



Traditional Medicine and Tissue Repair and Regeneration

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12.1 General Description

12.1.1 Concept of Regeneration in Traditional and Modern Medicine

Regenerative medicine in the modern sense mainly refers to the use of the principles and methods of life sciences, materials science, computer science, and engineering, to research and develop regenerative treatment technologies and products for replacing, repairing, improving, or regenerating various tissues and organs of the human body and for tissue and organ defects or dysfunction caused by diseases, trauma, aging, or genetic factors. The basic scientific problem of tissue repair and regeneration is actually the proliferation, differentiation, and orderly regulation of tissue repair cells [1]. The scope of regenerative medicine is not simply biology or medicine, but covers almost all areas of natural sciences and social sciences. It is a discipline that studies the mechanism of tissue and organ defects, and how to promote physiological repair for structural reconstruction and functional optimization of tissue and organ regeneration [2].

In the traditional medicine of the motherland, the concept of “regeneration” has always accompanied its development. The theory of the “mutual generation of five phases” and “mutual generation of five zang viscera” is the representative of *Huangdi Neijing*. *Bencao Beiyao* said: “Five zang viscera of human beings correspond to the five phases, mental, wood, water, fire and earth, mother offspring mutual generation.” Wood generating fire, fire generating earth, earth generating metal, metal generating water, water generating wood, repeat in this way, to “Replenish the deficiency and

subtract the excess.” In the case of “deficiency” or “excess,” there are a mutual generation of five phases of dynamic change and interpromotion and interrestraint, which are suitable for regenerating the structure and function of the damaged organs, and avoiding “virtual and reality,” which is also the goal pursued by regenerative medicine. If the wound should be repaired and the rebirth is insufficient, the ulcer will form; if it is more than enough, it will form a scar. Wound repair is also in line with the theory of qi and blood, Yin and Yang balance. “Yin blood is calm, yang qi is inseparable, so that the human body can be fully refreshed. The separation and rupture between yin and yang will exhaust the essence in the body.”

Suwen • Spiritual cultivation conforming with the four seasons said: Only the sages who know the way to keep healthy can adapt to the changes of yin and yang in the seasons, so their bodies are never seriously ill. If all things can be like the sage not to deviate from the way of health, can adapt to the change of yin and yang seasons, the life is inexhaustible. It emphasizes to enhance the regeneration ability of the body by actively adapting to the season, climate, and environment, and by strengthening the body function “inexhaustible” is the source of regeneration. The theory of essential qi in traditional Chinese medicine reflects the essence of regenerative medicine. *Lingshu • Benshen* said: “Human life comes from the combination of parents’ essence.” *Suwen • Jingui Zhen Yan Lun* said: “Essence is the root of life.” Essence is the root of human body occurrence, development, regeneration, repair, and maintenance of life. Therefore, in the *Nan Jing Gu Yi*, it is pointed out that “There will be self-sufficiency, the pulse is fundamental, and the people have the vitality, so they do not die.” From this, we can see a description similar to the modern embryo development and stem cell function. Similarly, we have seen the emphasis on the idea of inducing and enhancing tissue regeneration through adjustments to the overall and local environment.

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12.1.2 The Modern Medical Treatment of Wound Healing

After the tissue is traumatized, local vasoconstriction, blood and cell exudation, and activation of vasoactive factors induce a blood coagulation process. The inflammatory response period occurs immediately after the injury to 48 h. Tissue changes are characterized by inflammatory reactions, edema, degeneration, necrosis, dissolution, and clearance of the wounded tissue. The essence and core of the inflammatory response period is the regulation of growth factors and their results. On the third day after injury, with the regression of inflammatory reaction and the gradual proliferation of tissue repair cells, the pathological and physiological processes of granulation tissue proliferation and epidermal cell proliferation were observed. In the future, the reconstruction of the local tissue still needs to be carried out for a certain period of time to restore the original structure and function as much as possible, mainly the transformation of granulation tissue into normal connective tissue. The formation of scars is one of the final outcomes of soft tissue wound repair [3]. In this process, a variety of cellular components (mainly macrophages), growth factors and nerves, the immune system can regulate the synthesis and degradation of connective tissue, so that collagen is repeatedly dissolved, deposited, and renewed, scars gradually disappear, and finally reach the organization the purpose of the alteration.

12.1.3 The Inheritance and Evolution of Wound Healing in Traditional Medicine

The traditional medicine of the motherland is specific to the field of wound repair and tissue regeneration. It has a history of 5000 years of treatment for “sore and ulcer” diseases. Wound repair is one of the oldest medical problems of human beings. Chinese medicine believes that: Too much heat will make the meat rot, the rotten meat will become pus, the pus is formed by steaming and brewing the heat and rotten flesh between the skin and the flesh, which is generated by qi and blood. *Waike Zhengzhi Quansheng Ji* said: “The poison must be made of pus, the pus must come from the blood,” Xue Lizhai said: “Perhaps the generation and healing of sores are the result of blood gas action,” pointed out that wound occurrence/healing has a great relationship with the body function, and is directly determined by the tissue regeneration ability, and the treatment also emphasizes the “promoting pus drainage and granulation.” It was first seen in the *Waike Qixuan•Sore and ulcer•Yi Tie Gaoyao Lun* (published in 1604) by Shen Douyuan (the surgical surgeon of the Ming Dynasty), there are written records of “promoting pus drainage and granulation” to explain it.

12.1.4 The Traditional Medicine on the Cognition of Wound Healing

Traditional medicine on the healing of body surface ulcers is basically based on the general shape of the wound and has a unique cognition, such as “eliminating necrotic tissues and promoting granulation,” “promoting pus drainage and granulation,” “granulation tissue filled the tissue defect and epidermal cells grew normally,” etc., and according to the healing laws of these wounds, the internal and external treatments such as “eliminating pus and removing necrosis, promoting pus drainage and granulation, nourishing blood and promoting granulation, dispelling stasis and eliminating scar.” The method runs through the inflammatory reaction period, the granulation growth period, and the scar formation period.

