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NURSING EFFECT OF TRADITIONAL CHINESE MEDICINE SMEARING ON RADIATION SKIN INJURY IN A PATIENT WITH BREAST CANCER

XiaoYan Wen*, XiuLing Ding, YaLin Guo, Jin Liu, LiLi Jia
Department of Oncology, National Clinical Research Center for acupuncture and moxibustion and Moxibustion of Traditional Chinese Medicine, the First Affiliated Hospital of Tianjin University of Traditional Chinese Medicine, Tianjin 300381, China.
**Corresponding Author: XiaoYan Wen*

Abstract: This article summarized the nursing effect and experience of a case of skin injury caused by radiotherapy of breast cancer treated with Chinese herbal medicine. Diyu has the effects of cooling blood, stopping bleeding, antibacterial, anti allergic, anti-inflammatory, reducing swelling, antioxidant, improving the blood system and neuroprotection. Diyu ointment is applied to the site of radiation-induced skin injury through traditional Chinese medicine rubbing, and has achieved good results. The patient's site has healed well and is very satisfied with the treatment effect. This ointment has a single ingredient and good therapeutic effect, and can be used by radiation therapy patients for the prevention and treatment of radiation-induced skin damage.
Keywords: Traditional Chinese Medicine application; Breast cancer; Radiation induced skin damage; Nursing

1 INTRODUCTION

Radiation therapy is one of the important means in the treatment of malignant tumors, but it is a double-edged sword, which can kill tumor cells and cause damage to normal tissues at the same time.Radiation skin damage is the most common complication of radiotherapy for malignant tumors[1]. More than 95% of radiation therapy patients will develop radiation skin damage[2]. Among them, 85% of radiotherapy patients can experience moderate to severe skin damage reactions. These conditions are most common in patients with head and neck tumors and breast cancer[3-4]. Radiation skin damage can be divided into acute and chronic. Acute damage usually occurs within 90 days after the first radiotherapy or radiation exposure, and skin changes can appear within a few hours. Mild symptoms include burning itching, pain, pigmentation, peeling and erythema, while severe symptoms include edema, ulcers, bleeding, necrosis and local infection. Chronic injury occurs 90 days to several years after the first radiotherapy or radiation exposure, and mainly manifests as skin atrophy, pigmentation, indurated edema, delayed ulcers, thickening and fibrosis, etc., and even discomforts such as tissue contracture, limited movement function, and pain.。According to the expert consensus on the diagnosis and treatment of radiation-induced skin damage (2024 edition) [5], the treatment principles of radiation-induced skin damage are mainly to protect the skin damage, prevent various physical and chemical stimulation, eliminate inflammation, and prevent secondary infection. Ulcers can be treated surgically, etc. According to the recommended level, local prevention and treatment drugs include glucocorticoids, non-steroidal drugs, natural preparations such as topical olive oil, skin dressings (such as polyurethane film, silicone film) and topical antibacterial agents (such as silver sulfadiazine).。This article summarizes the nursing effect of applying traditional Chinese medicine Diyu liniment on a case of radiation-induced skin ulceration in a breast cancer patient. The report is as follows.

2 CLINICAL DATA

2.1 General Information

The patient, a 61-year-old female, was admitted to the hospital on February 26, 2024 for "more than 3 months after surgery for left breast cancer, for further treatment with integrated traditional Chinese and Western medicine." The patient was conscious when admitted to the hospital. The left breast was absent, the skin on the left chest wall was red, and there was a surgical scar about 5 to 6 cm long. There was slight exudation in the scar. The vital signs were normal. A break was visible in the skin of the radiation area of the left axilla. The surface was about 8 cm long. It was an equilateral triangle from the inside to the outside. The hole became smaller as it went deeper, with a depth of about 5 cm. The previous patient self-examined breast lumps and went to the doctor in June 2023, and was diagnosed with breast cancer. From June to September 2023, she underwent 4 cycles of THP chemotherapy; in October 2023, the protocol was changed to white-purple + inib. Tutuzumab + Pigatinib; performed whole breast + subaxillary lymph node dissection on November 8, 2023; received a total of 25 radiotherapy sessions from January 7 to February 9, 2024; denied other surgical trauma history, denied family history.

2.2 Physical Examination

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Western medicine examination: body temperature (T) 36.5°C, pulse (P) 83 beats/min, respiration (R) 20 times/min, blood pressure (BP) 115/77 mmHg; the left breast is absent, and the patient's left axillary radiation skin is pigmented. He said that his skin felt dirty, and he wiped it hard with a tissue, which caused the patient's radiation skin to ulcerate. The diameter of the skin on the surface of the ulcer was about 8 cm, and the deeper the wound became, the smaller it was. The depth was 5 About cm, the skin at the ulceration site is clean, with slight bleeding and fluid oozing. After the ulceration, you can perform iodophor disinfection and anti-inflammatory drugs (unknown name) at home and apply them for 4 to 5 days. TCM physical examination: The patient is conscious and energetic, has a normal complexion, sweats easily, has pain in both knees, has difficulty sleeping, wakes up easily, has loose bowel movements, has a dark tongue with white coating, and a deep and thready pulse.

