Progress in the Application of MEBO in Clinical Surgery

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Abstract

Objective: To make a review of the progress in the application of MEBO in clinical surgery. Method: A literature survey was made and the data analyzed. Result: MEBO as a core in MEBT has not only been widely used in burn treatment and has very good efficacy but also widely used in surgical and other medical fields. Conclusion: MEBO has very good prospects in its application in clinical surgery.

Keywords: MEBO; Surgical wound and ulcer; Clinical application; Efficacy analysis

As the key drug of MEBT, MEBO has been used all over China for more than 10 years, since MEBT was put forward by Professor Xu RX based on the traditional Chinese medical theory and modern theory of burn pathology and physiology in the middle 1980s. It has been proved by many years' clinical application and experimental study that several difficulties such as burn infection, assuaging pain and scar proliferation were solved perfectly [1]. With the extensive use of MEBO in clinical practice, the application field of MEBO in surgery will surely be enlarged. The following is the review and summary of the application and development of MEBO in clinical surgical practice in recent years:

A. Bedsore Ulcers (Phase III bedsore)

Bedsore ulcers, which are common in patients with debility, paralysis and long-term lay-up, refer to the tissue necrosis and ulceration due to long-term pressure on skin blood vessels and nerves, which damages local blood circulation and results in nutritional disturbance. The key points in decubital treatment are as follows: treat the primary disease actively, strengthen the basic nurse, enhance the resistance of the body, control wound infection, keep wound drained unobstructedly, ameliorate local microcirculation, and accelerate tissue regeneration and restoration [2]. Li SL [3] used exposed and binding-up therapies to treat 15 cases of bedsore ulcers with different depth and course in different parts with MEBO. All the patients were healed without toxicity and side reactions. Zhang SC etc. [4] immerged the antiseptic gauzes into warmed MEBO to make MEBO gauzes, and covered the bedsore wound or filled sinus tracts. The drug and dressing were changed once or twice a day. All the 5 cases were healed. Chen ZY etc. [5] used MEBO to treat 32 cases of bedsore ulcer, and observed the changes in wound, the bacterial culture results of wound, and scars after the wounds were healed. They thought MEBO had strong anti-infection capacity, and could improve local microcirculation, reduce scar formation, and had no influence on the functional restoration of the functional parts. Kong Jun [6] treated 60 cases of bedsore ulcers due to different causal factors in different parts with bandaging therapy. The cure rate after 2 months was 78.3%, and the cure rate after 6 months reached 96.7%.

B. Contused and Abrased Wound of Skin Soft Tissues
Acute wounds with skin soft tissues contused and abraded are acute skin injuries due to the composite forces in trauma, which are the complication of abraded wound and contused wound, and belong to skin ulcers. Although acute wound with skin soft tissues contused and abraded is not severe in clinical practice, but its incidence is high, and the wound is in the exposed place with severe pollution. Traditionally, astringent for external application is used to obtain subcrustal healing. Although the wound turns dry fast, subcrustal infection often comes into existence. The incidence of scar is high, resulting in dysfunction, ugly appearance, and bad life quality. It is believed in modern wound restoration standpoints that wetness is in favor of wound healing. When treating the open wounds, traditional dry binding therapy can lead to superficial necrosis, impede the regeneration of epithelia, therefore moist therapy is better. He RL, Liu WG etc. treated 39 and 96 cases of skin wound with soft tissues contused and abraded respectively. Phase I healing was acquired for all the patients, and the healing time was 7-30 days. Based on the comparative study between MEBO therapy and high efficiency iodine therapy in the healing mode of wound, healing time, local therapeutic reactions, analgesic effects, scar incidence at 3 months, toxicity and side effects when treating acute skin soft tissue contused and abraded wound, He RL etc. came to a conclusion: MEBO therapy was better with fast analgesia, good curative effects, fewer pains during dressing change, strong anti-infection effects, short healing time, alleviated scar healing, little pigmentation in the healed wound, few toxic and side effects, and better patient toleration. Meng Xia etc. treated 23 case of maxillofacial soft tissue abrasion. All the wounds were healed with first intention without infection, pigmentation and apparent scar. Sai FD etc. treated 10 severe extremity and joint skin abrasion patients with MEBO. The treatment course was 7-15 days. All the wounds were healed without infection, scar or dysfunction, and the damaged joints returned to normal.