12.1.4.1 The Understanding of “Essence of Pus” in Traditional Medicine

In the inflammatory reaction phase, for “pus,” traditional medicine believes that it cannot be judged as a factor to prevent wound healing, and it is necessary to dialectically consider its effect on wound healing. Traditional Chinese medicine pays special attention to the method of “discriminating pus.” It is not only to distinguish the presence or absence of pus, but also to observe the shape, color, quality, and odor of pus, so as to judge the prognosis and formulate treatment measures. *Huangdi Neijing* observes the “red, swelling, hot” performance of wounds, and puts forward the idea that “too much heat and rotten flesh produce pus.” The pus at this stage shows different forms depending on the type of bacteria infected. For example, for *Staphylococcus aureus*, the pus is yellow, sticky, and dirty. If it is infected with fecal bacteria, it is thin and stinking. If it is infected with streptococcus, local redness and exudation are more, and specific manifestations may be caused by multiple or special bacterial infections. Most of the pus is produced by the liquefaction of necrotic tissue, which contains more inflammatory cells and a large amount of necrotic tissue. The pus culture can have the growth of pathogenic bacteria [4].

Traditional medicine also regards “pus” as a product of qi and blood metaplasia. “Pus” is given different connotations at different stages of wound healing. In the relatively clean granulation growth period, “pus” is the exudate from the wound. After the necrotic tissue is removed, use “promoting pus method drainage,” the pus turns yellowish and clear, like plasma. The pus (exudate) at this time is a product of wound metabolism, containing the wound healing indispensable white blood cells, proteins, amino acids, and various growth factors, providing a good environment for wound healing.

12.1.4.2 “Promoting Pus Drainage and Granulation” and “Wet Healing Theory”

“Promoting pus drainage and granulation” is a traditional Chinese medicine external treatment method based on the sum-

mary of the causes, pathogenesis, and evolution of sores. It means that in the process of wound healing, the application of external Chinese herbal ointment (powder) through the skin and the absorption of drugs in the face promote local qi and blood patency, enhance its defensive ability, so that the pus exudation of the wound surface increases, the drug is excreted, the sinister poison is leaked out, and the purpose of wound growth is achieved, and then the “therapy of encircling lesion with drugs” and “external medicinal liquid application” are derived, which are all made after the drug acts on the body. The active ingredient is absorbed locally, and has the therapeutic effects of clearing heat for detumescence, removing congestion and relieving pain, warming channel and dissipating phlegm, that is, intercepting toxicity, restraining toxicity, and eliminating toxicity. This “pus” should be thick and should not be thin, the color should be clear, not dirty, the smell should be light, not skunk. On the basis of the other treatment methods, various medical doctors have derived such external prescriptions as “Yuhong Ointment,” “Shengji Yuhong Cream,” “Huanglian Jiedu Ointment,” and “Shengji San,” which are numerous.

In 1962, British zoologist Winter found that the wet environment significantly promoted wound healing, shortened wound healing time, and laid the foundation for modern wet wound healing theory. It was not until the 1870s that the first hermetic dressing was successfully developed, which opened the formal clinical application of the theory of wet healing [5]. The focus of “promoting pus drainage and granulation” is “promoting pus drainage,” which includes two contents: first, eliminating pus and necrotic tissues, and eliminating toxicity, increase the exudation of local pus, and accelerate the shedding and decomposition of necrotic tissue of the wound; second, the pus can be turned into qi and blood and body fluid, which helps the skin to grow. In modern medicine, the stage of inflammation is also inevitable and independent of the stage of wound healing. The occurrence and healing of wound is inseparable from the participation of inflammatory reaction. Whether healing is closely related to the occurrence and intensity of inflammatory reaction, and the description and understanding between the two are consistent. In essence, the theory of “wet healing” and “promoting pus drainage and granulation” emphasizes that the growth of wounds requires a proper moist environment. It is believed that by adjusting the healing environment of the wound surface, it can promote the repair and regeneration of wound tissue and promote healing [6].

The traditional Chinese medicine “promoting pus drainage and granulation” external treatment method, because of its combination and various components, can be used for the factors of wound healing, with multi-target, multi-link, multi-level comprehensive regulation, and synergistic effect, with the advantages of simple, convenient, cheap, and effective [7]. Through basic animal experiments on traditional Chinese medicine Jingwanhong ointment, we found that Jingwanhong ointment and compound sulfadiazine zinc gel have certain effects on wound healing in the early stage of wound healing

(0–7 days). The difference is not significant. The wound healing time of Jingwanhong ointment group was shorter than that of compound sulfadiazine zinc gel group. Histopathological observation also found that Jingwanhong ointment group can reduce inflammation and wound epithelialization earlier than compound sulfadiazine zinc gel, and the epithelial cells are well differentiated, the new collagen is arranged neatly, and the tissue structure of the wound surface is obviously normalized, which shows better healing quality. Jingwanhong Ointment has a large amount of pharmaceutical ingredients, which can promote blood circulation, increase the blood supply and oxygenation of chronic wounds, enhance the phagocytic ability of white blood cells, reduce local capillary permeability, reduce edema, and achieve antibacterial, anti-inflammatory effects, analgesic effect, improve the micro-circumstance of local injury are the reasons for its better curative effect. The multicenter large-sample clinical trial designed according to the RCT principle confirmed that it promotes the healing of chronic refractory wounds on the surface of the body, and has great advantages in terms of healing speed and healing quality.

12.2 Wound (Sore) Treated by Chinese Medicine Treatment

Commonly used external treatment methods include eliminating necrotic tissues debridement, nibbling debridement, Xi’s technique of eliminating necrotic and clearing tendon, Chinese medicine fumigation and washing therapy or external medicinal liquid application, therapy of encircling lesion with drugs, etc., as follows [8].

12.2.1 Eliminating Necrotic Tissues Debridement

Commonly used corrosive Chinese medicines include hydrargyrum oxydatum crudum and hydrargyrum chloratum compositum. Hydrargyrum oxydatum crudum is an orange-red matt powder, or a crystalline powder with orange-red luster. It is a mercury preparation, which is a remedy for eliminating necrotic tissues. Hydrargyrum chloratum compositum is a white fine crystal or crystalline powder, which is heavy and more corrosive. It can be administered in the form of medicated thread, medicine twist, etc., and it needs to be combined with ointment for the specific application. It is especially suitable for sinus treatment with more necrotic tissue and small external cavity and deep internal.

12.2.2 Nibbling Debridement

It is suitable for unclear boundary between wound necrotic tissue, rotten flesh and healthy tissue is not clear, necrotic

tissue is softer but difficult to fall off, that is, there are more ecological tissues, or the patient's vital signs are unstable, the systemic condition is poor, and the person who cannot afford invasive decisive debridement. The therapy can be used in combination with eliminating necrotic tissues debridement. The crust and necrotic carrion tissue is softened as soon as possible by eliminating necrotic tissues debridement. The junction of necrosis-health tissue is as clear as possible, thus selecting local rotten flesh to soften and the necrotic tissue which not closely adhered to the basal tissue, trimmed from the obvious boundary, to avoid bleeding as much as possible, from shallow to deep, small amount, many times and gradually.

