MATERIAL AND METHODS
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The present study has been conducted at M.L.B. Medical College, Jhansi from August, 1995 to Sept., 1996. In this study, patients with deep burns with or without partial thickness burn were included. All patients of deep burn were divided into two subgroups matched by age and percentage of burn. All patients were treated topically with topical povidone-iodine lotion (5% w/v) and Neosporin powder crust. In the test group we additionally injected PVP solution by diluting it in equal volume of normal saline (0.25% available iodine) in subepidermal plane.

MATERIAL

PVP Lotion:

1. PVP lotion with 0.5% available iodine for topical application in equal amount.

2. PVP lotion diluted in saline 0.25% available iodine for subepidermal injection.

Neosporin powder (Wellcome and Burrough)

It is available in 10 gm powder form. This powder contains three ingredients per gm.

1. Polymyxin B sulphate : 500 U.B.P.
2. Zinc Bacitracin : 400 U.B.P.
3. Neomycin sulphate : 3400 U.B.P.
Neosporin powder was used for sprinkling over the burn area till a uniform coating of powder was obtained.

**Selection of Patients**

All patients of deep burn with or without partial thickness burns who came to the emergency or OPD of this hospital were included in this study, irrespective of their age, sex, socio-economic status, contamination and mode of injury.

**Method of Study**

All selected cases were subjected to a detailed history and physical examination which were recorded in the following manner.

**History**

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Age/Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Address</td>
</tr>
<tr>
<td>Occupation</td>
<td>D.O.A.</td>
</tr>
<tr>
<td>D.O.A.</td>
<td>D.O.D.</td>
</tr>
</tbody>
</table>

**Regarding the burns accident**

Date and time of burn.

Hospital attendance delay time:

Place of accident

Cause of burn

Prior treatment (if any)
Physical Examination

General condition
Blood pressure
Respiration

Pulse
Temperature
Hydration

Local Examination

Percentage of total burn area:

It was calculated by Wallace's rule of nine in adult and Lund and Browder Chart in children.

Wallace rule of 'Nine'

The percentage of burn depicted against each area in adult.

<table>
<thead>
<tr>
<th>Area</th>
<th>Anterior (%)</th>
<th>Posterior (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head and neck</td>
<td>4.5</td>
<td>4.5</td>
<td>9.0</td>
</tr>
<tr>
<td>Upper limb (Single)</td>
<td>4.5</td>
<td>4.5</td>
<td>9.0</td>
</tr>
<tr>
<td>Trunk</td>
<td>18.0</td>
<td>18.0</td>
<td>36.0</td>
</tr>
<tr>
<td>Lower limb (Single)</td>
<td>9.0</td>
<td>9.0</td>
<td>18.0</td>
</tr>
<tr>
<td>Genitalia</td>
<td>-</td>
<td>-</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Lund Browder Chart

The percentage of burn depicted against each area in different age groups in children.

<table>
<thead>
<tr>
<th>Area</th>
<th>1 year</th>
<th>5-9 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>19.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Neck</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Anterior trunk</td>
<td>13.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Posterior trunk</td>
<td>13.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Buttock</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Genitalia</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Arm</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Fore arm</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Hand</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Thigh</td>
<td>5.5</td>
<td>8.0</td>
</tr>
<tr>
<td>Leg</td>
<td>5.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Foot</td>
<td>1.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Percentage of deep burn area

It was assessed by:

1. its painless nature.

2. Eschar formation.
<table>
<thead>
<tr>
<th>Classification of depth</th>
<th>Appearance of burn area</th>
<th>Pain sensation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Superficial</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st degree</td>
<td>Erythematous</td>
<td>Painful and hyperaesthetic</td>
</tr>
<tr>
<td>2nd degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIa</td>
<td>Blisters with reddened base and moisture.</td>
<td>Painful and hyperaesthetic</td>
</tr>
<tr>
<td>IIb</td>
<td>Blanched with blanched base and moisture.</td>
<td>Painful, hyperaesthetic or anaesthetic places.</td>
</tr>
<tr>
<td><strong>Deep</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd degree</td>
<td>Leathery pale or pearly white or charred dry.</td>
<td>Painless and anaesthetic</td>
</tr>
</tbody>
</table>

The I and IIa were included as superficial and IIb and III were included as deep burn.

**Contamination of wound**

- **Apparent clean**: No contamination by foreign body clean, intact blisters.
- **Mild contamination**: Slight contamination, ruptured blisters, open wounds.
- **Gross contamination**: Heavy contamination with dirty cloth, foreign body, dust and pus etc.
Resuscitation and General Management

Patients were resuscitated by maintaining airway, I.V. fluid supplementation, plasma and blood infusion, analgesic antibiotics and tetanus prophylaxis according to the need of patients.

Local Management of Wound

After necessary sedation a gentle and thorough debridement of wound was done by removing necrosed skin and blisters. The area of deep burn was again tested and then the whole burn surface was cleaned with sterile normal saline thoroughout.

Application of PVP & Neosporin Powder on Burn Surface

In all patients the application was started by cleaning with saline, then sprinkling a uniform layer of neosporin powder on burn surface. Over this the solution of Povidone Iodine (0.5% available iodine) was sprayed uniformly. Thus completely soaking the powder. A further layer of powder was applied to form a crust. On the first day, three such applications were carried out without removing the previously applied layers. On the second day, the application was reduced to two and form the third day onwards, this application was limited to those areas from which the crust was either separated or cracked. Subsequently these areas showing discharge with infection were subjected to twice daily applications each time after removal.
Method of Subescharal injection of PVP lotion

in test group

In test group the above mentioned procedure was followed. In addition we injected PVP solution by diluting in equal volume of normal saline and injecting it at multiple sites in the subescharal plane as 0.25% solution. The injected amount in adult was about 13 ml in one percent of deep burn.

This injection was started on the third post burn day and repeated twice weekly until escharolysis was completed. In patients with more than 25% deep burns, injections were restricted to three injections at 72 hours, 7th day and 14th day, basically to limit the amount of PVP injection.

Follow up of the patients

The assessment of the result was done by utilizing subjective and objective parameters with patient's examination visits and investigations.

Subjective parameters

The patients were asked about:

1. Pain and discomfort (mild, moderate, severe).
2. Fever, palpitation.
3. Any evidence of allergy as - itching, rashes, nauses and vomiting.
Objective parameters

Observation for following was done:

1. Appearance and duration of deep burn area.
2. Presence of discharge and/or soaksage.
3. Surface colonization of bacteria qualitatively.
4. Subescharal colonization of bacteria –
   qualitative and quantitative.
5. Eschar separation time.
6. Wound status for grafting.
7. Graft acceptance.

Other parameters

1. Cardiovascular status.
2. Thyroid status.
3. Renal function.
Name: [Blank]

Date & Time of burn: [Blank]

Age/Sex: D.O.A.

Address: [Blank]

Hospital attendance:

delay time:

Mode of burn:

Burn area: Superficial

Deep

Primary treatment given prior to admission:

Parameters at the time of admission:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>At the time of admission</th>
<th>3rd</th>
<th>7th</th>
<th>15th</th>
</tr>
</thead>
<tbody>
<tr>
<td>surface culture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Escharal biopsy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subescharal culture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Eschar separation/completion started:

Graft applied on:

Thyroid status: 7th day

15th day

Renal function: Blood urea

Serum creatinine on every 3rd day