MEBO for Treating Skin Injury and Phlebitis Caused by Extravasation of Chemotherapeutic Drugs

Wang Junying, Han Chuanping, Jiang Yuling
Affiliated Hospital of Taishan Medical College, Shandong Province 271000

[Abstract] Objective: To find a method for treating skin injury and phlebitis caused by extravasation of drugs for chemotherapy. Method: MEBO was applied to treat 18 cases of skin injury and phlebitis caused by extravasation of drugs. Procaine blocking and magnesium sulfate wet dressing were applied to treat another 18 cases of the same disease as control. Result: In MEBO group, after treated for 3 weeks, the total effective rate was 100% and cure rate was 72.2%, while in the control group, the total effective rate was 72.2% and curative rate was 33.4%. Conclusion: MEBO is superior to procaine combined with magnesium sulfate in treating skin injury and phlebitis caused by extravasation of drugs.

[Key words] MEBO; Extravasation of drugs for chemotherapy; Efficacy

Injury of local subcutaneous tissues or skin and chemical phlebitis caused by extravasation of anticancer and antileukaemia drugs are common in clinical practice. But most chemotherapeutic drugs are chemical and alkaloid preparations. In the treatment, mechanical injuries caused by repeated punctures and local stimulation by high concentration and pH of different drugs, result in congestion, swelling, pains, cirrhosis, organization, obstruction and even local tissue necrosis \(^1\) thereby make additional sufferings to the patients. Since 1993, we applied Moist Burn Exposed Ointment (MEBO) with infrared physical therapy to injury and phlebitis caused by extravasation of drugs for chemotherapy and compared it with traditional procaine combined with magnesium sulfate, as follows:

MATERIALS AND METHODS

In total, 36 patients in hospital were observed. Eighteen were in MEBO group and 18 in the control group. Twenty-seven patients had acute leukaemia, and 9 patients had malignant tumors in alimentary tract. There were 21 males and 15 females aged 16-64 years old. Nine patients had skin injury and phlebitis caused by vincristine, 7 patients had skin injury and phlebitis caused by mitomycin, 9 patients had skin injury and phlebitis by daunorubicin and 11 patients had skin injury and phlebitis by cytarabine. Seven patients had local skin swelling with blisters, 18 patients had local phlebitis (hardening, chord strip form), swelling and pains in adjacent skin, 11 patients had swelling, pains, hardening (chord strip form) in the injected area.

According to the degree of skin and subcutaneous tissue injury caused by extravasation of drugs, these diseases were classified into 3 degrees. Mild degree: skin injury area with a diameter less than 2cm. Moderate degree: skin injury area with a diameter of 2-3cm. Severe degree: skin injury area with a diameter more than 3cm with blisters, ulcers and...
erosion. See Table 1 for the skin and subcutaneous tissue injury conditions of the two groups of patients.

### Table 1 The skin injury of two groups

<table>
<thead>
<tr>
<th></th>
<th>MEBO group (n)</th>
<th>Control group (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Mild degree</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Moderate degree</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Severe degree</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

### Table 2 Contrast of two groups curative effects

| Group(n)     | Cases | cured (%) | better (%) | uncured (%) | (%)
|--------------|-------|-----------|------------|-------------|-----
| MEBO group   | 18    | 13        | 72.2       | 5           | 27.8 |
| Control group| 18    | 6         | 33.4       | 7           | 38.8 |

Notes: Total effective rate of MEBO group after three weeks 100%
Total effective rate of the control group after three weeks 72.2%

i: cure rate comparison between the two groups $\chi^2=4.012$ (small sample revised formula) $P<0.05$
i+ii=total effective rate, $P<0.05$ (Table of value C method)

MEBO group: MEBO was applied on the wounds by disinfectant cotton stick once extravasation of chemotherapeutic drugs or local phlebitis was found. The area was 1-2cm more than skin injury, the thickness was 0.4mm, and it was changed once every 4 hours. Liquefied substances were wiped off and MEBO was applied again at the same time with infrared irradiation, once per day, 30 minutes every time. The liquor from the blisters was taken out first with aseptic injector.

Control group: 2% procaine blocking and magnesium sulfate wet dressing was applied, 3-4 times per day.

### JUDGEMENT AND CURATIVE EFFECTS

After three weeks’ treatment, all cases were evaluated for curative effects which were classified as cured, better and uncured. Cured: after treatment, swelling and pains of drug extravasation position disappeared, the elasticity of hardening veins was restored, damages of mucous membrane and skin were cured. Better: after treatment, swelling range was reduced distinctly or damage of mucous membrane and skin were cured in part. Uncured: after treatment, pains disappeared slowly (>7 days), local swelling range was not reduced distinctly or damages of skin and ulcers of mucous membrane were not improved. The curative effects of the two group were shown in Table 2, $P<0.05$ (cure rate compared with total efficiency rate).
DISCUSSION

Malignant tumor which is one of the three primary diseases has been in an increase trend in these years. Meantime, chemotherapeutic clinical drugs were widely used and the species of drugs became more and more gradually. Although the injection required high techniques which could reduce and avoid drug extravasation rate to some degree, phlebitis caused by chemotherapeutic drugs and tissues injury caused by drugs extravasation were inevitable because of repeated intravenous injection. According to report, the rate of extravasation by i.v. chemotherapy is 0.5%-6%, but in fact the rate is much higher than this level\[^3\]. Consequently, how to alleviate the injury of chemotherapeutic drugs to the lowest limit so as to ensure the healthy psychology of patients and make the patients complete treatment became an important task in medical and nursing work. In order to find a perfect method, we changed traditional treatment and MEBO was applied on wounds, in treating the patients of blood and some entity tumors with extravasation by i.v. chemotherapy. It was proved that when treating extravasation of chemotherapeutic drugs MOBO is superior to control group in cure degree and pain alleviation.

MEBO is an effective external drug for burns based on Chinese Medical theory, it has antibacterial, antiphlogistic, analgesic effects and can promote the healing of wounds\[^3\]. The tissue injury of extravasation of chemotherapeutic drugs is chemical burn, which can lead to tissue congestion, swelling, infection and necrosis. Thus applying MEBO treating tissue injury of skin or mucous membrane and phlebitis caused by extravasation of drugs for chemotherapy is based on theory.

By clinical treatment observation, MEBO has perfect effects in alleviation of pains of extravasation of drugs and reparation of damaged injury. After MEBO is applied for 30 minutes, wound pains can be alleviated or disappear. The mechanism is that this ointment is oily to keep wounds moist to avoid sense nerve exposed, dehydrated, necrosis and sensitivity of nerve end reduced. Moreover, this ointment can promote the growth of new tissues and retrieve vitality with slough tissues discharged, activate blood flow and remove blood stasis, make for epidermis hyperplasia, improve ulcers and micro-circulation of tissues around to accelerate the metabolism local tissues, and thus the healing objective will be achieved.

Most chemotherapeutic drugs have characteristics of inducing extravasation to local injury and tend to bring chemical phlebitis. Despite the treatment is performed cautiously, extravasation of drugs still exists. So we must do our best to adopt effective therapy to reduce patient tissue injury and pains after extravasation. In conclusion, MEBO offers an effective method to tissue injury caused by extravasation of chemotherapeutic drugs.

REFERENCE