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## Nursing Experience of Traditional Chinese Medicine Fumigation and Washing Therapy for Grade 3 Hand-Foot Syndrome Induced by Oral Capecitabine: A Case Report

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### Abstract

**Abstract:** This article summarizes the nursing experience of a patient with grade 3 hand-foot syndrome following oral capecitabine who was treated with traditional Chinese medicine soaking technique, including nursing intervention measures such as the prescription composition, operation procedure, precautions, and daily life care. Under the guidance of traditional Chinese medicine syndrome differentiation and nursing theory, targeted measures were adopted, resulting in significant improvement of the patient's symptoms.

### Full Text

#### Title

Nursing Experience of Traditional Chinese Medicine Soaking Therapy for Grade 3 Hand-Foot Syndrome Induced by Oral Capecitabine: A Case Report

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## Abstract

This article summarizes the nursing experience of managing a patient with grade 3 hand-foot syndrome (HFS) following oral capecitabine chemotherapy using Traditional Chinese Medicine (TCM) soaking therapy. The report details the herbal prescription composition, procedural methods, key precautions, and supportive nursing interventions. Guided by TCM syndrome differentiation theory, targeted therapeutic measures resulted in significant symptomatic improvement.

**Keywords:** Capecitabine; hand-foot syndrome; Traditional Chinese Medicine soaking; nursing care

## Introduction

Capecitabine is an oral fluoropyrimidine chemotherapy agent widely used for gastric, colorectal, and breast cancers [1]. Hand-foot syndrome represents one of its most common adverse drug reactions [2], with reported incidence rates ranging from 43% to 71% [3]. Characterized by palmar and plantar erythema, pain, and paresthesia, HFS is a cutaneous syndrome primarily induced by cytotoxic agents [4]. Although not life-threatening, HFS substantially impairs quality of life, reduces chemotherapy compliance, and negatively impacts long-term prognosis [5]. Current management strategies focus primarily on symptomatic treatment [6], yet conventional Western medical interventions often yield suboptimal efficacy [7], while TCM demonstrates distinct advantages in HFS prevention and treatment [8].

Based on clinical manifestations, HFS aligns with the TCM pattern of “bi syndrome” (impediment syndrome) manifesting as qi and blood deficiency with blood stasis obstructing the vessels. As stated in the *Suwen • Wuzang Sheng Cheng Pian*: “When blood congeals in the skin, it causes bi.” The syndrome differentiation classifications include yang deficiency with blood stasis, heat-toxin accumulation, and blood deficiency with wind-dryness, with yang deficiency and blood stasis being the most common pattern. The therapeutic principle involves warming the channels, invigorating blood circulation, generating new tissue, unblocking collaterals, dispelling stasis, and supplementing qi and nourishing blood. This report presents the nursing experience of a patient with sigmoid colon cancer who developed grade 3 HFS after postoperative capecitabine chemotherapy and was successfully managed with TCM soaking therapy.

## Case Presentation

The patient was a 69-year-old male admitted with “swelling of fingers and toes, fingertip numbness, desquamation, and ulceration after one year post-sigmoid colon cancer surgery and two weeks of oral capecitabine.” Upon admission, physical examination revealed dry, hyperpigmented skin on hands and feet; palmar erythema and desquamation with localized ulceration and bleeding, particularly prominent at joint flexion sites, accompanied by painful fingertip numb-

ness and burning sensation. The feet showed nail detachment, extensive plantar desquamation, localized fissuring with pain, and limited mobility. The patient reported normal appetite, sleep, and bowel/bladder function. Tongue examination showed a dull, dark tongue with petechiae, thin white coating, and a deep, thready pulse. TCM diagnosis: Bi syndrome; pattern differentiation: Yang deficiency with blood stasis. Western medicine diagnosis: Hand-foot syndrome, post-sigmoid colon cancer surgery.

Specialized examination according to the National Cancer Institute (NCI) toxicity grading criteria classified the condition as grade 3. Limb swelling assessment revealed grade 1 swelling in the hands and grade 2 swelling in the feet. The patient received TCM hand-foot soaking therapy twice daily. On day 3 of intervention, NCI grade improved to grade 2, with both hand and foot swelling reduced to grade 1, and fissures at finger/toe joints healed with scab formation. By day 6, NCI grade decreased to grade 2 with swelling maintained at grade 1. On day 10, NCI grade further improved to grade 1 with swelling resolved to grade 0. After 14 days of treatment, the hand and foot skin had essentially returned to normal.

## Assessment Criteria

### Symptom Grading

The National Cancer Institute (NCI) toxicity grading criteria for HFS were employed [9]: Grade 1 involves mild skin changes or dermatitis (e.g., erythema, desquamation) with paresthesia (numbness, tingling, burning) that does not affect daily activities. Grade 2 includes skin changes with pain that mildly impacts daily activities, with intact skin surface. Grade 3 comprises ulcerative dermatitis or skin changes with severe pain that significantly affects daily life and shows obvious tissue destruction (desquamation, blisters, bleeding, edema).

### Limb Swelling Assessment

Swelling severity was classified into three grades: Grade 0 indicates no swelling with no abnormal changes compared to the normal limb. Grade 1 shows swelling with visible skin distension but preserved skin creases. Grade 2 involves swelling with disappearance of skin creases. Grade 3 includes loss of skin temperature and presence of scattered tension blisters with prominent localized pain. Higher grades indicate more severe swelling.