12.2.3 Xi's Technique of Eliminating Necrotic and Clearing Tendon

It is suitable for diabetic foot non-ischemic tendon degeneration and necrosis. The clinical manifestations of the Xi's diabetic gangrene of foot tendon are red, swollen, and bulging in the back of the foot, the sole of the foot and the toe. Pressing it can cause fluctuation or breakage, the rotten tendon is exposed, the exudate is dirty and foul, and the drainage is not smooth. The rule of treatment is completely removed by walking along the direction of the necrotic tendon, thereby achieving the purpose of eliminating the lesion.

12.2.4 Chinese Medicine Fumigation and Washing Therapy

Traditional Chinese medicine fumigation and washing therapy is guided by the basic theory of traditional Chinese medicine. After decoction of traditional Chinese medicine, steam fumigation is first used, and then liquid medicine is used to rinse, soak the body or locally affected area. It has the effects of clearing heat and removing toxicity, cooling blood and detumescence, activating blood and expelling pus, and astringing sores and promoting granulation. It is used for the initial stage of acute suppurative infection and local redness, swelling, heat and pain, inflammation and infiltration are more obvious. The heat-toxin congestion and excessiveness can be used for fumigation and washing with honeysuckle bud and flower, dandelion, wild chrysanthemum flower, purslane herb, Tokyo violet herb, natural indigo, *Cyrtomium fortunei*, dyers woad leaf, glabrous greenbrier rhizome, heartleaf houttuynia herb, rhubarb root and rhizome, and other drugs with clearing heat and removing toxicity effects, to control local inflammation. When heat toxicity is more severe with blood stasis syndrome, it can also compatible with unprocessed rehmannia root, peony root, tree peony root bark and other cooling blood and activating blood circu-

lation drugs, strengthen the efficacy, promote local inflammatory exudate early absorption and detumescence. If the ulcer has already formed, the pus cannot be broken or the vital qi deficiency cannot promoting toxic discharge, you can compatible with milkvetch root, Chinese angelica, Sichuan lovage rhizome, pangolin scales, Chinese honeylocust spine and other drugs for promoting pus drainage and toxic discharge, to achieve the purpose of promoting the early liquefaction of the affected area into pus, discharge of pus and toxic, swelling and pain subsided. For acute suppurative infections, such as pus, scald infection, or chronic ulcer, it can be used for clearing heat and removing toxicity drugs such as lightyellow sophora root, amur cork-tree, honeysuckle bud and flower, baical skullcap root, and unprocessed liquorice root, and it is also compatible with drugs for promoting blood circulation and dispelling stasis, promoting granulation and wound healing such as frankincense, myrrh, Chinese angelica, and milkvetch root. Decoct the decoction with these drugs and soak the affected part with heat. It can not only sterilize and eliminate inflammation, but also cleanse the wound to reduce infection. At the same time, it can make the affected part congestive, accelerate blood flow, improve blood circulation and tissue nutrition, and help the wound to heal.

12.2.5 External Medicinal Liquid Application

The trick is to wet the affected area with gauze or cotton wool containing the liquid, and to soak the affected area in the liquid. External medicinal liquid application is a method for achieving the therapeutic purpose by wet compressing, rinsing, soaking the physical effects on the affected part, and the pharmacodynamic effects of different drugs on the affected part, and is similar to the fumigation and washing therapy. Commonly used 6–8 layers of gauze soaked Chinese medicine liquid, to the degree of no drip, apply to wound surface. Remove every few minutes, repeat the soaking of the liquid, continue to apply, or drip the liquid frequently on the gauze to maintain certain humidity on the wound. It is used for the treatment of wet compresses with large amount of pus and red swelling wounds around the wound. The commonly used prescriptions are mainly tree yellow liquor, honeysuckle bud and flower, and lightyellow sophora root.

12.2.6 Therapy of Encircling Lesion with Drugs

This therapy is called "Tie Fa," "Tie Xie," and "encircling paste," that is, according to the condition of the disease, the medicine is selected and ground into a fine powder, and take vinegar, wine, medicinal juice, oil, etc., to apply around the affected area, to bundle the sore and detumescence. The red-

ness and swelling area around the wound surface is often externally applied with encircling paste, the application range should be more than 1 cm in the whole redness, swelling, and heat area. The thickness of the medicine should be 1–2 mm, not too thick, so as not to affect the skin permeability around the wound. The commonly used encircling paste is as follows. (a) Jinhuang powder: rhubarb root and rhizome, amur cork-tree, turmeric, dahurian angelica root are 25 g each, jackintheulpit tuber, dried tangerine peel, atracylodes rhizome, officinal magnolia bark, liquorice root are 10 g each, radix trichosanthin is 50 g. Grind the above medicines together into a fine powder and store in bottles for later use. The prescription can be applied to acute stage of carbuncle on the back, various sores, phlegm-damp and shank erysipelas, acute mastitis and erysipelas, or to patients with yang-heat excess syndrome due to persistent symptoms. (b) Yulu powder: cotton rose hibiscus leaves are not limited, grinding into fine powder and apply at any time. It can also be added to rice bean, rhubarb root and rhizome, baical skullcap root, amur cork-tree, hirsute shiny bugleweed herb, etc. It is used for carbuncle and furunculosis, acute mastitis, intestinal abscess, etc. It is especially suitable for those who have swollen red sputum and no obvious swelling with pain. (c) Chonghe powder: fried Bark of Chinese Redbud is 150 g, doubleteeth pubescent angelica root is 90 g, peony root is 60 g, dahurian angelica root is 30 g, grassleaf sweetflag rhizome is 45 g. Grind the above medicines together into fine powder and store in bottles for later use. It is used for the abscess on the back, disharmony between yin-yang, the swelling is not obvious, reddish and scorching, the pain is not very serious, and it can also treat the bone abscess and pernicious influence. (d) Hui Yang Yulong powder: kusnezoff monkshood root, roasted zingiber are 90 g each, peony root, dahurian angelica root, jackintheulpit tuber are 30 g each; cassia bark is 15 g. Grind the above medicines together into fine powder and store in bottles for later use. It is used for the abscess, cold syndrome without swelling and pain and fever.

12.3 The Role of Traditional Chinese Medicine in the Healing Process of Wounds

12.3.1 Wound Infection

In recent years, antibacterial drug abuse and bacterial resistance have become more prominent in China. Traditional Chinese medicine has a special anti-bacterial infection mechanism, which is not easy to produce drug resistance. It can effectively control infection during wound healing. Antibacterial Chinese medicine has attracted the attention of many scholars and has gradually become a research hotspot.

