

A Clinical Observation and Study on Prunella Vulgaris Decoction in Promoting the Repair of Chronic Infective Refractory Wounds

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Abstract: Objective: To further study the clinical efficacy of prunella vulgaris decoction in promoting the repair of chronic infective refractory wounds, and analyze and evaluate the feasibility of this treatment. Methods: A total of 80 patients with chronic infective refractory wounds were screened out from a hospital from March 2020 to March 2021. The random sampling method was used to divide the patients into the experimental group and reference group. The experimental group was treated with prunella vulgaris decoction while the reference group was treated with routine wound dressing change. Wound repair rate, bacterial negative conversion rate, healing time and clinical comprehensive efficacy in the two groups were used as evaluation indexes in this study. Results: After different treatment, the conditions of the patients in the two groups were statistically analyzed. It was found that the wound repair rate, bacterial negative conversion rate and total effective rate of the experimental group were much higher than that of the reference group. In addition, the wound healing time in the experimental group was also significantly shortened compared with that of the reference group. Conclusion: Prunella vulgaris decoction bears obvious anti-inflammatory and anti-bacterial effects and can accelerate the speed of wound repair, which has great practical value in clinic treatment and prosperous prospect in future development and application.

Keywords: Prunella Vulgaris Decoction; Chronic Infective Refractory Wounds; Clinical Observation

1. Introduction

Chronic infective refractory wounds are common in internal medical clinics and surgical clinics, and it appeared an increasing incidence in recent years with the aggravation of population aging. Although the disease will not pose a great threat to the patients' life and health, it is difficult to cure, and patients often need to bear both physical and psychological trauma in the long run. At present, clinical treatment methods such as closed negative pressure suction technique combined with skin flap transplantation have improved the cure rate of chronic infectious refractory wounds to some extent, but the expensive operation costs will bring economic burden to the family. For this reason, it is of certain practical significance to innovate the treatment means with low cost, few side effects and significant curative effect. Thus the external washing technique of traditional Chinese medicine is highly praised for its above advantages. Prunella vulgaris was first recorded in Agriculture God's Canon of Materia Medica, and was widely used as an anti-

tuberculosis drug in the clinical practice of ancient Chinese medicine. With the continuous exploration of modern medical science and technology to Chinese medicine, it is found that *prunella vulgaris* has obvious inhibitory effect on *staphylococcus aureus* and *mycobacterium tuberculosis*. In addition, the active components of *prunella vulgaris* extract, such as *prunella polysaccharide* and *prunella alcohol*, have been widely used in clinical medical treatment. Now as the safe medication has become a common sense in the medical field, it has been the research hotspot to explore new medicine for antibacterial wound repair from traditional Chinese herbal medicine. This study will further explore the clinical therapeutic effect of *prunella vulgaris* in promoting the repair of chronic infective refractory wounds. The contents will be summarized and reported in the following sections^[1].

2. Materials and methods

2.1 General data

A total of 80 patients with chronic infective refractory wounds were screened from a hospital from March 2020 to March 2021. Randomly sampling method was used to divide the patients into the experimental group and the reference group, with 40 cases in each group. The experimental group was treated with *prunella vulgari* decoction while the reference group was treated with routine wound dressing change. In the experimental group, there were 22 male patients and 18 female patients, aged from 22 to 55 years old, with an average age of (36.25 ± 3.52) years old. In the control group, there were 21 male patients and 19 female patients, aged from 20 to 53 years old, with an average age of (35.98 ± 3.39) years old. This study was submitted to the Medical Ethics Committee for approval. All the patients had no diseases which may affect the analysis results of the study except chronic infective refractory wounds. The detailed information was learned and the relevant agreement documents were signed. By comparing the data of age, gender and pathological conditions of patients in the two groups, there was no significant statistical difference ($P>0.05$).

2.2 Research Methods

Patients in both groups enjoyed routine nursing care at the initial stage of admission, and they were allowed to adapt themselves to the ward and surrounding environment in a short period to reduce experimental variables. After 1 day, the experimental group was treated with *prunella vulgari* decoction in the contrast with the reference group. The specific treatment measures are as follows:

2.2.1 Reference group

In the reference group, 50mL normal saline with 0.9% mass fraction was used to clean the wound. After the excess liquid was washed, Vaseline was applied to the wound, and the wound was fixed with sterile gauze and bandage. The frequency of dressing change was once a day for three consecutive weeks.

2.2.2 Experimental group

In the experimental group, the drug package made of *prunella vulgari* was selected to clean the wound through sterile syringe without additional treatment. The other steps were the same as those in the reference group. The preparation method of *prunella vulgari* decoction is as follows: 250g *prunella vulgari* flower ear (dry product) and water in the ratio of 1:3 are decocted by gentle fire with decocting machine to leach the medicinal juice, and then filter the drug residue and disinfect the liquid, and finally pour 50mL of medical juice into a vacuum packing bag to make a medicine bag.

2.3 Evaluation indexes

Wound repair rate, bacterial negative conversion rate, healing time and clinical comprehensive efficacy of patients in the two groups were regarded as the main evaluation indexes of this trial.

2.4 Evaluation criteria

The higher rate of wound repair and bacteria negative conversion, as well as more cases of wound healing and

shorter healing time all indicate that the curative effect of wound repair are developing toward a good direction.

According to the Criteria for Efficacy in Diagnosis of Diseases and Syndromes of Traditional Chinese Medicine issued by the State Administration of Traditional Chinese Medicine, the comprehensive clinical efficacy can be divided into four grades: well-healed, excellent effective, effective and ineffective. Well-healed: The scab on the surface of the wound was completely covered, without the phenomenon of pseudo healing. Excellent effective: wound surface area was reduced more than 75% without purulent secretions; Effective: wound surface area was reduced more than 25% but less than 75%, containing a small amount of purulent secretions; Ineffective: there was no change in the wound surface and no reduction in pain. The total efficacy rate is the proportion of the total amount of treatment subtracting ineffective treatment^[2].