### Nursing Diagnosis

The patient's impaired skin integrity and limb swelling secondary to HFS were attributed to qi and blood deficiency and blood stasis obstructing the vessels, as induced by oral capecitabine.

## Treatment Goals

The therapeutic objectives were: within one week, achieve scab formation and wound healing in hands and feet, reduce swelling to grade 1 or below, and decrease NCI grade to level 2; within two weeks, resolve limb swelling and reduce NCI grade to level 1 or below.

## Nursing Interventions

### TCM Characteristic Nursing: Herbal Soaking Therapy

The herbal prescription consisted of *Angelica sinensis* (Danggui) 20g, *Carthamus tinctorius* (Honghua) 10g, *Geranium wilfordii* (Laoguancao) 20g, *Arnebia euchroma* (Zicao) 10g, and *Cinnamomum cassia* (Guizhi) 10g [10]. The herbs were soaked in 500ml water for 15 minutes, boiled vigorously for 10 minutes, then simmered for 20 minutes to concentrate to approximately 200ml. This concentrated decoction was placed in a thermostatic foot bath with warm water added to reach 1000ml total volume, maintaining temperature at 35-37°C. Hands and feet were immersed for 20 minutes per session, twice daily (morning and evening). After soaking, skin was patted dry with cotton towels (not rubbed), and urea ointment was applied, particularly to skin folds at joint areas.

**Precautions:** (1) In cases of extensive skin damage, soaking is contraindicated; localized herbal spray may be used instead until wounds heal. (2) Caution is advised for patients with pre-existing dermatological conditions of the hands/feet or drug allergy history. (3) After soaking, avoid wiping hands/feet with towels to prevent tearing of desquamated skin and creating new wounds; instead, pat dry gently. (4) Immediately discontinue treatment if any discomfort occurs during the procedure.

### Conventional Nursing Measures

Patients were advised to wear soft, well-fitting footwear to reduce pressure on feet and avoid direct contact with harsh detergents. Sunscreen application was recommended when outdoors to prevent direct sunlight exposure to affected skin. Elevated skin flaps should be trimmed with sterilized scissors rather than pulled off manually to avoid creating new wounds. Oral vitamin B6 was administered as prescribed, and capecitabine was temporarily withheld until HFS symptoms improved to grade 0-1, with subsequent dose reduction to 75% of the original dose.

Psychological support was provided, as cancer patients often experience anxiety, depression, or even despair due to disease recurrence and chronicity [11]. Successful treatment cases were shared to encourage the patient and help build confidence in overcoming the disease.

## Discussion

Current cancer treatments include chemotherapy, targeted therapy, and immunotherapy. While gastrointestinal reactions, hepatic and renal damage, and bone marrow suppression are well-recognized adverse effects, dermatological toxicities are often overlooked. Hand-foot syndrome occurs with relatively high frequency, initially presenting as diminished sensation or numbness in palms and soles, progressing to tingling and burning pain with visible erythema and edema. Lesions typically appear on the lateral aspects of distal finger fat pads or involve nail changes. Erythema may evolve into blisters, followed by desquamation, ulceration, and erosion.

From a TCM perspective, HFS affects the hands and feet with a root-deficiency and branch-excess pattern. The pathogenesis involves obstructed collaterals. As stated in *Lingshu • Bai Bing Shi Sheng*: “Healthy individuals do not develop masses; only the deficient do.” Cancer patients exhibit visceral qi-blood imbalance with underlying deficiency, unable to withstand aggressive treatments [12]. Chemotherapy drugs are considered toxic substances that, while attacking tumors, also deplete qi and blood and lodge in the collaterals, manifesting as disease [13]. Syndrome differentiation is based on local hand-foot symptoms combined with overall disease presentation [14]. The underlying deficiency pattern in cancer patients involves qi and blood depletion, resulting in malnourished channels and vessels, preventing yang qi from reaching the extremities [15]. The cold-toxic nature of chemotherapy drugs flows to the extremities, damaging skin and channels, manifesting as ecchymosis, ulceration, pain, and aversion to wind-cold. Chronic disease course further consumes yin-blood, leading to blood deficiency with wind-dryness and malnourished skin, causing dryness, desquamation, and fissuring [16].

In the herbal formula, *Angelica sinensis* nourishes and invigorates blood, unblocks vessels, and relieves pain; *Carthamus tinctorius* activates blood and resolves stasis; *Geranium wilfordii* effectively dredges collaterals and assists blood circulation; *Arnebia euchroma* detoxifies, relieves pain, and promotes tissue regeneration; *Cinnamomum cassia* warms the channels, unblocks yang, and induces sweating, enabling yang qi to reach the extremities and allowing qi-blood to flow freely and nourish the skin and interstitial tissues [17]. Through combined action, the herbal soaking therapy directly affects hand-foot skin, improves peripheral circulation, and facilitates drug absorption via transdermal delivery combined with warm temperature, thereby promoting qi-blood circulation to the extremities and alleviating HFS symptoms [18].

Herbal soaking therapy effectively promotes wound healing in HFS patients, reduces swelling, desquamation, fissuring, and numbness, improves compliance with capecitabine and other chemotherapeutic agents, and enhances prognosis and survival in cancer patients [19].

## Declarations

**Patient Consent:** Written informed consent was obtained from the patient for publication of this case report.

**Conflict of Interest:** The authors declare no conflicts of interest.

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