12.3.1.1 Mechanism of Chinese Medicine Treatment of Wound Infection

Traditional Chinese medicine treatment of infectious wounds is based on the chemical action of temperature, machinery, and drugs, and has a local therapeutic effect. For its pathogenesis, it uses clearing heat and removing toxicity, promoting granulation for hemostasis, promoting menstruation and activating collaterals, inducing diuresis and eliminating dampness. The antibacterial range and antibacterial level of Chinese herbal medicines vary. In addition, various bacteria and fungi have different sensitivities to traditional Chinese medicines, and should be targeted in the clinical application of antibacterial Chinese herbal medicines.

The common pathogens and antibacterial Chinese medicines on wounds are as follows:

- A. *Staphylococcus*: honeysuckle bud and flower, medicine terminalia fruit, rhubarb root and rhizome, amur cork-tree, baical skullcap root, golden thread, siberian cocklebur grass, heartleaf houttuynia herb, snakegourd root, weeping forsythia capsule, climbing groundsel herb, wild chrysanthemum flower, purslane herb, wintergreen, garden burnet root, Taiwan beautyberry leaf, and so on.
- B. *Escherichia coli*: medicine terminalia fruit, baical skullcap root, Tokyo violet herb, fried Cape jasmine fruit, common selfheal fruit-spike, purslane herb, heartleaf houttuynia herb, dandelion, etc.
- C. *Candida albicans*: golden thread, peony root, Paris polyphylla, baical skullcap root, rhubarb root and rhizome, Chinese gall, garlic, etc.
- D. *Neisseria gonorrhoeae*: golden thread, Chinese gall, medicine terminalia fruit, amur cork-tree, baical skullcap root, giant knotweed rhizome, honeysuckle bud and flower, weeping forsythia capsule, etc.
- E. *Streptococcus*: honeysuckle bud and flower, baical skullcap root, amur cork-tree, medicine terminalia fruit, rhubarb root and rhizome, heartleaf houttuynia herb, climbing groundsel herb, Taiwan beautyberry leaf, giant knotweed rhizome, weeping forsythia capsule, wild chrysanthemum flower, Japanese climbing fern spore, stick tight, Ussurian grape, and so on.
- F. *Pneumococcus*: baical skullcap root, golden thread, platycodon root, Japanese ardisia stem and leaf, giant knotweed rhizome, officinal magnolia bark, and Chinese arborvitae twig and leaf.
- G. *Meningococcus*: honeysuckle bud and flower, weeping forsythia capsule, baical skullcap root, wild chrysanthemum flower, isatis root, garlic, etc.
- H. *Corynebacterium diphtheriae*: honeysuckle bud and flower, weeping forsythia capsule, baical skullcap root, golden thread, dandelion, Tokyo violet herb, blackberry lily rhizome, native achyranthes root, unprocessed rehmannia root, figwort root, etc.

- I. *Mycobacterium tuberculosis*: baical skullcap root, golden thread, heartleaf houttuynia herb, common andrographis herb, stemona root, garlic, ginkgo seed, realgar, danshen root, Chinese arborvitae twig and leaf, and Japanese ardisia.
- J. Enterobacter: argy wormwood leaf, giant knotweed rhizome, garlic, purslane herb, heartleaf houttuynia herb, Chinese pulsatilla root, creeping euphorbia, baical skullcap root, amur cork-tree and so on.
- K. Skin filamentous fungi: stemona root, radish seed, Sichuan chinaberry bark, cortex pseudolaricis, areca seed, rangooncreeper fruit, golden thread, amur cork-tree, rhubarb root and rhizome, giant knotweed rhizome, argy wormwood leaf, cassia seed, cultivated land, solomonseal rhizome, etc.
- L. *Salmonella*: weeping forsythia capsule, lightyellow sophora root, heartleaf houttuynia herb, Chinese pulsatilla root, etc.

External washing of traditional Chinese medicine decoction can play the role of clearing heat and removing toxicity, promoting urination and eliminating dampness, removing stasis, and relieving pain. It is suitable for infection wounds, pus odor, and more exudation. Plaster and powder used for external application on infected wounds have the effects of eliminating dampness and astringing sores, promoting granulation for hemostasis, and are suitable for the late stage of infected wounds.

12.3.1.2 Mechanism of Action of Single Traditional Chinese Medicine

The main active ingredients of Chinese herbal medicine are: alkaloids, flavonoid glycosides, anthraquinone glucosides, saponins, coumarin glycosides, volatile oils, polysaccharides, and terpenoids. The antibacterial mechanism of traditional Chinese medicine mainly interferes with the formation of bacterial cell wall, damages the cytoplasmic membrane, affects cellular protein synthesis, affects nucleic acid synthesis, and interferes with genetic code. The active ingredients of antibacterial Chinese herbal medicine can directly or indirectly kill bacteria, fungi, and viruses, inhibit the reproduction of bacteria and fungi and the replication of viruses, participate in the biochemical processes of bacteria and molds, and change the functions of enzymes and cell membranes; inducing interferon and enhancing interferon induction; enhance the phagocytosis of leukocytes and reticuloendothelial systems, enhance lymphocyte transformation rate; inhibit allergic reactions; delay the cytopathic effects caused by the virus. Although some have weak antibacterial activity in vitro, they have good curative effects. For example, mudan cortex, common anemarrhena rhizome, and golden thread can inhibit the formation of *Staphylococcus aureus* enzymes at a low concentration, thereby exerting an

antibacterial effect. Hyun et al. studied the antibacterial effect of the methanol extract of golden thread on *Salmonella*. They used 26 species of *Salmonella*-infected chicks as animal models, and the mortality rate of chicks was greatly reduced [9]. Ban et al. used Chinese medicines such as polydatin, resveratrol, and anthracene glucoside B extracted from the root tip of *Polygonum* to exert anti-*Streptococcus mutans* by inhibiting the glycolysis pathway [10]. Mohammed et al. studied the antibacterial effect of *Podophyllum hexandrum* in Rhubarb genus in male Wistar rats. It was found that the ethanol and benzene extract of *Podophyllum hexandrum* (MIC 3.0 mg/mL) can cure *H. pylori* infection in 7 days at a relatively low concentration [11].

