Postprint of a Nursing Case Report on Plum-blossom Needle Therapy for a Patient with Left Lower Limb Peripheral Neuropathy Induced by Postoperative Chemotherapy for Colorectal Cancer

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Abstract

Objective: To observe the therapeutic efficacy of plum-blossom needle combined with bloodletting therapy on lower limb peripheral neuropathy induced by postoperative chemotherapy for colorectal cancer. Methods: Plum-blossom needle was used to tap leg collaterals, alternating between yin and yang collaterals, twice weekly on Mondays and Thursdays; simultaneously, bloodletting was performed on the toes twice weekly to relieve peripheral stasis and obstruction. Results: Scoring using the Toronto Clinical Scoring System (TCSS) demonstrated reduced lower limb numbness and pain sensation in patients, with significant recovery in nerve conduction velocity compared to baseline. Conclusion: From the perspective of Traditional Chinese Medicine, plum-blossom needle therapy helps alleviate lower limb peripheral neuropathy induced by postoperative chemotherapy for colorectal cancer and improves patient comfort.

Full Text

Preamble

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Nursing Report on Plum Blossom Needle Therapy for a Patient with Lower Limb Peripheral Neuropathy Following Postoperative Chemotherapy for Colorectal Cancer
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Abstract

Objective: To observe the therapeutic efficacy of plum blossom needle combined with bloodletting therapy for lower limb peripheral neuropathy caused by postoperative chemotherapy in colorectal cancer patients. **Methods:** Plum blossom needle was used to tap the collaterals of the leg, alternating between yin and yang collaterals, twice weekly on Mondays and Thursdays. Concurrently, bloodletting was performed on the toes twice weekly to dredge peripheral blood stasis. **Results:** Evaluation using the Toronto Clinical Scoring System (TCSS) demonstrated reduced numbness and pain in the patient' s lower limbs, with significant recovery in nerve conduction velocity compared with baseline. **Conclusion:** From the perspective of traditional Chinese medicine, plum blossom needle therapy is beneficial for alleviating chemotherapy-induced lower limb peripheral neuropathy following colorectal cancer surgery and improving patient comfort.

Keywords: colorectal cancer; chemotherapy-induced peripheral neuropathy; plum blossom needle therapy; bloodletting therapy

Introduction

Malignant tumors have become a major disease affecting public health in China. Colorectal cancer, in particular, ranks third in both incidence and mortality rates, significantly impacting physical wellbeing. To prevent postoperative recurrence, chemotherapy serves as a crucial adjuvant therapy; however, it introduces numerous complications including gastrointestinal reactions, bone marrow suppression, and peripheral neuropathy. Among these, peripheral neuropathy is the most common chemotherapy-related complication. Chemotherapy-induced peripheral neuropathy (CIPN) is often insidious in onset and persists for extended periods, affecting subsequent treatment and imposing substantial psychological burden on patients.

CIPN refers to peripheral nerve damage caused by the neurotoxic effects of chemotherapeutic agents used in cancer treatment. Clinical manifestations predominantly involve sensory neuropathy symptoms in the hands and feet, including numbness, difficulty grasping objects, abnormal sensation when stepping, stabbing pain, and hypersensitivity. While the pathogenesis remains unclear, domestic and international research indicates that CIPN is commonly associated with platinum-based agents, taxanes, and vinca alkaloids. According to Seretny et al., oxaliplatin, paclitaxel, cisplatin, or carboplatin combined with paclitaxel induce CIPN in 72.3%, 70.8%, and 73% of patients, respectively.

Current Western medical management of CIPN primarily involves neuropharmacological agents such as duloxetine, acetyl-L-carnitine, amifostine, and mecobal-

amin. However, only duloxetine receives moderate recommendation due to insufficient evidence for other drugs, which are used clinically at the physician' s discretion. Non-pharmacological approaches include methods that reduce blood flow/ischemia to extremities to decrease chemotherapeutic drug concentration, such as cryotherapy or compression. These modalities alleviate CIPN severity and improve quality of life to varying degrees, though robust clinical data remain limited.

Traditional Chinese medicine (TCM) demonstrates clinical efficacy in treating CIPN, which is generally classified under the category of "blood impediment" (血痹). The primary treatment principles focus on resolving stasis and unblocking collaterals. Plum blossom needle, a type of dermal needle, incorporates multiple short needles to achieve comprehensive therapeutic effects including bloodletting, acupuncture, and encircling needling. It directly targets local lesions while promoting blood circulation, unblocking collaterals, relieving pain, and dispelling impediment. Through syndrome differentiation and stimulation of corresponding meridians and acupoints, it regulates visceral qi and restores yin-yang balance, demonstrating notable efficacy in CIPN management with advantages of being green, safe, and simple to administer.

Case Report

Patient Liu, a 45-year-old male, was admitted to our department 1.5 years after colon cancer surgery following nine cycles of oxaliplatin plus capecitabine plus bevacizumab chemotherapy. The patient presented with significant pain and numbness in the left leg (pain score: 7/10), mobility impairment, inability to ambulate independently, poor appetite, and disturbed sleep. Diagnosis: Blood impediment (chemotherapy-induced peripheral neuropathy). Syndrome differentiation: Qi stagnation and blood stasis. Treatment principle: Activate blood, resolve stasis, unblock collaterals, and relieve pain.

