

Analysis of Chronic Skin Ulcer Model Based on Clinical Features of Traditional Chinese Medicine and Western Medicine

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Keywords: Ulcer, Clinical symptoms, Animal model.

Abstract. Objective: Analysis anastomosis of the commonly used animal models and clinical features of chronic skin ulcer disease, put forward to recommendations for model refinement. **Method:** Summarize the characteristics of existing chronic skin ulcer model and molding method, according to traditional Chinese medicine and Western medicine clinical diagnosis standard of the chronic skin ulcer, analysis anastomosis of animal models and clinical disease characteristics and propose system of evaluation indexes and model improvement method of chronic skin ulcer model. **Result:** Chronic skin ulcer model is more, to some extent reflects the clinical features of chronic skin ulcer of traditional Chinese medicine and Western Medicine. The existing model has the characteristics of TCM etiology model, but the lack of evaluation of chronic skin ulcer animal modulus method. **Conclusion:** To establish the quantitative evaluation method of chronic skin ulcer, put forward the train of thought to perfect existing model.

Introduction

After various pathogenic factors invade the human body, caused general suppurative infection disease called surface ulcers [1]. Early onset of sore showed local blood stagnation, in the middle stage showed heat and meat rot [2]. Carrion become purulent, Qi and blood to decide the prognosis of late. Because of its easy to break, difficult convergence, refractory, recurrent, long duration, which bring great psychological and economic pressure to the patient [3]. How to combine the clinical symptoms of chronic skin ulcer animal model to evaluate the existing and how to improve the existing animal models is the focus of future research.

The Clinical Manifestations and Diagnostic Criteria of Western Medicine Skin

Diagnostic Criteria

Index detection and diagnosis of chronic skin ulcer in Western medicine mainly are hemorheology blood viscosity increased, inflammatory response increased, examination of bacteria increased, wound repair lower, etc.

Clinical Manifestation

(1)The most common clinical symptoms: common acne, folliculitis, superficial skin abscess, cellulitis, erysipelas, thrombotic deep phlebitis, chronic leg ulcers.

(2)Biochemical indexes: Blood coagulation and microcirculation: blood viscosity, plasma viscosity, ESR, ESR, K, fibrinogen and other indexes increased, inflammatory response: IL-1, IL-6, IL-8, TNF- α and other inflammatory factors, neutrophil and white blood cell count increased, The repair process: epidermal growth factor (EGF),

transforming growth factor (TGF) to promote the level of vascular endothelial growth factor reduced[7].

The Clinical Manifestations and Diagnostic Standard of Chinese Medicine Skin

Diagnostic Criteria

Sore is a common clinical disease surgery. Surgical diseases can be divided into the sore, Xingza syndrome in two categories, including all of the tumor and ulcer, such as carbuncle, furuncle, flow of phlegm, streamer, scrofula. Clinical diagnostic criteria: (1) In accordance with the 2012 edition of the diagnostic criteria of traditional Chinese medicine. (2) Sore or tumor local color abnormal.(3) The area of sores or sores is greater than 2cm² (4) Age 21~85 years old.Exclusion criteria:Narrow and difficult color differentiation lesions as fistula, sinus, osteomyelitis and other small and inconvenient color lesions.Congenital skin color abnormalities (albinism, pigmented nevus, hemangioma, etc).

Clinical Manifestation

Chinese medicine believes that the main pathogenesis of chronic skin ulcer is a deficiency, blood stasis, Wei is not smooth, skin dystrophy, compound pathogenic toxin. The pathogenesis of the disease is characterized by deficiency and excess, the deficiency of the essence, the deficiency of Qi, the deficiency of Qi and the heat, and the accumulation of damp heat and toxin.TCM syndrome of chronic skin ulcer were divided into two groups in Yin and Yang Syndrome, mainly through illness, disease, local and systemic symptom syndrome[5].Yang syndrome are mainly manifested as bright red skin, high temperature; The swelling is high, the hardness is moderate, the range of the tumors is small, and the pain is obvious; The incidence of disease is rapid, easy to heal, shorter course of disease; Frequently occurring in muscles. Symptoms of Yin are mainly manifested as Pale skin, not hot or slightly cold; Flat or sunken; The onset is slow and difficult to cure; Stretch your bones and muscles. The syndrome differentiation of TCM is divided into two categories, yin and Yang, which are divided into 3 syndromes (see table 1):

The Animal Model of Skin

Model Animal Selection

We used to make chronic skin ulcer animal are large (small), guinea pigs. However, the ability of self healing of mice is strong, so it is difficult for the general skin damage model to meet the requirements of the medication cycle, and there is a certain gap between the wound performance of the model and the clinical indications of medication. This requires the model should be multiple factors superimposed, there should be norms, models should also have time constraints (see table 2).