12.3.1.3 Mechanism of Traditional Chinese Medicine Compound Prescription in Treating Wound Infection

Compared with the concentration, the antibacterial spectrum and antimicrobial MIC of the prescription were better than that of the single Chinese medicine. The MIC of the different prescriptions changes with the change of composition, and the synergistic effect of the drug appears. Zhang Hanqing et al. replicated the guinea pig skin ulcer model caused by *Staphylococcus aureus* infection, confirming that the lianyang powder has a good improvement on local redness and secretion, and the lysozyme level in the pus is also significantly improved after treatment. Zhu Zhanbo et al. used the paper diffusion method to detect the inhibitory effect of Jun Du Ling on *Staphylococcus aureus*, *Salmonella*, and *Pasteurella multocida*. Yu Keming et al. observed 60 patients with diabetes complicated with skin suppurative infection, the treatment group was treated with the homemade traditional Chinese medicine Liushen Qufu Decoction and the affected area is rinsed with physiological saline, and the gauze soaked with the traditional Chinese medicine Liushen Qufu Decoction is applied to the sore surface. After the local infection of the control group, the Vaseline gauze was applied externally, the effective rate of the treatment group was 96.67%, and the effective rate of the control group was 70%. Li Pingping used Huayu Shengji Powder external application to treat 66 cases of chronic shank ulcer of varix of lower limb. All cases were cured, the ulcer surface was completely healed. Zhou Zhaoying used 30 cases of Touhai Powder to treat 30 cases of lower limb erysipelas. 18 cases were markedly effective and 11 cases were effective. Zhao Dongrui used homemade Daqing Powder external dressing to treat 89 patients with chronic shank ulcer. The total effective rate was 96.63%.

12.3.1.4 Other Mechanisms for Traditional Chinese Medicine Treatment of Wound Infection

With the increasing problem of bacterial resistance, integrated Chinese and Western medicine therapy provides a

cheaper and more effective way to treat the wounds of resistant organism infections [12]. Maurer and others found that the combination of golden thread or rhubarb root and rhizome with ceftazidime can enhance the anti-infective effect on *Escherichia coli*. Que. Huafa and others applied the comprehensive treatment scheme of internal and external treatment of traditional Chinese medicine to treat chronic refractory wounds complicated with *Pseudomonas aeruginosa* and methicillin-resistant *Staphylococcus aureus*. The results showed that the negative rate of *Pseudomonas aeruginosa* was 92.21%; methicillin-resistant *Staphylococcus aureus* negative rate was 95.56% [13]. Traditional Chinese medicine has different degrees of synergistic effect on antibacterial drugs, which can improve the sensitivity of resistant organism to antibacterial drugs. Mi Wei et al. found that berberine sulfate can enhance the antibacterial activity of ceftazidime by inhibiting the β -lactamase activity of *Escherichia coli*. Bacteria are not easy to develop drug resistance to traditional Chinese medicines, especially traditional Chinese medicine compound preparations. Under the guidance of traditional Chinese medicine theory, treatment based on syndrome differentiation, and the formula is modified and applied, can successfully avoid the drug resistance of bacteria, sensitization, or reversal of resistant organism. It provides new ideas and methods for the treatment of infectious wounds with resistant organism as the main pathogenic factor.

12.3.2 Promote Granulation Tissue Growth

Traditional Chinese medicine has a curative effect on promoting the growth of wound granulation tissue and accelerating the healing of refractory wounds. It mainly promotes the growth of granulation of wounds by the following five ways [1].

12.3.2.1 Eliminating Necrotic Tissues and Promoting Granulation

Yao Chang et al. found that Shengdan preparation can improve the hydroxyproline content and fibroblast cell count of wound granulation tissue, can eliminate wound necrotic tissue, promote wound granulation growth, and facilitate wound healing. The mechanism of Honghengdan may be at the cytological and molecular biological level by regulating growth factors such as interleukin-2, interleukin-6, and tumor necrosis factor in granulation tissue, which can improve the content of TNF and IL-6 in wound granulation, and thereby mediates the inflammatory reaction of the wound, promotes the infiltration of inflammatory cells, enhances the bactericidal effect, and at the same time mediates the production of high concentration of IL-2R, promotes cell mitosis, and is beneficial to the proliferation of granulation to accelerate wound healing. Wei Zhendong

et al. found that traditional Chinese medicine qufu shengji powder can increase the number of fibroblasts on the 12th day after the skin surgery of experimental animals, and the function is active, the cell body is enlarged. On the 15th day after surgery, the rough endoplasmic reticulum of fibroblasts is developed, and the content of free ribosome is rich, interstitial contains more fine collagen fibers, and its ointment can also reduce the wound healing integral value of sore model rats, increase the content of lysozyme in complement C3, immunoglobulin IgA, IgM and purulent secretions, increase thymus index and spleen index, thereby enhancing wound immunity and promoting wound healing.

12.3.2.2 Dispelling Stasis and Promoting Granulation

Chen Jianchang and others discovered: External application of danshen root can not only accelerate the removal of necrotic tissue of the wound, reduce inflammation and edema, but also promote the growth of fibroblasts and epithelial cells and accelerate wound healing. Zhang Fengchun et al. found that: earthworm can promote the contraction of wounds in animal models, promote the proliferation of myofibroblasts in granulation tissue, and increase actin in cells, which is active in synthesis and promotes wound healing. Li Ping et al. observed the effect of Zhuxu powder, a traditional Chinese medicine for activating blood circulation and promoting granulation, on the healing of wounds with azithromycin injured rats. It was found that Zhuxiang powder can improve the blood circulation of wounds, exert the effect of promoting blood circulation for removing the obstruction in collaterals, promote local inflammatory reaction, and release cytokines, promote the proliferation of granulation tissue and collagen synthesis and have the effects of promoting granulation and consolidating skin. Fuhuang Shengji Yuchuang Ointment (hereinafter referred to as Fuhuang Ointment) is the empirical formula of Professor Tang Hanjun from Longhua Hospital of Shanghai University of Traditional Chinese Medicine. Its clinical application has been proven to have a significant effect on promoting the healing of chronic skin ulcers. Related experimental studies found that Fuhuang Ointment can significantly shorten the wound healing time of traumatic rats, and can significantly increase the content of fibronectin in serum and granulation tissue of traumatic rats, and affect the content of related amino acids in granulation tissue, it has effects in increasing hydroxyproline and deoxyribonucleic acid content in newborn granulation tissue, and can increase the levels of epidermal growth factor receptor and fibronectin in local granulation tissue of experimental wounds.