2.3 Diagnosis and Treatment

TCM diagnosis: Breast cancer; Syndrome differentiation: Qi and Yin deficiency syndrome; Western medicine diagnosis: Breast malignant tumor, chemotherapy for malignant tumors and radiotherapy for malignant tumors were performed after surgery. After admission, complete relevant examinations, provide first-level care, routine internal medicine care, and a normal diet. Traditional Chinese medicine treatment focuses on replenishing qi, nourishing yin, strengthening body and anti-cancer, while Western medicine focuses on symptomatic treatment. The patient was admitted to the hospital on February 26. Immediately after admission, he applied burnet oil liniment once a day in the morning and evening. The application covered every corner of the wound, exposing the ulcerated skin. The patient only applied burnet oil liniment in the hospital. After applying it for 5 days, the wound ulcer healed significantly, and the deep skin healed well. The wound had healed to about 6 cm in diameter and 3 cm in depth. The patient was very satisfied with the treatment effect and was discharged from the hospital on March 2. The patient was instructed to continue applying it after going home. The patient was admitted to the hospital again 21 days later and the ulcer was completely healed.

3 NURSING

3.1 Nursing Assessment

3.1.1 Skin breakdown assessment

In response to occupational radiation skin injuries, my country has formulated and promulgated the national standard "Diagnosis of Occupational Radiation Skin Diseases" (GBZ106-2020) [6]. Acute radiation skin damage is divided into degrees I, II, III and IV based on the magnitude of the exposure dose and clinical manifestations. See Table 1 for details. According to the time and extent of the patient's radiation injury, the patient's radiation skin injury was grade II, which was an acute radiation skin injury.

Table 1 Grading Diagnostic Criteria for Acute Radiation Skin Injury

Grading	Initial Reaction Period	Holiday Recovery Period	Period Of Obvious Symptoms
I	/	/	Hair follicle papules, Temporary hair removal
II	Erythema	2～6 Weeks	Hair loss, Erythema
III	Erythema, Burning Sensation	1～3 Weeks	Secondary erythema and blisters
IV	Erythema, Numbness, Itching, Edema and Stinging	Several hours to 10 days	Secondary erythema, Blisters, Necrosis and ulcers

3.1.2 Anxiety assessment

The Self-Rating Anxiety Scale (SAS) is used for assessment. This scale contains a total of 20 items, all scored using a four-level scoring method. The total score of the scale ranges from 20 to 80 points, and the score is directly proportional to the patient's anxiety level. A total score below 50 is considered normal, 50 to 60 is considered mild anxiety, 61 to 70 is considered moderate anxiety, and a score above 70 is considered severe anxiety. The patient's SAS score was 72, indicating severe anxiety.

3.1.3 Sleep quality assessment

The Pittsburgh sleep quality index (PSQI) is a sleep quality self-rating scale compiled by psychiatrist Buysse et al. It is one of the most validated and widely used sleep disorder assessment scales. The 18 self-evaluation items involved in the scoring of the scale can be combined into 7 parts, including sleep time, sleep time, sleep efficiency, sleep disorders, sleep quality, hypnotic drugs, and daytime functions. Each item is assigned 0, 1, 2, and 3 points respectively according to the level. The PSQI total score ranges from 0 to 21 points. A total score of >7 indicates poor sleep quality, and a total score of ≤7 indicates good sleep quality. The higher the score, the worse the sleep quality. The patient took a long time to fall asleep and woke up easily. His PSQI score was 18 points.

3.2 Nursing Diagnosis

According to the patient's physical assessment and chief complaint, the patient is at risk of delayed healing of the ulcer,

and the patient's pain and sleep will affect wound healing and quality of life. Limited physical activity is related to skin ulcers and worries about further expansion of wounds; anxiety is related to worries about delayed healing of skin ulcers; sleep pattern disorders are related to insomnia and worries about disease prognosis.

3.3 Nursing Plan

Based on the patient's existing main symptoms, the following care plan was formulated: ① Apply Diyu liniment to the radiation-induced skin damage and ulcers, which can stop bleeding, cool blood, clear away heat and detoxify, and resist inflammation and sterilization to promote skin recovery as soon as possible; ② Appropriately administer estazolam to relieve the patient's insomnia and improve the body's resistance.

