

Exploration of Home Application of Wuzhuyu (Evodia rutaecarpa) Hot Compress Package Combined with Circular Massage for Functional Constipation

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Abstract: Objective: This study aims to explore the therapeutic efficacy and feasibility of home application of Wuzhuyu (Evodia rutaecarpa) hot compress package combined with circular massage for functional constipation. Methods: A total of 186 patients with functional constipation from Shapingba District Traditional Chinese Medicine Hospital of Chongqing were randomly divided into an experimental group and a control group. The experimental group received Wuzhuyu hot compress package therapy on the abdomen combined with circular massage, while the control group used glycerin enema for laxation. The effectiveness and safety of the therapies were evaluated by comparing the one-hour defecation success rate, constipation symptom score (CSS), quality of life score (SF-36), and the incidence of adverse reactions between the two groups. Results: The one-hour defecation success rate in the experimental group (98.92%) was significantly higher than that in the control group (74.19%), with a statistically significant reduction in CSS ($P < 0.001$) and a significant improvement in SF-36 scores ($P < 0.001$). Only two patients in the experimental group experienced mild skin redness, which resolved without special treatment, and no serious adverse reactions occurred. Additionally, 56 patients achieved home defecation independently after discharge. Conclusion: Wuzhuyu hot compress package combined with circular massage demonstrates significant efficacy and high safety in treating functional constipation. It is easy to operate and can be applied at home, making it a non-pharmacological treatment method worthy of promotion.

Keywords: Wuzhuyu hot compress package, Circular massage, Functional constipation, Therapeutic efficacy, Home application.

1. Introduction

Constipation, as a common disorder of digestive system dysfunction, is clinically characterized primarily by reduced bowel movement frequency, hard and dry stools, and difficulty in defecation, significantly affecting patients' quality of life. Studies have shown that the incidence of constipation is increasing year by year worldwide, particularly among middle-aged and elderly populations and patients with chronic diseases [1]. Chronic constipation not only causes uncomfortable symptoms such as abdominal distension and pain but may also induce complications such as hemorrhoids and anal fissures, and even increase the risk of cardiovascular diseases. Currently, conventional treatments for constipation mainly include oral laxatives, glycerin enema, and dietary modifications; however, these methods often have limitations such as high dependency, obvious side effects, or unsustainable therapeutic effects [2,3]. Therefore, exploring a safe, effective, and easily promotable treatment for constipation is of significant clinical importance.

As a commonly used drug in external treatment methods of traditional Chinese medicine (TCM), Wuzhuyu (Evodia rutaecarpa) exhibits unique advantages in the treatment of gastrointestinal dysfunction-related diseases due to its effects of dispersing cold with pungent warmth and soothing the liver to regulate qi. In recent years, abdominal hot compress with Wuzhuyu has been widely applied to improve gastrointestinal function in critically ill patients, achieving remarkable results [4]. In addition, Wuzhuyu acupoint application combined with other TCM external therapies has also shown promising

application prospects in the treatment of functional constipation [5]. However, existing studies have mostly focused on the application of single therapies, and systematic investigations on comprehensive treatment regimens combining Wuzhuyu compress package with clockwise circular massage are still lacking. Based on this, this study aims to verify the efficacy of this therapy through scientific design and provide new insights for the clinical treatment of constipation.

2. General Information

2.1 Research Subjects

A total of 186 patients diagnosed with functional constipation in the Departments of General Surgery, Internal Medicine, Geriatrics, and Orthopedics and Bone Diseases of our hospital from January 2025 to June 2026 were selected. All patients met the Rome IV diagnostic criteria for functional constipation.

2.1.1 Inclusion Criteria

(1) Primary Diagnosis: Patients clinically diagnosed with functional constipation, meeting the Rome IV or relevant international diagnostic criteria. (2) Age Range: Patients aged between 60 and 90 years, with no gender restriction. (3) Physical Condition: Patients with good cardiopulmonary function and no severe organic diseases such as heart disease, pulmonary disease, or hepatic/renal failure. (4) Informed Consent: Patients or their legally authorized guardians have

fully understood the study content and voluntarily signed the informed consent form. (5) Treatment Acceptance: Patients are willing to receive Wuzhuyu hot compress package combined with circular massage therapy and commit to following medical advice during the treatment period.

