions have a dry white leathery appearance. The necrosed tissue separates within about a week leaving an ulcer with scar formation. These burns are associated with considerable pain and shock.

Deep burns:-

The affected area is completely changed, there being gross destruction of skin, subcutaneous tissue, muscles and bones. Nerve endings are also destroyed. So they are relatively painless.

Prognosis:-

second or less for a full thickness burn at 71°C. The relationship between temperature and time is non-linear and as temperature rises severe burning can occur. If there is partial loss of skin thickness (first degree burns) it is self-healing. If full thickness of skin is lost (second degree burns) it will require skin grafting. If there is deep burning (third degree burns), it will cause loss of function. Long term results of revival from severe burning may cause considerable disfigurement and disablement which must be considered in assessing damages.

Estimation of burnt surface:-

It is usually worked out by the rule of nines; nine percent for head and each arm, eighteen percent for front or back of trunk, nine percent for front or back of each leg, and one percent for perineum, thus making a total of one hundred percent for the body. Roughly, one percent of surface burn is equivalent to the area covered by the palms of the individual. In children, the estimation is done by the use of Land and Browder chart. If the burnt area is more than 15 percent in an adult and 10 percent in a child, the loss of circulating blood volume must be replaced or irreversible shock is likely to set in.

Effects of burns:-

The effects of burning mainly depend upon,

1. Temperature and duration of exposure.
2. Extent and position of burns.
3. Age of victim.

Within 30 to 72 hrs. Superficial sloughs fall in about a week and deeper sloughs in about this period, granulation tissue begins to cover the burnt surface, and the final result is formation of a scar.

Temperature and duration of exposure:

Cause of death:

The severity of burns, whether of first degree, second degree or third degree depends on the degree of heat and the duration of exposure. The higher the temperature the more severe are the burns. The lowest temperature that would cause burns is 44°C if sustained long enough. Only three seconds are needed if the object is at 60°C. It takes only about a second or less for a partial thickness burn at 63°C

and about a second or less for a full thickness burn at 71°C. The relationship between temperature and time is non-linear and as temperature rises severe burning can occur in fraction of a second.

Extend and position:

The surface area burnt is more important than the degree of burn in assessing prognosis. As for example a first degree burn over a wide area is more dangerous than a third degree burn over a limited area. Destruction of one third of skin area is usually fatal though instances are known when victims with 80% burns have survived with skilled treatment and appropriate facilities. Burn on the head, neck, trunk and genitals are said to be more dangerous than on other parts of the body, on account of possible involvement of vital structures.

Age:

Infants, young children, and the elderly are particularly vulnerable to initial shock and subsequent complications.

Age of a burn:-

Redness occurs immediately after a burn, vesication within two or three hours, and purulent inflammation may be found within 36 to 72 hrs. Superficial sloughs of third degree burns are thrown off in about a week and deeper sloughs in about a fortnight. After this period, granulation tissue begins to cover the burnt surface, and the final result is formation of a scar.

Cause of death:

Death may occur from primary neurogenic shock instantaneously from fear or pain, or within 24 to 48 hrs from severe pain caused by extensive burns, or from injury to a vital organ from burning, or from oligoemic shock. If victim survives, this stage merges rapidly into stage of secondary shock due to exudation of serum

from burnt area and consequent depletion of blood volume. Death may occur from asphyxia due to inhalation of smoke, or from fat embolism.

Death may be delayed due to acute tubular necrosis owing to general toxæmia arising from destruction of tissue by burning, or due to inflammation, such as meningitis or peritonitis. The chief danger to life is the occurrence of sepsis in burned areas, or intercurrent disease especially of the respiratory system. Curling's ulcer may develop in one or two weeks after severe burning. Tetanus, gangrene, and erysipelas or other complications. Gross hypoproteinaemia producing oedema, ascites, pleural and pericardial effusions is seen in some cases. After recovery fibrosis and contraction of scar in burnt area usually lead to pronounced disability and disfigurement.