3.4 Nursing Measures

3.4.1 Traditional Chinese medicine special care

The traditional Chinese medicine application method is to apply ointment to the affected area, and the medicinal power is absorbed through the skin tissues to exert a therapeutic effect. Give the patient Diyu Liniment and apply it to the skin ulcer, covering the skin ulcer from the epidermis to the inside, once in the morning and evening. After applying, expose the affected area without covering anything, and keep warm. After application, pay attention to observe whether the patient has allergic symptoms. Apply traditional Chinese medicine twice a day, once in the morning and once in the evening, and the treatment time is 5 days. Diyu liniment (Diyu liniment is a preparation made by the First Affiliated Hospital of Tianjin University of Traditional Chinese Medicine, formulated by Jinyao Darentang Jingwanhong Pharmaceutical Co., Ltd.) is composed of Diyu Diyu and is a brown oily liquid. Its main functions are heat-clearing and detoxifying, swelling and pain relief, and it is used for first-degree or shallow second-degree scalds and burns.

3.4.2 Psychotherapy

The rupture of patients' radioactive skin causes anxiety in patients. Nurses are the core personnel of patients' psychological intervention. Psychological pain is the sixth vital sign after pain. Evaluating the psychological pain of cancer patients and providing appropriate psychological intervention and psychological treatment can reduce the level of psychological pain of cancer patients and improve their quality of life. For this patient, the nursing staff further introduced the relevant knowledge of radiation therapy and added meditation therapy. On the one hand, they dynamically assessed the patient's psychological condition. On the other hand, they used positive suggestions and relevant knowledge education to reduce the patient's anxiety and promote the healing of the skin at the ulcer.

4 RESULTS AND FOLLOW-UP

After nursing, all the patient's indicators improved to a certain extent, see Table 2 for details. After applying Diyu liniment to the radioactive skin ulcer for 5 days, the patient's skin tissue healed significantly. When the patient was discharged from the hospital, the wound had healed to a surface skin diameter of about 6 cm and a depth of 3 cm. When the patient was hospitalized again (21 days later), the skin had healed. The patient complained that he only used Diyu liniment after returning home and did not use other drugs. The patient expressed that he was very satisfied with the treatment effect of the ulcer.

Table 2 Efficacy Evaluation

Observation Items	Before Treatment	After 3 days of treatment	After 7 days of treatment
SAS/Score	72	65	51
PSQI/Score	18	15	10

5 CONCLUSION AND DISCUSSION

Traditional Chinese medicine believes that radiation dermatitis syndrome belongs to the category of "exogenous heat and poison", that is, the evil of external heat and poison accumulates in the body over time, combines with stagnation, turns into inflammation, and consumes qi and damages body fluids. Symptoms of body fluid depletion and damage will first appear. As the amount of radiation increases, the heat and toxin accumulates. "Heat evil can easily cause sores and ulcers", causing skin, Oral and pharyngeal mucosal ulcers ooze fluid and cause unbearable pain. Long-term retention of heat evil damages healthy qi, resulting in deficiency of both qi and yin in the human body, burns of local glands, decreased secretion function, and insufficient body fluids. The clinical manifestations include skin redness, swelling, heat and pain, and even skin ulceration and suppuration, which are symptoms of qi and yin deficiency, heat poisoning, and internal depression.

Burnet burnet was first recorded in the "Shen Nong's Materia Medica" and is the dried root of burnet burnet or burnet burnet of the genus Burnett genus in the rose family. The latter is often called "burnt burnet". It has a slight odor and slightly bitter taste. It belongs to the liver and large intestine meridians and has the effects of cooling blood and stopping bleeding, detoxifying and curing sores[7]. Scientific research shows that Sanguisorba is rich in a variety of chemical components, such as burnet glycoside I, gallic acid, burnetin, kaempferol, quercetin, burnet saponin II and catechins, etc., which can enhance immune function, reduce wound exudate, and play hemostatic, antibacterial, anti-tumor,

anti-allergic, anti-inflammatory and swelling, antioxidant, blood system improvement, and neuroprotective effects [8]. Studies have shown that Sanguisorba has strong antibacterial activity and has a strong inhibitory effect on viruses and fungi [9]; the tannins in Sanguisorba have a strong hemostatic effect[10]; the antioxidant active substances in Sanguisorba can effectively scavenge free radicals in the body and have antioxidant effects[11]; In addition to having hemostatic and coagulant, anti-inflammatory and antibacterial, antioxidant and anti-allergic effects, Sanguisorba also has anti-tumor activity[12,13]. In addition, Diyu also has pharmacological effects such as promoting hematopoiesis, enhancing immunity, and antiemetics [14]. Clinically, different preparations of Diyu have very good effects in treating burns and scalds [15-17].