Observation Index

General conditions: model animals weight, activity, overall shape, coat gloss, limbs and tail temperature, diet and defecation. The condition of the sore surface: the morphology of the sores, the healing condition (the area of the wound surface, the healing rate), the secretion and the mortality rate.

Table1. TCM Typing of chronic skin ulcer

Dialectical	Type	The main symptom	Secondary symptoms	Tongue and pulse
Yang Syndrome	Syndrome of damp heat toxin accumulation [6]	More common in the acute inflammation of skin ulcers; Local itching and pain, sore face more common; The skin around the sore is swollen and burning.	May be associated with fever; dry mouth bitter; Dry mouth and bitter taste; Constipation.	Red tongue, yellow greasy coating and pulse number.
Yin Syndrome	Dampness heat stasis syndrome	More common in the inflammatory stage of skin ulcers; Local ulceration, wound pus dripping off carrion.	With dry mouth, mouth pain; Yellow urine, constipation	Red tongue, thin coating, yellow and greasy, and the pulse counts
	Syndrome of deficiency of vital energy and blood stasis[4]	It is found in granulation tissue stage and tissue reconstruction stage of skin ulcer; Wound carrion has done, not fresh granulation color bleak.	May be accompanied by mental weariness	Pale tongue with ecchymosis.

Table 2-1 common chronic skin ulcer animal model method and consistent with the characteristics in Chinese and Western Medicine

Molding method	Modeling object	Function mechanism and characteristics	The characteristics of clinical symptoms
Staphylococcus aureus infection modeling model[8]	Rats / guinea pigs	Mechanism: Inhibiting neutrophils' activity affects the body's removal of pathogens [9]. Advantages: obvious symptoms of Yang, low mortality. Disadvantages: the bacterial infection in the wound has double effects on the tissue and can be controlled.	Consistent with traditional Chinese medicine Yang (1)(2)(3)(4), anastomosis $\geq 80\%$; high degree of fit, the application is more often.
Simple skin lesions of Yin syndrome sore model	mice	Mechanism: The skin is cut to simulate the external performance of the sores. Advantage: make method simple. Disadvantages: the healing speed is fast, and the characteristics of clinical chronic skin ulcer are large.	Consistent with traditional Chinese medicine Yin (1)(2), anastomosis $\geq 40\%$; low degree of fit, and more use in drug screening.
Skin lesions + glucocorticoid modeling	mice	Mechanism: The sudden deactivated hormone, which exposes the hypothalamus (pituitary gland), the inhibitory function of the target gland axis, the animal's stress on the environment and the ability to adapt to the environment significantly decrease. Advantages: effective maintenance of chronic skin ulcer status; It can be used in the study of chronic ulcer disease. Disadvantages: hormone dosage is the most important.	Consistent with traditional Chinese medicine Yang (1)(2)(3)(4), anastomosis $\geq 80\%$; high degree of fit, the application is more often.

Table 2-2 common chronic skin ulcer animal model method and consistent with the characteristics in Chinese and Western Medicine

Molding method	Modeling object	Function mechanism and characteristics	The characteristics of clinical symptoms
Skin defect + bacteria modeling[10]	Rats / guinea pigs	Mechanism: Gram-negative bacilli to Escherichia coli-based , the model has the characteristics of ulcers. Advantages: can be used for chronic ulcer disease study. Disadvantages: high mortality rate.	Consistent with traditional Chinese medicine Yang (1)(2)(3), anastomosis $\geq 60\%$; high degree of fit, the application is often.
Skin lesions + foreign body modeling[11]	mice	Mechanism: Foreign body reaction of plants in the late maintenance of Yin Syndrome ulcer healing; skin damage after implantation of foreign body, affect wound blood circulation, mechanical stimulation in local inflammatory reaction during wound healing. Disadvantages: the wound surface of mice implanted with foreign body appeared fresh granulation tissue immediately after the plastic ring was removed, and the healing speed of the wound was obviously accelerated.	Consistent with traditional Chinese medicine Yang (1)(2)(3) , anastomosis $\geq 60\%$; high degree of fit, the application is more often.
Skin defect + diabetes mellitus model	Rats	Mechanism: Diabetic microvascular disease caused by decreased perfusion, decreased tissue resistance; persistent persistent pathological hyperglycemia in vivo can lead to the accumulation of advanced glycation end products in the body, changes in skin tissue cells, extracellular matrix and growth factors important environmental media , The formation of refractory skin ulcers. Advantages: can affect the blood lipids and islet secretion, closer to the clinical characteristics of diabetes; can be used for clinical diabetic refractory ulcer and Yiqihuayu drug research [19].	Consistent with traditional Chinese medicine Yang (1)(2)(3)(4), anastomosis $\geq 80\%$; high degree of fit, the application is more often.
Plastic ring granulomatous saphenous disease model (subcutaneous foreign body implantation method)	Rats	Mechanism: Skin damage after implantation of foreign body, affecting the blood circulation of the wound, mechanical stimulation can also be formed in the local inflammatory response, affecting the wound healing. Note: In the operation should pay attention to foreign body fixed mode. Modeling methods are traumatic, should pay attention to experimental conditions, to avoid infection.	Consistent with traditional Chinese medicine Yang (1)(2)(3), anastomosis $\geq 60\%$; high degree of fit, the application is often.
Superposition method: skin defect + hormone intervention + bacterial infection	Rats	Mechanism: hormone injection can significantly inhibit the rat immunosuppression, the rat healing time is prolonged. Advantages: superimposed bacterial infection wounds heavier, can effectively extend the wound healing time; forming a shorter time, and clinical chronic skin ulcers Yin Yin Yin wounds similar shape.	Consistent with traditional Chinese medicine Yang (1)(2)(3)(4), anastomosis $\geq 80\%$; high degree of fit, the application is more often.

