BURNS: EXPERIENCES WITH CONSECUTIVE CASES TREATED AT THE PHILIPPINE GENERAL HOSPITAL

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Burns constitute one of our most serious emergencies and it is imperative for every physician in the general practice of medicine or surgery to be able to render satisfactory care to a victim of thermal trauma. It has been said that for a burn case to have a fair chance to live, proper care must be given during the first 24 hours. To bring out points in the management of burns, we are presenting 50 cases of burns treated over a period of six months in 1957 in the surgical wards of the Philippine General Hospital.

CLASSIFICATION OF CASES

(1) *Sex:* — Of the 50 cases, 28 were males.

(2) *Age:* — The age distribution was as follows: 30 cases 10 years of age and less; 12 cases between 11 and 30 years; and 8 cases 31 years old and over.

(3) *Etiology:* — In 37 cases, the burns were caused by fire. The flammable agents involved were:

Gasoline	— 8 cases
Kerosene	— 7 cases
Floor wax	— 7 cases
Others	— alcohol, sawdust, bagasse lightning, housefire, candle

Scalding was responsible in the remaining 13 cases.

(4) *Extent:* —

Extent of Burns	*No. of Cases*
0 — 10%	3
11 — 30% (moderate)	30
31 — 50% (severe)	9
51 — 70% (overwhelming)	7
Over 70%	1

(5) *Case Fatality:* —

Extent of Burns	*No. of Cases*	*Death*
0 — 30%	33	0
31 — 50%	9	3
51 — 70%	7	4
71% above	1	1

(6) *Time of Death:*—

Within 24 hours	6 deaths
After 24 hours	2 deaths

(7) *Hospital Stay:*—

Less than a month	30 cases
1 month—4 months	10 cases
Above 4 months	3 cases
Cases still in the wards	7 cases

(8) *Skin Grafting:* — Done in 7 cases.

DISCUSSION

We noted that most of the cases were children. Males and females were almost equally represented. All the adult patients came from the laboring class. There were more burns due to fire than due to scalding. One of the agents was floor wax which is not regarded by many as inflammable. Other types of burns not seen by us were electrical, friction, chemical and irradiation burns. It seems that these occur infrequently or usually minor as not to require hospitalization.

The moderately severe burns (11-30%) constituted more than half of the admissions and the most severe was a young lady with 75% burns. Above this extent, cases probably do not reach the hospital anymore.

It is important to note that nearly half of the cases with severe and overwhelming burns died; this should emphasize how serious a burn case can be. Most of those who died, died within 24 hours after the accident. The chances for survival decreases inversely as the extent of burns. It is also significant that no case with extent less than 30% died, regardless of the depth of trauma.

Cortone did not feature prominently in our management as most of the patients could not afford the drug. However, there is justification for its use.

MANAGEMENT OF BURNS

We have divided our management into early and late phases.

EARLY PHASE: This period covers the period of two weeks after the accident, at which time spontaneous healing of the superficial 2nd degree burns is more or less complete. The management consiated of:

1. *Fluids:* By far, this is the most important item in the treatment especially during the first 24 hours. We calculated it in accordance with the Evans formula (modified):

1cc. x percentage of burns x weight in lbs.=fluids/day
30-40% of the total fluids is colloids divided equally for blood and plasma.
60-70% is given as dextrose in water or normal saline or Ringers Lactate Solution.

The administration of fluids was done by the rule of thumb:

1/2 is given within the first 8 hours
1/4 for the next 8 hours
1/4 for the last 8 hours

For the more superficial 2nd degree burns, 30% colloids was sufficient and 40% was given to the deeper cases. Of the fluids, there is nothing more important than whole blood for there is from the beginning a masked or hidden burn anemia due to the destruction of red cells by the heat at the time of burning even when the RBC, hemoglobin and hematocrit readings are high. Furthermore, there is a decrease in blood vo-

lume due to the exudation of plasma to the burned areas. However, in the series, practically all could not be given adequate blood replacement.

2. *Antibiotics*:— These were given as prophylaxis against infection, for a burned surface is very weak and susceptible to micro-organisms. Penicillin (400,000 U) daily was usually sufficient for the mild cases, but broad spectrum antibiotics were given for the more extensive cases.

3. *Tetanus antitoxin*:—Given routinely in a single dose of 1,500 U.