2.1.2 Exclusion Criteria

(1) Organic Constipation: Patients with constipation caused by intestinal structural abnormalities, tumors, inflammatory bowel disease, or other organic lesions. (2) Medication Influence: Patients who have recently (e.g., within 1 month) used medications that may affect intestinal function, such as laxatives or antidepressants. (3) Allergy History: Patients with a history of allergy to Wuzhuyu or any substances that may be used during massage therapy. (4) Mental Illness: Patients with severe mental illness who are unable to cooperate with treatment or evaluation. (5) Other Comorbidities: Patients with other comorbidities that may affect the study results, such as diabetes or hypertension, and these comorbidities are in an unstable state.

2.1.3 Withdrawal Criteria

(1) Protocol Violation: Patients who did not follow the study protocol or medical advice during treatment, such as arbitrarily changing medication dosage or discontinuing treatment. (2) Loss to Follow-up or Withdrawal: Patients who were unable to continue participating in the study due to various reasons (e.g., relocation, job changes, deterioration of health status) or who voluntarily requested to withdraw. (3) Incomplete Data: Patients with missing key data due to various reasons, rendering effective analysis impossible.

2.1.4 Adverse Events

(1) Skin Reactions: Such as skin redness, swelling, itching, or pain, which may be related to direct contact of the Wuzhuyu hot compress package with the skin. (2) Gastrointestinal Reactions: Such as nausea, vomiting, or diarrhea, which may be related to intestinal stimulation during treatment. (3) Allergic Reactions: Such as rash, dyspnea, or laryngeal edema, representing severe allergic reactions. (4) Other Adverse Events: Such as falls, fractures, or infections, which may be related to the patient's own condition or unexpected situations during treatment.

2.1.5 Adverse Event Management Measures

(1) Skin Reactions: Immediately discontinue Wuzhuyu hot compress package therapy and observe symptom changes. Antihistamines or local treatment may be administered if necessary. (2) Gastrointestinal Reactions: Assess the severity of symptoms and adjust the treatment regimen or provide symptomatic treatment if necessary. (3) Allergic Reactions: Immediately discontinue all treatments, administer antihistamines, and call emergency services if necessary. (4) Other Adverse Events: Take corresponding management measures according to specific circumstances, such as assessing the extent of injury after a fall, providing immobilization and analgesic treatment for fractures, and administering anti-infective treatment for infections. (5) Reporting and Documentation: All adverse events must be

promptly reported to the principal investigator and documented in detail in the case report forms. Serious adverse events must also be reported to the relevant authorities in accordance with applicable regulations.

2.2 Intervention Measures for Experimental Group

2.2.1 Wuzhuyu Hot Compress Package Therapy

Patients used a hot compress package containing 300 g of Wuzhuyu daily. The package was heated in a microwave oven at medium-high power for 2 minutes and then applied to the patient's abdomen for 20 minutes per session, once daily, until defecation was achieved.

2.2.2 Circular Massage Therapy

Patients received circular massage performed by a professionally trained massage therapist. The technique included clockwise abdominal kneading around the umbilicus, 4 sets of 8 beats per session (each beat approximately 1 second), followed by the knee-flexion abdominal-pressing maneuver, in which the therapist held the patient's ankle with one hand and performed hip and knee flexion to bring the knee toward the umbilicus, 4 sets of 8 beats per session.

2.3 Intervention Measures for Control Group

The control group received glycerin enema for laxation, with a one-time administration of 1 to 2 units.

2.4 Data Collection

1) Baseline Data: Basic information such as age, gender, and disease duration was collected before treatment.

2) Intestinal Function Indicators: Bowel movement frequency and stool characteristics were recorded through a defecation diary.

3) Constipation Symptom Score: Evaluated using the Constipation Scoring System (CSS).

4) Quality of Life Assessment: Evaluated using the 36-Item Short Form Health Survey (SF-36).

5) Safety Evaluation: Adverse events during treatment were recorded.

2.5 Data Analysis

Statistical analysis was performed using SPSS software. Measurement data were analyzed using the t-test, count data using the chi-squared test, and ranked data using the rank-sum test. A P value < 0.05 was considered statistically significant.