For patients receiving radioactive therapy, early health education should be carried out to avoid further injuries caused by inattention during care due to lack of relevant knowledge. Diyu liniment has a certain repair function for radiation-induced skin damage. It can reduce inflammation and sterilization, stop bleeding and coagulation, antioxidant, anti-allergic, promote hematopoiesis, and contribute to skin recovery. It can be further used as a preventive preparation. At the same time, it is hoped that Diyu Liniment can be used in more standardized, larger sample, and more systematic research on radioactive treatment patients to provide protection for patients.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

INFORMED CONSENT

Case reports are disclosed with the informed consent of the patient or family member.

REFERENCE

[1] Rosenthal A, Israilevich R, Moy R. Management of acute radiation dermatitis: a review of the literature and proposal for treatment algorithm. Journal of the American Academy of Dermatology, 2019, 81(2): 558-567.
[2] Soriano J L, Calpena A C, Souto E B, et al. Therapy for prevention and treatment of skin ionizing radiation damage: a review. International Journal of Radiation Biology, 2019, 95(5): 537-553.
[3] Chin M S, Siegel-Reamer L, Fitzgerald G A, et al. Association between cumulative radiation dose, adverse skin reactions, and changes in surface hemoglobin among women undergoing breast-conserving therapy. Clinical and Translational Radiation Oncology, 2017, 4: 15-23.
[4] Tao Y G, Aupérin A, Sire C, et al. Multicenter randomized double-blind, placebo-controlled trial GORTEC 2009-01 evaluating the effect of the regenerating agent on radiodermatitis of head and neck cancer patients. International Journal of Radiation Oncology, Biology, Physics, 2017, 99(3): 590-595.
[5] Burn Trauma Branch of Chinese Geriatric Society, Tissue Repair and Regeneration Branch of Chinese Medical Association, Regenerative Medicine and Rehabilitation Professional Committee of Chinese Rehabilitation Medical Association, et al. Expert consensus on diagnosis and treatment of radiation-induced skin injury (2024 version). Chinese Journal of Burns and Wounds, 2024, 40(8): 701-712.
[6] National Health Commission of the People's Republic of China. Diagnosis of occupational radiation-induced skin diseases: GBZ 106-2020. Beijing: China Standards Press.
[7] National Pharmacopoeia Commission. Pharmacopoeia of the People's Republic of China, Part III (2010 Edition). Beijing: China Medical Science and Technology Press, 2010.
[8] Shen X, Zhang W J, Peng C, et al. In vitro antibacterial activity and network pharmacology analysis of Sanguisorba officinalis L. against Helicobacter pylori infection. Chinese Medicine, 2021, 16(1): 33.
[9] Zhao Hui. A preliminary study on the basis of hemostatic substance of Sanguisorba officinalis stir-fry based on gray correlation analysis. Jinan: Shandong University of Traditional Chinese Medicine, 2019.
[10] Cheng X X, Zhou Z Y, Hu Q L, et al. Charcoal-frying process and quality markers of Sanguisorbae Radix based on hemostatic effect. China Journal of Chinese Materia Medica, 2024, 49(10): 2710-2721.
[11] Wu L L, Liu J W, Yu Z L, et al. Phenolic constituents of Sanguisorba officinalis and their Nrf2 agonistic effect. Acta Pharmaceutica Sinica, 2024, 59(1): 170-182.
[12] Peng Z W, Liu P, Yi S J, et al. Clinical observation of modified Diyu Powder for oral mucositis of Yin deficiency and heat toxin pattern in patients undergoing targeted lung cancer treatment. Modern Chinese Clinical Medicine, 2021, 28(5): 34-37.
[13] Liu N, Qin J W, Li W, et al. Effect evaluation of Diyu Shengbai Tablet on elevating leukocytes in patients with lung cancer undergoing chemotherapy and its impact on quality of life. Tianjin Journal of Traditional Chinese Medicine, 2024, 41(11): 1418-1422.
[14] Xiong Ling. Study of geographical origin traceability and the mechanism of promoting platelet formation of Sanguisorba officinalis L. based on metabolomics. Luzhou: Southwest Medical University, 2023.
[15] Sang L Y, Ye Y L, Gu M. Diyu oil gauze in the treatment of 114 burn cases. Clinical Journal of Traditional Chinese Medicine, 2019, 31(5): 965-967.
[16] Anikzi Abduresiti, Yang K, An N. Study on the influence of Qinyu burn liquid combined with ginger-warming acupuncture on burns. Journal of Sichuan Traditional Chinese Medicine, 2019, 37(10): 163-165.

[17] Wu Hua. Evaluation of therapeutic efficiency and exploration of the potential mechanism of Qingshu Ointment in preventing and treating radiation-induced skin toxicity. Nanjing: Nanjing University of Chinese Medicine, 2019.