4. *Cortone and ACTH:* These should be given as much as possible as the stress factor in burns is great. Autopsies of cases reported in literature have shown the adrenals to be similar to that in Addison's disease. In its administration, the fluids calculated according to the Evans formula need no correction. Dose for cortone in adults is usually 50 mg. every 8 hours. In the 8 cases that died, it was only those given cortone which lived up to the 5th and 6th days while those who did not receive it died within 24 hours.

5. *Antihistaminics*: The release of histamine bodies from the burned area is so great that the administration of antiallergens seems imperative. Doses of 50 mg. every 8 hours given as Benadryl or any equivalent was sufficient.

6. *Tracheostomy:* This was resorted to in respiratory and severe facial burns with respiratory tract obstruction. This happens in cases where the accident occurs in a close compartment as a garage. Most often, dyspnea is interpreted as due to pulmonary edema and burns of the respiratory tract which could prove fatal is overlooked. Tracheostomy should be performed without hesitation in such cases.

7. *Dressings:* Exposure therapy may be resorted to, but we commonly used dressings. The choice of method depends much on the environment in the hospital and the extent of the burns. In all our cases, we have used vaselinized gauze for the first dressing with a liberal amount of covering. Usually analgesics as demerol or morphine was enough to deaden the pain. Pain should be differentiated from anxiety as one may tend to give an overdose of the drugs.

8. *Other Points:* An indwelling catheter to measure the output and indirectly the blood pressure should be inserted. The development of the earliest signs of pulmonary edema is an urgent indication for reduction in the rate of fluid administration. Burn shock is usually either cured or markedly improved or will cause death of the patient before the 48 hours period is completed.

Partial thickness burns of less than 20% did not ordinarily require intravenous therapy as the patient could retain oral fluids. Burns of over 50% had their fluids calculated on the basis of 50% to prevent overtreatment. As a further precaution, a total of 10,000 cc. in the first 24 hours was the maximum given.

After the first 24 hours, the fluids may be reduced depending on the capacity of the patient to tolerate food by mouth, urinary output, hematocrit levels and general progress of the patient.

Burns of the first and superficial second degree with blister formation usually healed within two weeks similar to the donor site for skin grafting. Thus 60% of our patients stayed less than a month in the hospital. A complication one should guard against is infection which may convert a partial thickness burn to one of full thickness, thereby prolonging the healing time and hospital day. This healing period is the "lull that follows the storm" in superficial burns, but in large deep burns the patient may show a steady decline until death or until covered with skin, whichever occurs first.

LATE PHASE:

1. *Dressing:* Probably this is the most important procedure during the later part as on it depends the speed of healing of the wound. Careless dressing may introduce infection which may lead to other systemic complications. Thus, it is advisable to change the dressings every four days or else maggots may set in.

In the hospital, we washed the wound gently to avoid bleeding, using phisoderm followed with permanganate or salt solution. Sulfa locally and furacin ointment for the gram

negative bacilli was found to be effective, but one should be on the alert for allergy to these drugs. Thick dressings were not necessary inasmuch as the dressings were changed frequently. We could hardly institute exposure treatment in the emergency wards as the environment is unfavorable to this method.

2. *Skin Grafting*: This was done for cases where epithelization did not occur due to the depth and extent of burns. Furthermore, spontaneous healing should not be regarded as good in cases where there is full thickness loss of skin as it leads to the more serious condition namely, contracture. Grafting was done either as a temporary dressing or as a permanent skin covering. Only 7 of our cases required skin grafting. Some of the patients had so extensive burns that not enough skin was available. It was in these cases where homografting and cadaver skin grafting became heroic measures.

The skin dressing usually stayed only 2-10 weeks but this period was important as it gave the patient a respite from pain, dressings and electrolyte losses besides serving as a stimulus for epithelization. During this time also, the patient was built up with blood and tonics to be ready for the final stage when she could provide for a permanent covering with her own skin. The criterion for this period included hemoglobin and blood count levels and a good albumin-globulin ratio. Needless to say, the systemic condition must be good.

Autografting was done in the form of stamp grafts or if skin is adequate, total covering of the raw area after slicing off the granulation tissue is preferred. For areas where secondary contracture of thin grafts was undesirable as in the face and neck, repair by the sliding flap, tube or pedicle flap was resorted to for cosmetic reasons.

3. *Other Measures:* Fluids were not important in the later phase, except blood and plasma, as patients tolerate oral intake well. Vitamins were given in high doses and antibiotics were maintained at a high level. A part of management often forgotten is psychotherapy and one should take special efforts to improve the morale of the patient.

In conclusion, we have received encouraging results in our management of burns and nothing is more gratifying than seeing a patient crippled by burns recover and return to his place in society.

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