Treatment Methods

Plum Blossom Needle Tapping Technique

The treatment area was exposed and disinfected with alcohol swabs. The practitioner held the needle handle between thumb and index finger, positioning the plum blossom needle perpendicular to the skin of the left lower limb. Tapping proceeded uniformly from superior to inferior, with immediate recoil after each tap. Each meridian received 2–3 consecutive taps until the patient experienced mild pricking, distending pain, or the skin became slightly flushed with minimal blood extravasation [Figure 1: see original paper]. The tapping force was moderate—excessive force was avoided. Dry cotton swabs were used to wipe bleeding sites, maintaining clean and dry skin to prevent infection at broken skin areas. Simultaneously, the tips of the left foot' s five toes received light tapping until the toe tips became slightly flushed or exhibited minimal blood extravasation [Figure 2: see original paper].

Treatment Frequency and Duration

Left lower limb tapping was performed twice weekly on Mondays and Thursdays. Each meridian was tapped for several minutes, with total treatment duration per session being several minutes. One treatment course comprised weekly sessions.

Evaluation Criteria

Efficacy was assessed using the Toronto Clinical Scoring System (TCSS), which comprises three components: neurological symptoms, reflexes, and sensory function examination. The symptom subscale (10 points) includes numbness, pain, tingling, weakness, and gait instability, scored as 0 (absent) or 1 (present) per symptom. The reflex subscale (4 points) evaluates ankle and knee reflexes bilaterally, scored as 0 (normal), 1 (diminished), or 2 (absent). The sensory examination subscale (5 points) assesses pain, temperature, touch-pressure, vibration, and position sense of the right hallux, scored as 0 (normal) or 1 (abnormal). Total scores range from 0–19, with 0–5 indicating no neuropathy, 6–8 mild neuropathy, 9–11 moderate neuropathy, and 12–19 severe neuropathy.

Treatment Outcomes

After 1 week of treatment: The patient's TCSS score improved from baseline to 9 points, upgrading from severe to moderate peripheral neuropathy. The patient reported partial relief of pain and numbness but remained unable to ambulate independently.

After 2 weeks of treatment: The TCSS score improved from 9 to 7 points, upgrading from moderate to mild peripheral neuropathy. The patient reported substantial improvement in pain and numbness and could ambulate with assistance.

After 4 weeks of treatment: The TCSS score improved from 7 to 6 points, maintaining mild peripheral neuropathy with continued reduction. While not fully recovered, the patient experienced significant symptom relief, with left lower limb discomfort no longer the primary concern. The patient could ambulate independently without assistance, demonstrating markedly improved quality of life.

Discussion

The development of chemotherapy-induced peripheral neuropathy closely resembles the description of "blood impediment" in the TCM classic *Jin Gui Yao Lue* (Essential Prescriptions from the Golden Cabinet): "Question: From what does blood impediment disease arise? The master replied: In persons of esteemed status with weak bones and delicate skin, sweating from fatigue, restless sleep with constant movement, plus exposure to slight wind—thus it arises." Consequently, CIPN is categorized under "blood impediment" in TCM. The etiology

involves medicinal toxicity injuring the collaterals; the pathomechanism involves chemotherapeutic drugs damaging the meridians, causing collateral qi obstruction and stagnation, which subsequently leads to collateral vessel stasis. This stasis obstructs qi and blood flow, resulting in malnourishment of the extremities. Obstruction causes pain, while malnourishment causes numbness. From a zang-fu and internal-external perspective, CIPN involves internal deficiency of visceral qi with functional disturbance, combined with external pathogenic invasion causing blood stasis obstructing the collaterals.

Cancer patients experience prolonged disease courses with persistent pathogenic harassment, leading to insufficiency of healthy qi and deficiency of qi and blood. This deficiency renders the body unable to eliminate cancer toxins, resulting in prolonged mutual binding of cancer toxins and blood stasis that ultimately produces peripheral neuropathy. Additionally, most chemotherapeutic agents are toxic substances with fierce medicinal properties that readily damage yang qi and deplete primal yang. Therefore, CIPN treatment may employ qi-supplementing and yang-unblocking methods to address the root. Yang qi damage leads to impaired propulsion, causing collateral qi stagnation. Since "qi stagnation leads to blood stasis," this ultimately results in collateral vessel obstruction. As collaterals function through patency, the primary treatment principle should be resolving stasis and unblocking collaterals.

Plum blossom needle belongs to the dermal needle category. By tapping the cutaneous regions, stimulation transmits to the collaterals, then to the meridians, and finally to the viscera, thereby activating the regulatory functions of the visceral meridian system. This harmonizes visceral qi and blood, unblocks meridians and vessels, and achieves therapeutic goals. Modern neurophysiological research indicates that stimulating skin overlying diseased muscles can enhance muscle tension and activate local nerves, generating dominant spasm to counteract the opposite side, thereby establishing new balance between flexor and extensor muscle tension and ultimately eliciting various regulatory responses from the central nervous system such as excitation and inhibition.

Through this case study, plum blossom needle therapy demonstrated efficacy in alleviating lower limb peripheral neuropathy induced by postoperative chemotherapy for colorectal cancer, improving chemotherapy-related symptoms, reducing psychological burden, and enhancing quality of life during cancer treatment. However, extensive research is required to substantiate the effectiveness of plum blossom needle therapy for chemotherapy-induced peripheral neuropathy and facilitate its broader clinical application.

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Note: Figure translations are in progress. See original paper for figures.