C. Skin Soft Tissue Impairment

Skin soft tissue impairments can result from both congenital and acquired causes. Congenital causes are concerned with intrauterine infection of the fetus; the acquired cause is related to traumas and local infection. In the past, operation therapy was taken to treat these diseases, but its expense was high, and it was difficult to be accepted by patients and their relatives. Zhao Xiong etc. treated 8 cases of new-born congenital skin defect with 1%-15% defect area. Defect parts: 5 lower extremity defect cases, 2 upper extremity defect cases, and 1 trunk defect case. The average healing time was 7-21 days. There was no infection, necrosis or scar, and the skin had good elasticity. The author thought MEBO was an ideal drug for treating congenital skin defects. Zhang HZ etc. treated 19 cases of finger tip defects due to traumas with MEBO. All the patients were healed without apparent infection. The shortness of affected fingers was not obvious after they were healed, there was no obvious dysfunction, and the unbroken nails in the nail bed were reproducible. Qu YB etc. compared MEBO therapy with routine surgical dressing change method in treating infected small-area scalp defects after traumas with the results as follows: the healing time was shorter with MEBO therapy, and local pains and hemorrhage etc. were avoided. Su YT etc. cured 5 cases of small-area exposed bone with MEBO bandage, and 6 cases of large-area exposed bone with MEBO bandage, bone cortex drilling and skin grafting. Wei JG etc. treated 40 cases of large-area avulsion injury wound with skin flap necrosis after debridement and
stitching in original position with MEBO treatment in the whole treatment process. All the wounds were healed physiologically. The skin had good elasticity and normal color without cicatricial contracture sotomy, ankylosis, infection, or sepsis. Among the 40 cases, 30 cases had open fracture, and the wound with maximal area is 32 cm × 13 cm.

D. Fissure of Nipple

Fissure of nipple often takes place in primipara due to depressed nipples, short nipples, lack of lactation, improper lactation posture. The skin was impaired and fissure of nipple appeared because of sucking. The clinical manifestation is as follows: there are epidermal desquamation, skin rupture at the root of nipples, and ulcers around nipples; the pains are aggravated during lactation; some patients even had supplicative mastitis. The curative effects of the past therapies were not satisfying, and these therapies interfered with lactation and aggravated the inadequate drainage of breast milk. Li XA etc. \[20\] treated 260 cases of nipple fissure patients with MEBO, and all the patients were cured in 3-12 days.

E. Abscess Drainage

Abscess is the accumulation of pus in the tissues, organs or body cavities with an intact wall in the acute inflammation of deep tissues. The treatment includes antibiotics for systemic or local use, local hot application, physical therapy, incision and drainage through operation, and the drain after operation is often vaseline yarn strips etc. \[21\]. Zheng GH \[22\] treated 18 cases of abscess of iliac fossa through drainage with the use of MEBO oil yarn strips, and all the patients were healed in 7-10 days. The author came to a conclusion: drainage therapy with MEBO yarn strips was safe with few pains, short treatment course, low expense and high cure rate. Zhao BS etc. \[23\] treated 78 cases of perianal abscess with MEBO yarn strip drainage, and more than 90% of the patients were healed after 2-5 times of dressing change and drainage. The author came to a conclusion: drainage therapy with MEBO yarn strips was safe with few pains, short treatment course, low expense and high cure rate. Ge XF etc. \[24\] treated 28 cases of perianal abscess with MEBO yarn strip drainage, 78% of the patients were healed after 3-4 times of dressing change and drainage. Kong QC etc. \[25\] treated 31 patients after hemorrhoids exsection with MEBO yarn strip pressing wound, and all the patients were healed. Compared with Yuhong ointment, a Chinese traditional medicine, the average healing time was reduced by 7 days. Zhang CY etc. \[26\] treated 56 cases of Bartholin’s abscess with MEBO yarn strip tamping and drainage, the dressing was changed every other day and more than 90% of the patients were healed after 2-3 times of dressing.

F. Infection of Incisional Wound after Operation

Infection of incisional wound after operation refers to the infection of clean wounds or wounds likely to be contaminated. Generally, the treatment methods of it include local physical therapy, taking out stitches and drainage, and systemic antibiotics. Deng FP etc. \[27\] provided 26 patients with incisional wound infection after operation with MEBO external application, twice a day. Continual B-ultrasound was used monitor the changes in infected wound. All the cases were healed without inflammation diffusion. Our
experience is as follows: if the incision wound turns red or the patients feel pain, MEBO should be used as early as possible, even if the patients is without fever and incision wound is without purulence or fluctuation. The major advantages of MEBO is as follows: 1) Alleviate the inflammation; 2) Control the diffusion of infection; 3) Reduce scar formation; 4) Accelerate incision healing; 5) Relieve pains.

MEBO is the core of MEBT, the functions of which in treating different kinds of burns have been well-known [1]. MEBO can improve the microcirculation of burn wound, and prevent the tissues in burn wound from progressive sloughing [28]. It can lead to morphological change of *E.coli*, *proteus*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*, disappearance of *Pseudomonas aeruginosa* pigment, reduction of plasma-coagulase produced by *Staphylococcus aureus*, slowing-down of bacterial metabolism, anabolism, growth and reproduction, and the decrease of their toxic actions [29]. It also has strong broad-spectrum antibacterial actions on *Clostridium tetani*, *Bacillus fragilis*, acne *Propionibacterium* and fungi [30]. Therefore, not only the effects of MEBO on wounds and ulcers have been confirmed in clinical practice, but also it can be proved by the pathological changes and the changes of microbiological characteristic after the wounds and ulcers are healed. However, further studies should be conducted on the clinical problems, such as case selection, indications, contraindications, standardization of usage, drug interaction etc. and the pathophysiological changes of wounds after the wounds and ulcers are treated with MEBO, so as to improve the use of this therapy and apply it in wider clinical practice.

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