12.3.2.3 Invigorating and Promoting Granulation

Qiu Ke et al. found that Astragalus injection can promote wound repair after hemorrhoid and fistula operation, acceler-

ate the regeneration of capillaries, supplement the nutrients and trace elements necessary for wound repair, promote the proliferation of fibroblasts, and activate macrophages. Wang Zhenyi et al. found that: in the process of wound healing, the traditional Chinese medicine for invigorating and promoting granulation can inhibit the secretion of MMP-1, thereby increasing the secretion of type I and III collagen, and promoting wound healing. Cao Yongqing et al. found that Wenshen Jianpi Recipe can promote the repair of chronic refractory wounds in rats, and promote the expression of interstitial fibronectin by up-regulating the expression of epidermal growth factor and TGF- β 1 cytokine protein. Zhou Yanjie et al. found that electroacupuncture at Zusanli can improve the inflammatory response caused by trauma, increase the number of mast cells and its released mediator, and increase the content of hydroxyproline, so that the gray scale of collagen fibers rises, which is beneficial to the repair of fibrous tissue of skin wounds.

12.3.2.4 Benefiting qi and Removing Stasis and Promoting Granulation

Zhang Zhen et al. found that traditional Chinese medicine for benefiting qi and removing stasis can promote wound healing by increasing the level of wound TGF- β 1. Que. Huafa et al. found that traditional Chinese medicine for benefiting qi and removing stasis can down-regulate the level of hypoxia-inducible factor-1 α , down-regulate the expression of Smad3 and Smad4, up-regulate the expression of capillary endothelial growth factor to improve the state of ischemia and hypoxia, and can significantly promote diabetic skin ulcers. The wound healing of rats with the syndrome of blood stasis was due to qi deficiency.

12.3.2.5 Other Effects

Lu Jinli et al. found that aloe vera gel can promote the formation of granulation tissue in radiation dermatitis tissue and accelerate the healing of radiation dermatitis. Zheng Xueping found that topical Zhuhuang Frost significantly increased the hydroxyproline content in the granulation tissue of the anus after surgery, increased the synthesis of the matrix, and promoted wound healing. Combination of compound Zhuhuang Frost and basic fibroblast growth factor can promote the healing of contaminated wounds on the back of rabbits and increase the filling rate of granulation tissue and the rate of re-epithelialization. Li Linggen et al. found that chitosan traditional Chinese medicine compound membrane stimulates the body to secrete a large number of phagocytic cells and promote the release of VEGF and PCNA, promote the growth of granulation tissue, reduce the proliferation of fibrous tissue, and accelerate the healing of ulcers. Wang Chunming et al. found that the myogenic ointment can make the granulation tissue of the ulcer surface healthy, with abundant capillaries, more macrophages and higher positive expression

rate of VEGF and PCNA. Dong Liqiang et al. found that Shengji Yupi Ointment can increase the content of epidermal growth factor in granulation tissue of white rabbit wounds in early and middle stages, thus accelerating the healing of wounds. Yuyangling Ointment and Shikonin Oil can promote the expression of ulcerated basic fibroblast growth factor and promote the growth of granulation tissue, thus promoting the repair.

12.3.3 Traditional Chinese Medicine Inhibits Scar Formation

12.3.3.1 Overview of Scar Modern Medicine

Scar is a general term for the appearance and histopathological changes of normal skin tissue caused by various wounds. It is an inevitable product in the process of human wound repair [14]. Superficial scars generally involve the superficial epidermis or dermis, the surface of the skin is rough or pigmented, the part is flat and soft, and generally there is no dysfunction. Over time, the scar will gradually become inconspicuous. Hypertrophic scar damage affects the deep dermis, and the scar is significantly higher than the surrounding normal skin, local thickening, and hardening. Hypertrophic scars can sometimes be as thick as 2 cm or more, but they are not tightly adhered to deep tissues and can be promoted. They generally have obvious boundaries with normal skin around them. The contractility of hypertrophic scars is smaller than that of contracture scars. Atrophic scars are generally more damaging, involving the entire layer of skin and subcutaneous fat tissue. If the disease breaks down from time to time over a long period of time, there is the possibility of malignant transformation in the late stage, pathologically mostly squamous cell carcinoma. Atrophic scars have a large contractility and can pull adjacent tissues and organs, causing severe dysfunction. Keloids generally manifested as a lump that is higher than the normal surrounding skin and grows continuously beyond the original injury site. It is hard and has poor elasticity and local itching or pain, and the early surface is pink or purple, and the early stage is mostly pale, sometimes with hyperpigmentation, has a clearer boundary with the surrounding normal skin. Inflammation necrosis may occur in the lesion due to residual hair follicle glands, or liquefaction necrosis may occur due to central ischemia. Keloids generally do not contract, except for a small number of joints that cause mild activity limitation, generally do not cause dysfunction. Keloids may be related to the following factors: cytokines released by post-traumatic inflammatory cells, immune cells, platelets, etc.; abnormal expression of related proteases, mRNAs, genes in extracellular matrix; increased free radicals in scars; microcirculation within the scar.

12.3.3.2 Understanding of Scar Formation in Traditional Medicine

There are many traditional Chinese medicines for keloids, for example, called “paravertebral abscess,” “meat turtles,” “saw scar,” and there are some other names such as “meat centipede” and “crab foot swelling.” Traditional Chinese medicine believes that this disease is a pathological reaction in the process of wound healing, mainly because it originally has the syndrome of internal retention of damp-toxin or dampness-heat in the lungs and stomach, also has knife wounds, fire poison, and poisonous insect wounds, which hurts the skin, resulting in stagnation of qi and blood stasis, scars hyperplasia, and keloids over time, or due to trauma and attack of exogenous evils, disharmony between nutrient qi and defensive qi, qi stagnation, and blood coagulation. Shi Hongtai put forward a new theory of “the excess syndrome is its essence and the deficiency syndrome is its standard” on the pathogenesis of scars.

12.3.3.3 Oral Decoction Treatment

Chinese medicine believes that this disease is mostly caused by qi and blood stasis and dysfunction. The internal treatment is mostly treated with promoting qi for activating blood circulation and softening and resolving hard mass. Clinically, Fuyuan Huoxue Decoction is commonly added and subtracted, regulating qi for activating blood circulation, softening and resolving hard mass, treating keloids with the syndrome of qi stagnation and blood stasis; Shengmai Powder adds flavor, benefiting qi for promoting the production of fluid, nourishing blood for moistening dryness, treating keloids with deficiency of qi and yin, blood dryness and muscular contracture. Wushuidou et al. used Wulingzhi Pills for oral treatment of 54 cases of keloids, the cure rate was 88.89%, and the difference was not significant compared with the hormone-blocked group. Liu Jianjun believes that the treatment of this disease should be activating blood circulation to dissipate blood stasis, clearing heat and removing toxicity, resolving masses and eliminating scar, and selecting Liangxue Siwu Decoction in *Jianzong Jinjian*. Xia Shiping believes that the scar is mainly caused by blood stasis, and it is treated with Shuizhi Huoxue Decoction. Ma Chuntai et al. used Quban Xiaoling Decoction, a total of 26 cases of keloid diagnosis were diagnosed and treated, the total effective rate was 96.1%.