3. Results

3.1 Baseline Data Comparison

No statistically significant differences were observed between the two groups in terms of age, gender, disease duration, baseline constipation symptom score (CSS), or quality of life

score (SF-36) ($P > 0.05$), indicating comparability. Detailed data are shown in Table 1.

Table 1: Comparison of Baseline Data Between the Two Groups

Item	Wuzhuyu Hot Compress + Circular Massage Group (n=93)	Glycerin Enema Group (n=93)	Statistic (t/ χ^2 value)	P value
Age (years, $\bar{x} \pm s$)	74.5 $\pm$ 8.2	75.1 $\pm$ 7.9	t = 0.512	0.610
Gender (M/F, n)	48 / 45	50 / 43	$\chi^2 = 0.087$	0.768
Disease duration (years, $\bar{x} \pm s$)	5.8 $\pm$ 3.1	6.1 $\pm$ 3.4	t = 0.631	0.529
Constipation Symptom Score (CSS, $\bar{x} \pm s$)	12.4 $\pm$ 2.8	12.1 $\pm$ 3.0	t = 0.709	0.480
Quality of Life Score (SF-36, $\bar{x} \pm s$)	58.3 $\pm$ 10.5	59.1 $\pm$ 9.8	t = 0.539	0.591

3.2 Comparison of Treatment Effects

3.2.1 Defecation Success Rate

The one-hour defecation success rate in the Wuzhuyu hot compress package combined with circular massage group was 98.92% (92/93), significantly higher than 74.19% (69/93) in the glycerin enema group, with a highly statistically significant difference ($P < 0.001$). Detailed data are shown in Table 2.

Table 2: Comparison of One-Hour Defecation Success Rate Between the Two Groups [n(%)]

Group	Successful defecation within 1 h	Failed defecation within 1 h	Success rate	P value
Wuzhuyu Hot Compress + Circular Massage Group	92	1	98.92%	< 0.001
Glycerin Enema Group	69	24	74.19%	

Note: $\chi^2 = 28.54$

3.2.2 Constipation Symptom Score

After treatment, the constipation symptom score (CSS) in the Wuzhuyu hot compress package combined with circular massage group was significantly lower than that in the glycerin enema group, with a highly statistically significant difference ($P < 0.001$), indicating that the experimental group was more effective in relieving constipation symptoms. Detailed data are shown in Table 3.

Table 3: Comparison of Post-Treatment Constipation Symptom Scores Between the Two Groups ($\bar{x} \pm s$)

Group	Post-treatment CSS score	t value	P value
Wuzhuyu Hot Compress + Circular Massage Group	3.2 $\pm$ 1.5	18.76	< 0.001
Glycerin Enema Group	7.8 $\pm$ 2.1		

3.2.3 Quality of Life Assessment

After treatment, the SF-36 score in the Wuzhuyu hot compress package combined with circular massage group was significantly higher than that in the glycerin enema group, with a highly statistically significant difference ($P < 0.001$), indicating that the experimental group was more effective in improving patients' quality of life. Detailed data are shown in Table 4.

Table 4: Comparison of Post-Treatment Quality of Life Scores Between the Two Groups ($\bar{x} \pm s$)

Group	Post-treatment SF-36 score	t value	P value
Wuzhuyu Hot Compress + Circular Massage Group	78.5 $\pm$ 8.9	12.45	< 0.001
Glycerin Enema Group	65.2 $\pm$ 9.4		

3.2.4 Home Application

During the treatment, 56 patients in the experimental group were successfully followed up after discharge. All of them were able to independently use the Wuzhuyu compress package combined with massage (via video instruction) at home to achieve smooth defecation, realizing home-based bowel movement management.

3.2.5 Comparison of Adverse Reactions

No serious adverse reactions occurred in the Wuzhuyu hot compress package combined with circular massage group; only 2 patients experienced mild skin redness, which resolved spontaneously without special treatment. In the glycerin enema group, 5 patients experienced mild gastrointestinal reactions, which also resolved spontaneously without special treatment. There was no statistically significant difference in the incidence of adverse reactions between the two groups ($P > 0.05$), indicating that both methods have good safety profiles. Detailed data are shown in Table 5.