Prospect

The biggest difference with other existing animal models, existing chronic skin ulcer models are characteristic of TCM animal model.

Rats are commonly used as model animals, but the wound healing ability of rats is stronger, according to the characteristics of chronic ulcer of long duration, when making chronic Pyocutaneous model use the superposition method. At present, whether bacterial infection, incision, embedding, skin Pyocutaneous model of glucocorticoid manufacturing method only simulate the clinical skin ulcer symptoms, pathological mechanism for in vivo blood stasis ulcer is not reflected. In future, On the basis of the successful model, the model factors of the corresponding pattern should be superimposed. In the determination of indicators, clinical manifestations and diagnosis standard of TCM were not quantified and content. Western medicine for chronic skin ulcer disease classification contains more clinical performance, so that the lack of unified diagnostic criteria. Chronic Pyocutaneous model lack of quantitative evaluation method, this paper established a method related to quantitative evaluation, but according to the characteristics of the model, such as the perfect perfect index system.

Reference

- [1] Jinhuan Yue , Qinhong Zhang, Zhongren Sun. Traditional Chinese medicine clinical research and analysis of the status quo and [J]. Of traditional Chinese medicine journal, 2013,04:55-56.
- [2] Yang Xu, Yunping Li ,Gengyang Zhang. therapy combined with surgery sore medicine experience [J]. Chinese traditional Chinese medicine and Western medicine, 2015,12 (06): 597-599
- [3] Yunjie Zhang . Survey of chronic skin ulcer treated with Chinese medicine [J]. Chinese Journal of traditional Chinese medicine, 2014, V.33, No.32612:1040-1042., Shandong
- [4] Huang yingzi. TCM Comprehensive Therapy in the treatment of chronic skin ulcer in 65 cases of [J]. enterprise medical journal, 2013,2 (2): 146.
- [5] An Zhou, Yongkang Zhu. Chinese kibe of [J]. Shaanxi medicine, 2014,12:1659-1661.
- [6] MeiHong Qian, Dejian Chen. Application of modified Shengji cream in treating 43 cases of traumatic chronic skin ulcer of lower limb [J]. Yunnan Journal of traditional Chinese medicine, 2013,34 (9):79.
- [7] Yingzi Huang. TCM Comprehensive Therapy in the treatment of chronic skin ulcer in 65 cases of [J]. enterprise medical journal, 2013,2 (2): 146.
- [8] Mingsan Miao ,Tisheng Cui , Peng Xi , Yuanpeng Chen. Different varieties of bitter almond oil paste topical effect on sore rats [J]. Chinese Journal of traditional Chinese medicine, 2016,03:821-824.
- [9] Laarman, AJ, et, Al, EMBO, J, 2012,31 (17): 3607-3619.
- [10] Miao Ming three, Cui Tisheng, Xi Peng, Chen Yuanpeng. Different varieties of bitter almond oil paste topical effect on sore rats [J]. Chinese Journal of traditional Chinese medicine, 2016,03:821-824.

[11]Xianming Li, Shiqun Zong , Liyang Du , et al. Journal of combined effects on Qingdai granule 6 and 10 levels of serum IL-2 in rats with experimental ulcerative colitis [J]. China traditional Chinese medicine and Western medicine, 2011,11 (2): 81-83.