12.3.3.4 External Treatment

Because keloids occur mostly in local areas, external treatment is most commonly used.

A. Ancient Prescriptions

Mieban Ointment (the white part of domestic chicken manure is 30 g, biond magnolia flower-bud is 1.2 g, giant typhonium rhizome and manchurian wildginger are 0.6 g

each), the above four traditional Chinese medicine are soaked in wine for one night, decocted with 1200 g of mutton fat over low fire for three times, the residue is removed, and the scar is washed with Gancao Decoction, and the medicine is smeared on it. Liumie Banhen Ointment (equal parts of silverfish, the white part of domestic chicken manure, eagle dung with white, Chinese peony, Japanese ampelopsis root, white bee, etc.), the above medicine are ground into powder, mixed with milk, and applied to scar three times a day. Miebanhen Prescription (limonite, pinellia tuber), the above medicine are ground into powder, mixed with hen egg yolk. First use new cloth to wipe the scar and make it red, then apply it with medicine twice a day. Do not blow the air, will recover within 10 days. People who have been ill for 10 years will also improve. Wipe the affected area with a clean new cloth to make it hyperemia, making the drug easy to penetrate and exert its effects.

B. Modern Times Prescriptions

Professor Zhao Bingnan’s Heibu Ointment [old black vinegar is five jin (2.5 kg), Chinese gall is one jin and twelve liang (1.1 kg), ten golden head centipede, honey is six liang (0.3 kg), plum blossom borneol is one qian (5 g)], clean the skin before dressing change, apply this medicine 2–3 cm thick, cover with black cloth, change dressing once every 2–3 days. Compound Ai Ye Jian (30 g of old pine bark, 15 g of argy wormwood leaf and Chinese clematis root, 10 g of safflower) add external rubbing Ding Ai Oil (argy wormwood leaf is 30 g, clove is 50 g, safflower is 20 g, borneol is 6 g), compound Ai Ye Jian for 30 min, once in the morning and once in the evening, then rub the Ding Ai Oil. Wubei Ointment (smoked plum is 50 g, centipede is 5, Chinese gall and lightyellow sophora root are 30 g each, unprocessed rehmannia root is 40 g, musk is 3 g), grinding centipede and musk into fine powder, the other drugs are soaked in water for 10 h and then decoct to obtain 500 mL of juice concentrating to form a paste, then add centipede and musk powder and mix well. When using, apply the Wubei Ointment evenly on the multi-layer disinfected mulberry paper, and cover the affected part with ointment after disinfection, once a day. Xiaojin mini-pills is grinded to a powder and then add 30 g Huapu Powder (20 g of danshen root, seaweed and clam shell, 15 g of kelp, immature orange fruit, Chinese gall, zedoray rhizome and Stephania tetrandra, 10 g of borax and common aucklandia root, 5 g of cinabar and centipede), mix with a proper amount of sesame oil and honey for external use.

C. Chinese Patent Medicine Injection for External Use

Danshen injection has an external application method and partial closed injection method, external application method is more suitable for children and skin lesions in the frontal, eyelids, breasts, etc.; local injection of ligust-

razine can inhibit the synthesis of collagen in keloid fibroblasts, so that soften scar.

D. Acupuncture Therapy

- (a) Heated needle treatment, point selection in the local lesions, rapid advancement of heated needle, deep into the bottom of the scar, quickly cupping after acupuncture, leaving the tank for 5–8 min, based on mucus or blood flowing out.
- (b) Acupuncture and moxibustion and encircling needling combined with external application of traditional Chinese medicine.

E. Massage Therapy

Generally, the wound is healed immediately after healing, and the curative effect is obvious, and the effect on the old scar is poor or ineffective. (a) Therapeutic massage, rubbing around the scar first, followed by pushing scars, grasping and lifting the scar again, and finally pushing and rubbing toward the heart, can reduce the symptoms caused by scars, improve their blood supply. (b) Ginger slice rubbing method, slicing ginger, gently rubbing scars, can prevent its granulation tissue from continuing to proliferate.

F. Combination of Internal and External Treatment of Traditional Chinese Medicine

The combination of internal and external treatment can give consideration to both symptoms and root causes, through the overall syndrome differentiation, the treatment method can be applied separately, which can enhance the curative effect. The formula is prepared from medicines that cooling and activating blood, softening and resolving hard mass such as danshen root, Chinese gall, lightyellow sophora root, kelp, seaweed, common selfheal fruit-spike, Chinese clematis root, sulfur, coral-bean bark, divaricate saposchnikovia root, cicada slough, common buried rubber, zedoray rhizome, dahurian angelica root, pangolin scales, safflower, areca seed by addition and subtraction, oral administration, and external application.

G. Chinese Herbal Extracts

Some of the active ingredients of traditional Chinese medicine have the effects of inhibiting the proliferation of fibroblasts, promoting apoptosis of fibroblasts, and reducing collagen synthesis. Most of them have been applied clinically, and have obvious effects on the treatment of pathological scars, and some are still in vitro. It also presents a good application prospect. (a) Asiaticoside is an extract of Chinese herbal medicine *Centella asiatica*, which is a triterpenoid saponin compound. The asiaticoside can significantly affect the ultrastructure of fibroblasts, inhibit collagen synthesis, and in a dose-effect relationship, reduce the activity of transamidase, reduce the amount of acid mucopolysaccharide and collagen, and the excessive proliferation of matrix and fiber components of connective tissue is inhibited. (b) Matrine