2.5 Statistical analysis

In this paper, the collected patient-related clinical data were processed and analyzed with the help of SPSS20.0 software, which not only saved the cost of manual calculation, but also improved the calculation accuracy and work efficiency. t was used to test, and ($\bar{x}\pm s$) was used to represent the unit of measurement. χ^2 was used to test and the counting rate was represented by probability %. If $P<0.05$, the difference was proved to be statistically significant.

3. Results

3.1 Comparison of wound repair rates between the two groups

After data collection and statistics, it was found that the wound repair rate of the experimental group was much higher than that of the reference group. See Table 1 for detailed data.

Table 1. Comparison of wound repair rates between the two groups [$\bar{x}\pm s$, %]

Group	7d	14d	21d
Experimental group (n=40)	36.1±24.8	49.5±28.6	70.1±23.6
Reference group (n=40)	0.5±11.3	5.9±20.8	11.3±41.4

3.2 Comparison of on wound surface between the two groups

After data collection and statistics, it was found that the bacteria negative conversion rate on the wound surface of the experimental group was significantly higher than that of the reference group, and the detailed data were shown in Table 2.

Table 2. Comparison of on wound surface between the two groups [n(%)]

Group	7d	14d	21d	Total negative conversion rate
Experimental group (n=40)	32 (80)	1 (2.5)	1 (2.5)	48 (97.5)
Reference group (n=40)	14 (35)	16 (40)	10 (25)	40 (75)

3.3 Comparison of wound healing time between the two groups

After data collection and statistics, it was found that compared with the reference group, the experimental group had more patients with wound healing, and the healing time was about 5 days faster than that of the reference group, indicating that prunella vulgaris decoction has a significant effect on the clinical treatment and will accelerate the repair speed of chronic infective refractory wounds. See Table 3 for detailed data.

Table 3. Comparison of wound healing time between the two groups [$\bar{x}\pm s$]

Group	Cases	Healing time
Experimental group (n=40)	39	22.9±3.3
Reference group (n=40)	30	27.9±2.8
T value		-5.976
P value		0.000

3.4 Comparison of clinical comprehensive efficacy between the two groups

After data collection and statistics, it was found that the total effective rate of the experimental group was significantly higher than that of the reference group, and the detailed data were shown in Table 4.

Table 4. Comparison of clinical comprehensive efficacy between the two groups [n(%)]

Group	Well-healed	Excellent effective	Effective	ineffective	Total efficacy rate
Experimental group (n=40)	6 (15)	32 (80)	1 (2.5)	1 (2.5)	48 (97.5)
Reference group(n=40)	0 (0)	14 (35)	16 (40)	10 (25)	40 (75)

4. Discussion

The etiology of chronic infective refractory wound is complicated, and it is easy to occur repeatedly. The incidence of chronic infective refractory wound is increasing year by year in clinical treatment, whose treatment is quite difficult. In the process of wound healing, hypoxia, infection, malnutrition and other conditions will delay the speed of wound healing. Although modern medical technology can effectively improve the cure rate, the burden of medical expenses is still heavy for patients. According to the survey statistics, the proportion of chronic infectious refractory wounds in surgical inpatients is about 1.5% to 3.0%, and the proportion of traumatic infections is as high as 67.5%, which is much higher than other types. In addition, under the current medical environment, there are many drug-resistant pathogenic bacteria strains, which made the situation even more serious. Therefore, how to realize symptomatic prevention and treatment, maximize the curative effect in the treatment process and guarantee the cost of drug use, has become an urgent problem for every clinician to consider.

Prunella vulgaris belongs to a kind of Chinese herbal medicine. Since ancient times, it has been used to dispel heat and improve eyesight, as well as diffuse swelling. In recent years, with the advancement of the research and analysis on the chemical components and pharmacological effects of *Prunella vulgaris* in the medical field, *Prunella vulgaris* has been applied in clinical medicine from a brand-new perspective. In modern studies, it is known that *Prunella vulgaris* has obvious anti-tumor, anti-inflammatory, anti-bacterial, immunomodulatory and anti-oxidation effects. Compared with western medicines, *Prunella vulgaris* does not produce too many toxic and side effects, especially in the case of antibiotic abuse, which has certain practical significance. This study shows that wound repair rate, bacterial negative conversion rate, the clinical total efficacy rate of the experimental group were higher than those in reference group, of which the rate of wound repair and bacteria negative conversion will be more apparent and the treatment effect will be greatly improved with the passage of the treatment time. And this may have a close relationship with the anti-inflammatory effect of *Prunella vulgaris*, which can inhibit the growth of bacteria of the trauma and provide a good environment for the growth of granulation, thus accelerating the wound healing. From the final observation results, the conditions of patients

treated with *prunella vulgaris* decoction was better than those treated with conventional treatment both in cured cases and healing time, which proved that that *prunella vulgaris* decoction had a certain positive effect and application value in the treatment of chronic infective refractory wounds.

In conclusion, *prunella vulgaris* decoction has obvious anti-inflammatory and antibacterial effects and can accelerate the speed of wound repair, which has great practical value in clinic treatment and prosperous prospect in future development and application.

References

1. Yao Y, Li D, Zhang J. Research progress on pharmacological effect and clinical application of *prunella vulgaris*. Chinese Medicine Modern Distance Education of China 2018; 16(5): 161–164.
2. Yu S, Liang Y, Peng Y, et al. Clinical observation of Baiteng lotion in promoting the repair of chronic infective refractory wound. Journal of Sichuan of Traditional Chinese Medicine 2020; 38(8): 166–169.