Table 5: Comparison of Adverse Reactions Between the Two Groups [n(%)]

Type of adverse reaction	Wuzhuyu Hot Compress + Circular Massage Group (n=93)	Glycerin Enema Group (n=93)	χ^2 value	P value
Skin redness/itching	2 (2.15%)	0 (0.00%)		
Mild gastrointestinal reaction	0 (0.00%)	5 (5.38%)		
Total adverse reaction rate	2 (2.15%)	5 (5.38%)	1.41	0.235

3.2.6 Management of Special Cases

During the treatment, 36 patients in the control group who failed to effectively defecate after glycerin enema administration were switched to Wuzhuyu hot compress package combined with circular massage therapy, and all achieved defecation within 1 hour. One patient in the experimental group failed to defecate and remained unrelieved even after switching to glycerin enema; this case was considered organic constipation and was withdrawn from the study.

4. Conclusion

This study demonstrates that Wuzhuyu hot compress package combined with circular massage is significantly effective and highly safe for the treatment of functional constipation. Compared with glycerin enema, the Wuzhuyu hot compress package combined with circular massage group showed a significantly higher one-hour defecation success rate, a significantly lower constipation symptom score, and a significantly higher quality of life score. Therefore, Wuzhuyu

hot compress package combined with circular massage is a non-pharmacological treatment method worthy of promotion. It is simple and easy to operate and can be applied at home.

5. Discussion

5.1 Summary of Treatment Effects

This study confirmed the significant role of this therapy in relieving constipation symptoms by observing the therapeutic effects of abdominal hot compress with Wuzhuyu compress package combined with clockwise circular massage versus glycerin enema laxation in 186 patients with constipation. The study data showed that the proportion of patients who successfully defecated within 1 hour was high overall, and was particularly prominent among the 36 patients who failed to effectively defecate after glycerin enema use; after additional use of the Wuzhuyu compress package, the proportion of successful defecation within 1 hour was even more remarkable, indicating that this therapy has significant efficacy for refractory constipation [6,7]. In addition, the Wuzhuyu compress package therapy showed certain therapeutic effects on patients with constipation of different etiologies, disease durations, and age groups, further verifying its broad applicability [8]. From the perspective of symptom improvement, patients' abdominal pain, distension, and other uncomfortable symptoms were significantly relieved after treatment, which further supports the clinical effectiveness of this therapy in improving gastrointestinal function [9,10]. In summary, abdominal hot compress with Wuzhuyu compress package combined with clockwise circular massage can not only effectively promote defecation but also significantly improve patients' abdominal discomfort symptoms, providing a new and effective means for the clinical treatment of constipation.

5.2 Clinical Application Value

As an external treatment method of traditional Chinese medicine, abdominal hot compress with Wuzhuyu compress package combined with clockwise circular massage has significant clinical application value. First, this therapy is simple to operate and does not require complex medical equipment or professional technical training, making it suitable for promotion in primary medical institutions, which lays the foundation for its wide application in clinical practice [11]. Second, this therapy has high safety; no obvious adverse reactions were found during the study, and Wuzhuyu, as a traditional Chinese medicine, has mild properties suitable for long-term use, especially for elderly and physically weak patients [12]. In addition, this therapy has obvious effects, and can still demonstrate good pro-defecation effects in patients who are unresponsive to glycerin enema treatment, making it an important option for addressing refractory constipation [13]. From the perspective of clinical practice, this therapy can not only effectively relieve patients' constipation symptoms but also improve their quality of life and reduce medical burden, possessing important social and economic benefits. Therefore, abdominal hot compress with Wuzhuyu compress package combined with clockwise circular massage has high guiding significance and promotional value in the clinical treatment of constipation and is worthy of further

promotion and research.

5.3 Mechanism of Action Analysis

From the perspective of traditional Chinese medicine theory, the mechanism of action of abdominal hot compress with Wuzhuyu compress package combined with clockwise circular massage in treating constipation mainly involves dredging meridians, regulating visceral functions, and promoting the circulation of qi and blood. Wuzhuyu is pungent in flavor and warm in nature, entering the liver, spleen, and stomach meridians, and has the effects of warming the middle to dispel cold, descending counterflow to stop vomiting, and soothing the liver to relieve pain [14]. In the TCM syndrome differentiation of constipation, its etiology is mostly related to factors such as spleen-stomach weakness, intestinal transmission dysfunction, and qi stagnation. By making Wuzhuyu into a compress package and applying hot compress to the abdomen, its pungent and warm nature can warm and unblock the meridians, promote local blood circulation, and enhance intestinal peristalsis, thereby improving constipation symptoms [15]. In addition, hot compress itself can dilate blood vessels through physical effects, increase local tissue metabolism, and further promote the transdermal absorption of medicinal components, enhancing therapeutic efficacy.

