MANAGEMENT

The management of a patient with a heat burn depends upon the consideration of:

1. Shock
2. Healing
3. Scarring

Shock:-

The area of the body involved is important in relation to the development of shock. Children, compared to adults, incur greater fluid losses as they have a higher ratio of surface to body area. Shock is a combination of a threat to existence and the response of the body to the threat. The main factors are,

1. A loss or withdrawal of blood volume from the main vascular channels of the body, affecting cardiac output, central blood pressure and the perfusion pressure of oxygen into the tissues, particularly the heart and brain.

2. Vasoconstriction, which serves to maintain the peripheral vascular resistance, the arterial pressure, and therefore the oxygen perfusion of the vital structures. This is a protective mechanism which plays for time-time for the threat to cease e.g arrest of haemorrhage and blood transfusion, so that full recovery is possible (reversible shock). If the threat persists, is repeated, or replacement of blood volume is not carried out, the anoxia to heart muscle and brain stem causes failure of there organs, thus impairing oxygen perfusion of tissues still furthur and causing a vicious circle (irreversible shock) ending in death (clinically the condition of loss of blood volume and vasoconstriction is manifest as pallor, empty veins, cold skin, sweating and increased pulse

Types of shock:-

1. Psychogenic shock
2. Haemorrhagic shock
3. Burns shock
4. Retroperitonial shock
5. Endotoxin shock
6. Bacteraemic shock
7. Dehydration, Diarrhoea, vomiting

Burns Shock:-

The loss of blood volume is due to rapid plasma loss from the damaged tissues and whole blood constriction. A delayed form of burns shock may be caused by a breakdown product of cell membranes as well as from infection. This is due to vasodilatation and increased capillary permeability of the wound, probably mediated by the liberation of histanine, kinins, prostaglan dins and fibrin degradation products Also it is precipitated by the overwhelming sudden intensity of pain.

Treatment:-

In principle, it is the removal of the causes and the replacement of lost blood-volume. In burns the loss of plasma is replaced by plasma, plasma protein traction, dextran and blood.

Posistion and limb compression:-

Venous return is improved, and pooling of blood in the large muscles of the legs is reduced by raising the foot of the bed and bandaging the limb so as to compress the peripheral blood vessels.

Oxygen therapy:-

In shock its value has been disputed. The usual method employs a disposable polythene mark, delivering 4-6 lts per minute. The safe concentration is about 27% oxygen delivered by a venturie or disposable ventismask in which a jet of oxygen at

4 lts per minute strikes the side walls of the air intake aperture and sucks in about 50 lts of air per minute thus giving the necessary mixture.

Crush syndrome:-

This syndrome is commonly associated with earthquakes, all-raids and with mining and other accidents. As a result of massive crushing of muscles, oligaemic shock occurs, mainly due to extravasation of blood in to adjacent muscles. Myohaemoglobin enters the circulation and acute renal tubular necrosis is likely to result. The degree of shock has no relation to the development of the syndrome.

First aid treatment:-

It may necessitate the application of a tourniquet to the affected limb, which is generally released so that deleterious substances are admitted to the circulation in small quantities.

Healing:-

The depth of a burn determines the manner of healing. Two main grades are considered.

a. Partial skin thickness burns
b. Full thickness burns

Partial thickness burns:-

It will heal form the epithelial elements the deeper part of the skin (hair follicles, sebaceous and sweat glands)

Full thickness burns:-

In this all the epithelial elements have been destroyed and the dead skin (slough) will seperate in two or three weeks revealing a red granulating surface.

This can only heal from theedge very slowly and with the risk of contracture. This type of burn requires skin grafting either after the slough has separated or better still, by excision and skin grafting 4-6 days post-burn.

Assessing the depth of burn:-

In a partial thickness burn the nerve endings are still viable, so the burn wound is senititive. A deep burn is insensitive. The simplest method of assessment is the use of a sterile needle with which the clinician can distinguish between the sensitive and the insenitive areas.

The deep dermal burn is a borderline burn, between a partial and a full thickness burn, in which a few epithelial elements remain. This responds better to tangential excision (below) than to exposure treatment.

Scarring:-

Partial thickness burns usually heal without much scarring. Alteration in pigmentation is quite common. Full thickness burn tend to cause unsightly incapacitating scars and contractures. To some extend these can be minimised by properly timed skin grafting and the reduction of sepsis. In late contractures it may be necessary to excise the scar completely and to replace it with a full thickness skin graft.

All scars pass through a natural sequence of stages.

I. 0-4 weeks. The scar is fine, soft, not contracted, not strong

II. 4-12 weeks. The scar become red, hard, thick and strong. It tends to contract.

III. 12-40 weeks. The scar gradually becomes soft, supple, white and tends to relax

Hypertropic scars:-

This type occurs after injuries such as burns. It also take the normal pattern of scar formation. Both the intensity and the duration of active phase of scar formation are increased. Even in cases where severe hypertrophy occurs the scar does not become worse after 12 weeks. By this time, the scar is very thick, red and often itchy, and this condition then persists on this severe state for a further 3 to 6 months. After this time, it gradually regresses.

Table showing the average healing rate in the age group of 1-16 yrs.

	Age	Degree of burn	Time taken for healing
1.	1 yr 3 mons	Second degree	12 months
2.	1 yr 6 mons	Second degree	15 days
3.	2 yrs	Second degree	15 days
4.	2 yrs	First degree	35 days
5.	2 yrs	Second degree	1 month
6.	5 yrs	Second degree	5 months
7.	5 yrs	Second degree	3 months
8.	5 yrs	Second degree	3months
9.	7 yrs	Second degree	6 months
10.	8 yrs	Third degree	12months
11.	11 yrs	second degree	17 days
12.	13 yrs	Second degree	6 months

Degree of burn	Average time of healing
First degree	1 month
Second degree	3 months
Third degree	12 months

Table showing the average healing rate in the age group of 16yrs-45 yrs

	Age	Degree of burn	Time taken for healing
1.	19 yrs	Second degree	3 months
2.	21 yrs	Second degree	2months
3.	22 yrs	Second degree	3 months
4.	22 yrs	Second degree	4 months
5.	26 yrs	Second degree	3 months
6.	27 yrs	Second degree	6 months
7.	22 yrs	Second degree	3 months
8.	27 yrs	Third degree	7 months
9.	27 yrs	Second degree	4 months
10.	28 yrs	Second degree	15 days
11.	29 yrs	second degree	6 months
12.	30 yrs	Second degree	25 days
13.	31 yrs	second degree	5 months
14.	32 yrs	Second degree	2 months
15.	34 yrs	Second degree	20 days
16.	36 yrs	Second degree	4 months
17.	36 yrs	Second degree	1 month

Degree of burn	Average time for healing
First degree	Nil
Second degree	3 months
Third degree	7 months

Table showing the average healing rate in the age group of 60 yrs and above

Age	Degree of burn	Time taken for healing
60 yrs	Second degree	2 months

Degree of burn	Average time for healing
First degree	Nil
Second degree	2 months
Third degree	Nil

Table showing the classification of burns and their healing rate

Type of burn	Average time taken for healing
Dry Heat	3 months
Moist Heat	4 months
Chemical/ Electrical/Radiational	3 months 15 days

Table showing the degree of burn and their healing rate

Degree of burn	No.of bunrs	Average time taken for healing
First Degree	2	20 days
Second Degree	26	3 months 15 days
Third Degree	2	9 months 15 days