Analysis of the Efficacy of Dry and Moist Therapy in Treating 31 Cases of Large Area Burns Complicated by Respiratory Tract Inhalation Injury

Yang Longguang, Li Wenhui

The 1st People’s Hospital, Huaihua Prefecture, Hunan Province 418000

Abstract: A gunpowder explosion in a coach caused extensive burns, head burns, and respiratory tract inhalation injury to 31 passengers. After anti-shock therapy, tracheotomy and oxygen supply, etc and application of MEBO on wounds, 9 cases died, the mortality rate was 25.6%, lower than that reported in literature (1). Seven days after injury, the patients were divided into two groups, 12 were treated with dry therapy and 5 died, the mortality rate was 41.65%; 10 were treated with moist therapy and none died. Comparison showed that moist therapy was superior to dry therapy.

Key words: Burn, inhalation injury, dry therapy, moist therapy

This article introduces the treatment of extensive burns complicated by respiratory tract inhalation injury. The patients were divided into 2 groups at random after 7 days of treatment with the moist therapy. Now, it is reported below:

1. Clinical data

1.1 General information: There were 31 cases in this group, 26 were male, 5 female, the youngest one was 20 and the oldest was 51 years old and the average age of the patients was 33. There were 10 cases in the moist therapy group, 9 male and 1 female; and there were 12 cases in the dry therapy group, 11 male, and 1 female.

1.2 Burn surface area: 10 cases had burns to 71-93% of surface area, 15 cases 50-70%, and 6 cases 30-49%. The depth of burn was mainly deep second-degree, and a few cases had third-degree burns. All the patients had head and facial burns complicated by symptoms of dyspnea. See Table 1 for the burn surface area of both moist and dry therapy groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Case Number</th>
<th>30-50%</th>
<th>Over 51%</th>
<th>Maximum Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry therapy</td>
<td>12</td>
<td>4</td>
<td>8</td>
<td>83%</td>
</tr>
<tr>
<td>Moist therapy</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>82%</td>
</tr>
</tbody>
</table>

1.3 Cause of burns: Gunpowder explosion in a coach.

1.4 State of illness on hospitalization: All patients were hospitalized within 3 hours of injury, 24 were in shock, and seven had early symptoms of shock.

2. Therapeutic Methods

2.1 Wound management
After simple debridement, 31 patients were treated with the therapy created by Xu Rongxiang\(^2\), that is, MEBO was used on wounds, and the interval for dressing change was 4-6 hours. Sterilized tissues was used to clear away liquefied substances with the manner that patient would not feel pain. The patients in moist therapy group would continue to use MEBO after 7 days. In the dry therapy group, after debridement, that is, after removing MEBO and Liquefied matter, apply externally SD-Ag or chloromycetin gauze on the wounds, irradiate them with a heat lamp to keep them dry and clean, and dressing changing was conducted once every day or every two days. One or several stamp-like or microsome skin grafts were conducted to eliminate all wounds.

2.2 Systemic Treatment

Before grouping, the systemic complex therapy was conducted, namely, anti-shock, anti-infection, and tube installation in deep vein therapies were performed as supporting treatment; and albumin, chyle fat, amino acid, high content sugar, microelement, vitamins etc were used. After the patient could take food, gastrointestinal nutrition was conducted to protect gastrointestinal mucosa and prevent translocation of bacteria. Attention was paid to water-electrolyte acid-base equilibrium, and early tracheotomy and oxygen supply shall be conducted to maintain smooth respiratory tract. After grouping, continue anti-infection therapy, supportive therapy to protect the visceral functions of heart, liver, kidney, stomach, intestine etc.

3. Therapeutic effect

Nine cases died of respiratory failure before grouping. After grouping, five cases died and seven cases were cured in the dry therapy group. All the 10 cases in moist therapy group were cured. Deep second-degree wounds healed without scars or with flat-skin slight scars. Skin grafting was unnecessary and there was no dysfunction. The healing of wounds of dry therapy group had obvious scars, which affected functions and they could not take care of themselves in life, in addition, many complications occurred. See Table 2.

<table>
<thead>
<tr>
<th>Group</th>
<th>Case No.</th>
<th>Tonic encephalopothy</th>
<th>Stress ulcer</th>
<th>Hepatic and renal injury</th>
<th>Double Infection</th>
<th>MSOF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry therapy</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Moist therapy</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

4. Discussion

In large area burn complicated by respiratory tract inhalation injury, the mortality is very high, 9 in 31 cases died early, and the gunpowder explosion produced many kinds of harmful gases, which aggravated the injuries to the respiratory tract\(^3\), leads
to airways obstruction and hinders the exchange of gas and blood. Chest scenograph indicates the patients have atelectasis, and the brightness of lung field decreases. Complete sets of tube-type deciduous intima of trachea were sucked from the place of tracheotomy. Patients died of respiratory failure. The dry therapy stimulates the wounds and aggravates pains, which makes it difficult for patients to overcome shock successfully. Use of MEBO on wounds eliminates pain from the wound in several minutes, which helps patients to overcome shock.

In the moist therapy group, MEBO was continued, which isolated the air and wounds and avoid the re-injury of wounds by external matter. The medicine on wounds was distributed in two states, which allowed the automatic clearance of hydrolyzed, acidifying, enzymolysis and saponified liquefied matters with dead tissues from wounds. Proper use of MEBO made the medicine automatically works on wounds, which ensures the environment required by repairing of wounds. It is known to all that if the patients with extensive burns are not treated in special sickrooms, the incidence rate of pyemia and pyosepticemia of wounds would be very high, which causes death of burns victims.

In contrast to the moist therapy group, wound management in the dry therapy group dried and dehydrated wounds, destroying tissues which could have recovered and deepening the wound. Bactericide or bacteriostat was used on wounds to control wound infection, but it was difficult to reach the expected target. The key of the problem was that the wounds lacked a suitable environment for repairing and regeneration. MEBO contains nutrient content suitable for and required by repairing and growth of tissues and cells. Although MEBO could not sterilize directly and restrain bacteria, it promotes the repairing of wounds and provides a clean environment with fewer bacteria for wounds. According to the characteristics of the medicine, correct and timely application of MEBO eliminates bacteria before they can reproduce on wounds, and plays the role that the application of bactericide or bacteriostat in dry therapy fails in, thus reaching the expected target.

Except for the administration on wounds, the systemic administration in dry therapy is like a pagoda, that is, the higher the quality of antibiotics, the more the dose, which may easily cause double infection. The rate of double infection in the dry therapy group was quite high, see Table 2. The side effect of antibiotics was also distinct, and the visceral function would be damaged to different degrees, which may easily lead to the dysfunction of multiple organs, and 5 cases died in dry therapy group, see Table 2.

The moist therapy realizes curative effect through moist exposed burn ointment. It is the fruit of theory, prescription, therapeutics and pharmacology of traditional Chinese medicine. Moist exposed therapy will receive more and more attention.

References