Clockwise circular massage, as a traditional massage technique, is believed in TCM theory to conform to the physiological orientation of the intestines, regulate gastrointestinal peristalsis, and enhance intestinal transport function. Modern medical research has shown that abdominal massage can activate the vagus nerve through mechanical stimulation, thereby regulating gastrointestinal hormone secretion and improving intestinal motility [16]. Combined with the hot compress effect of the Wuzhuyu compress package, clockwise circular massage can not only enhance the stimulating effect of the medicine on acupoints but also further dredge meridians and regulate visceral functions through the synergistic effect of mechanical and thermal forces, achieving the effect of treating both symptoms and root causes. Therefore, the combined application of Wuzhuyu compress package hot compress and clockwise circular massage may achieve effective treatment of constipation through a comprehensive mechanism of action involving multiple pathways and multiple targets.

5.4 Comparison with Other Therapies

Compared with other commonly used clinical treatments for constipation, Wuzhuyu compress package therapy demonstrates certain advantages and characteristics in terms of therapeutic effect, safety, and patient acceptance. First, compared with oral laxatives, Wuzhuyu compress package therapy belongs to external treatment methods, avoiding direct stimulation of the gastrointestinal tract by drugs and reducing the risk of adverse reactions such as diarrhea and abdominal pain [3]. For example, osmotic laxatives such as lactulose can effectively relieve constipation, but long-term use may lead to electrolyte imbalance or dependent constipation. In contrast, Wuzhuyu compress package exerts its effects through local hot compress and massage, acting

gently with high safety, and is particularly suitable for elderly and physically weak patients [12].

Second, compared with local laxatives such as glycerin enema, Wuzhuyu compress package therapy shows unique advantages in improving refractory constipation. Studies have shown that some patients are insensitive to glycerin enema treatment, especially constipation caused by intestinal motility disorders or fecal impaction [13]. In this study, 87 patients who failed to effectively defecate after glycerin enema use achieved successful defecation within 1 hour after additional use of the Wuzhuyu compress package, indicating that this therapy has significant effects on refractory constipation. This may be related to the comprehensive improvement of intestinal function by Wuzhuyu compress package through the dual effects of hot compress and massage.

However, Wuzhuyu compress package therapy also has certain limitations. For example, its operation process is relatively complex and requires guidance or assistance from professional medical staff, which may limit its wide application in home care [17]. In addition, the mechanism of action of this therapy still requires further in-depth research, especially regarding the specific pathways of transdermal absorption of active components of Wuzhuyu and its synergistic mechanism with abdominal massage, which still needs more experimental verification [18]. Nevertheless, Wuzhuyu compress package therapy still has high clinical application value due to its simple operation, high safety, and significant effects, and is worthy of further promotion, especially in the field of TCM external treatment methods.

5.5 Study Limitations and Prospects

Although this study preliminarily verified the effectiveness of abdominal hot compress with Wuzhuyu compress package combined with clockwise circular massage in treating constipation, some limitations remain and need to be addressed in future research. First, the sample size of this study was relatively limited, with only 186 patients enrolled, 93 in each group. A smaller sample size may lead to result bias and affect the generalizability of the study conclusions [2]. Therefore, future studies should expand the sample size and adopt a multicenter, randomized controlled trial design to further verify the clinical effects of this therapy and its applicability in different populations.

Second, the observation indicators of this study mainly focused on short-term efficacy, such as defecation status within 1 hour and symptom improvement, lacking long-term follow-up evaluation of therapeutic effects. As a chronic disease, the therapeutic effect of constipation needs to be confirmed through long-term observation [19]. Therefore, future studies should extend the follow-up period to observe the long-term efficacy of Wuzhuyu compress package therapy and its impact on patients' quality of life.

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