belongs to the tetracyclic quinolizidine and is an active ingredient of lightyellow sophora root. Matrine can inhibit the proliferation of scar fibroblasts, up-regulate bax expression, down-regulate p53 and bcl-2 expression, and promote apoptosis of scar fibroblasts by affecting cell cycle. (c) Danshensu and tanshinone are the main active ingredients of danshen root. The activating blood circulation to dissipate blood stasis drugs represented by danshen root can effectively inhibit collagen synthesis and deposition. Danshensu has the effect of inducing apoptosis of fibroblasts. The active constituents of danshen root can stimulate the up-regulation of c-Myc protein expression in fibroblasts, promote fibroblast apoptosis, and reduce collagen synthesis by inhibiting fibroblast autocrine TGF- β 1. Tanshinone II A can significantly inhibit the proliferation of scar fibroblasts and induce apoptosis. (d) Ligustrazine is an alkaloid monomer extracted from the rhizome of the umbelliferous plant Sichuan lovage rhizome. Ligustrazine can inhibit the proliferation of keloid fibroblasts, reduce the collagen synthesis of fibroblasts, and change the morphology of the cells. Ligustrazine can significantly inhibit the expression of type I and III procollagen mRNA in scar fibroblasts. (e) Capsaicin is the main biological active ingredient in hot pepper and is a fat-soluble natural plant base. Capsaicin can significantly inhibit scar hyperplasia, reduce the hardness of scar, and have analgesic and anti-pruritic effects. Capsaicin has an inhibitory effect on fibroblasts in vitro, and has a positive effect on clinical symptoms such as itching. (f) *Tripterygium wilfordii* is a celastraceae plants, and its extract contains various active ingredients, such as diterpene lactone, alkaloid, tribasic, etc., and has anti-inflammatory and immunosuppressive effects. *Tripterygium wilfordii* extract has a negative regulatory effect on the morphology and proliferation of fibroblasts. (g) Tetrandrine is an isoquinoline alkaloid extracted from the traditional Chinese medicine mealy fangji root. It is a calmodulin antagonist with broad pharmacological activity, which can significantly reduce the proliferation activity of fibroblast, and has the effects of preventing and treating scar hyperplasia.

12.3.4 Problems and Prospects

Traditional Chinese medicine therapy plays a good role in the treatment of keloids, but it also has the disadvantages of poor reproducibility, high recurrence rate, difficult to control health indicators, complex and difficult extraction of single-dose and compound Chinese medicines. This disease is still a difficult problem to be solved urgently in the clinical practice of traditional Chinese medicine. Moreover, there is no uniform standard for the diagnosis and syndrome differ-

entiation of keloids in traditional Chinese medicine, and there is no strict distinction between keloids and hypertrophic scars. The research on keloids is mostly a summary of clinical experience, and lacks a deep discussion on its pathogenesis and treatment mechanism from the perspective of traditional Chinese medicine theory. With the continuous revealing of the pathogenesis and key factors of keloids, traditional Chinese medicine treatment will play a greater role in the treatment of pathological scars in the future due to its positive curative effect, less adverse reactions and economical convenience, and comprehensive treatment based on actual conditions. The combination of surgery and medical treatment, making full use of the advantages of Chinese and western medicine, and more scientific treatment, will certainly improve clinical efficacy.

12.4 Traditional Chinese Medicine Wound Treatment

The three methods of “elimination, promoting, and supplementation” are based on three different stages of the initial stage of sore, pus formation, and ulceration. They are formulated under the guidance of the overall concept and the spirit of treatment based on syndrome differentiation. They are the main principles for the treatment of sores in traditional Chinese medicine. “Elimination” refers to the use of drugs that eliminate pathogen, so that the absorption of sores that have not yet become suppurated at the beginning is dissipated, which is the most ideal method for treating sores. “Promoting” means “expelling pathogens by strengthening vital qi and expelling pus.” In order to tonify qi and replenish blood, to support vital qi, so that vital qi can promote pus discharge, to lead poison out and enable pathogenic factor to have a way out. “promoting” is used in the pyogenic stage, which is to use the medicine for strengthening vital qi to eliminate pathogenic factor, to accelerate the limitation of abscess and the discharge of pus, so as to avoid the method of stagnation of pathogenic toxin, but because of the different outcomes of the struggle between vital qi and pathogen, it is divided into the direct promoting method and promoting method with tonification. “Supplementation” is a kind of therapy that uses drugs to tonify deficiency and strengthen body resistance, so as to make the qi and blood in the body sufficient, eliminate various virtual images, and restore the body’s vital qi. It is often used for deficiency syndrome, chronic ulcer after ulceration or not heal for a long time.

The wound has not healed for a long time, especially the chronic infection wound is the middle and late stage of the “outer ulcer” of traditional Chinese medicine. The condition is complicated and the course of disease is long. It is a clinically intractable disease. It is not treated internally or externally and cannot be cured. Its pathogenesis, because of

illness and lingering, repeated symptoms, although it has been treated for a long time, the pathogenic qi have declined, but the vital qi is also damaged, cannot exorcise the pathogenic qi out, forming the syndrome of deficiency of both vital qi and pathogenic qi, and syndrome of lingering pathogen due to deficient vital qi. This syndrome cannot support vital qi without tonifying qi and replenish blood cannot exorcise the pathogenic qi out without promoting toxin and pus drainage, it is the main syndrome of the promoting therapy. The local pathogenesis of wounds is syndrome of poor health condition, especially on nutrition and immunological deficiency, fitting for local external treatment. Therefore, “expelling pathogens by strengthening vital qi and expelling pus,” both inside and outside, it is necessary to take strengthening vital qi as the priority, to tonify qi and replenish blood and strengthening vital qi to eliminate pathogenic factor as the first, to restore the vital qi, to be able to promote toxin and pus drainage, and to promote the pathogenic factor out.

When the three methods are used, in addition to the cause and condition, it is also necessary to combine the pathogenesis. For example, in the early stage of sores, meridian obstruction, qi and blood stagnation, stagnation of heat is the main pathogenesis, so the syndrome is red swelling, heat and pain. In the elimination method, not only the method of clearing heat and removing toxicity should be used, but also the method of nutrient-blood-harmonizing, activating qi, dredging channels is used to eliminate heat-toxicity, unblock meridian obstruction, and regulate qi and blood stagnation to return to normal. Otherwise, “too much heat will make the flesh rot, the rotten flesh will become pus,” heat is the cause of further development of the disease, pus is a pathological product of too much heat and rotten flesh. Therefore, when applying direct promoting method in the pus formation stage, it is necessary to cooperate with the method of clearing heat and removing toxicity, and the curative effect can be remarkable. After the ulcer is ulcerated, the pus and blood are discharged, and the blood and qi are damaged. Therefore, the deficiency syndrome is more common (except for the light and shallow yang syndrome). Different complementary methods should be selected according to different situations of deficiency. It can be seen that the combination of pathogenesis and syndrome differentiation plays a certain role in improving clinical efficacy.

The three methods have their own stages, but they are related to each other. Because the development and changes of the disease are intricate, it is often necessary to use the three methods in combination and cannot be separated.

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