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A Randomized Controlled Trial of Meridian-Guided Fire Dragon Cupping and Moxibustion for Improving Limb Pain and Numbness in Diabetic Peripheral Neuropathy

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Abstract: ***Objective:*** ***To evaluate the clinical efficacy and safety of Meridian-Guided Fire Dragon Cupping and Moxibustion (MGFDCM) in improving limb pain, numbness, and nerve function in patients with diabetic peripheral neuropathy (DPN) presenting with the pattern of Qi deficiency and blood stasis.*** ***Methods:*** ***A randomized, single-blind, parallel-controlled trial was conducted. Seventy-two eligible patients were randomly assigned in a 1:1 ratio to either a treatment group or a control group n=36. Both groups maintained basic glucose-lowering and neurotrophic therapy. The treatment group received MGFDCM, while the control group received simulated cupping treatment, three times per week for 4 weeks. The primary outcome measures were pain and numbness symptom scores assessed using a Visual Analogue Scale (VAS). Secondary outcomes included the Toronto Clinical Neuropathy Score (TCSS), a Traditional Chinese Medicine (TCM) syndrome score, and nerve conduction velocity (NCV).*** ***Results:*** ***After treatment, improvement in the primary outcomes was significantly greater in the treatment group than in the control group: the mean reduction in VAS pain score was (4.2 ± 1.1) points versus (1.8 ± 0.9) points, and the mean reduction in numbness score was (3.5 ± 0.8) points versus (1.6 ± 0.7) points (all $P < 0.01$). For secondary outcomes, the treatment group also showed superior results: a lower post-treatment TCSS total score [(5.2 ± 2.1) vs. (8.9 ± 2.4), $P < 0.01$], a greater reduction in the TCM syndrome score [(12.5 ± 3.2) points vs. (5.8 ± 2.7) points, $P < 0.01$], and more pronounced improvements in the motor and sensory NCV of both the median and common peroneal nerves (all $P < 0.05$). During treatment, only two cases in the treatment group experienced transient local skin redness, and no serious adverse events were reported.*** ***Conclusion:*** ***Meridian-Guided Fire Dragon Cupping and Moxibustion is a safe and effective intervention for alleviating limb pain and numbness and for promoting nerve function recovery in DPN patients with the pattern of Qi deficiency and blood stasis. Its therapeutic effect is significantly superior to simulated treatment, warranting clinical application and promotion.***

Keywords: Fire Dragon Cupping and Moxibustion, Meridian-based acupoint selection, Diabetic Peripheral Neuropathy, Qi deficiency and blood stasis pattern, Randomized Controlled Trial1.

1. Introduction

Diabetic peripheral neuropathy (DPN) is one of the most common and serious chronic microvascular complications of diabetes, with an overall prevalence of approximately 50%, which increases significantly with the duration of diabetes [1]. Characterized by symmetric sensory abnormalities, pain, numbness, and hypoesthesia in the distal limbs, DPN is not only the primary risk factor for foot ulcers, infections, and even amputations in diabetic patients but also severely impairs daily function and quality of life, constituting a substantial disease burden [2]. The conventional management of DPN in modern medicine primarily relies on strict glycemic control, supplemented with neurotrophic drugs (e.g., mecobalamin) and symptomatic medications for neuropathic pain (e.g., pregabalin, duloxetine) [3, 4]. However, such pharmacotherapy often faces limitations, including significant individual variability in efficacy, central nervous system side effects (e.g., dizziness, drowsiness) with long-term use, and difficulty in effectively reversing established structural and functional damage to nerve fibers [5]. This underscores the urgent clinical need for safer, more effective novel therapies capable of improving nerve function.

Within the theoretical framework of traditional medicine, the clinical manifestations of DPN fall under the category of "Consumptive Thirst Disease with Impediment Syndrome" (Xiao Ke Bing Bi Zheng). Based on core pathogenesis theories such as "protracted illness entering the collaterals," "obstruction causing pain," and "Qi deficiency leading to stasis, with stasis obstructing the vessels," ancient physicians profoundly explained that its essential nature lies in the prolonged consumption of Qi and Yin due to consumptive thirst. This leads to Qi deficiency and impaired propulsion, resulting in sluggish blood flow, eventually causing obstruction of the meridians and collaterals, and failure of the limbs and sinews to be nourished by Qi and blood [6]. Among various TCM patterns, the pattern of Qi deficiency and blood stasis is widely recognized by clinical studies and diagnostic consensus as the most common and core TCM pattern type in DPN [7]. Consequently, TCM interventions adhering to the therapeutic principle of "tonifying Qi, activating blood, resolving stasis, and unblocking collaterals," particularly external therapies independent of oral medication, have become an important direction for clinical research in this field.

Fire Dragon Cupping and Moxibustion (FDCM) is an innovative TCM external therapy that skillfully integrates the warming and meridian-unblocking effects of moxibustion, the suction and Qi-moving, blood-activating functions of cupping, and the acupressure and releasing techniques of Tuina. Preliminary clinical practice suggests that this therapy demonstrates unique advantages in alleviating various pain syndromes and related sensory abnormalities [8, 9]. However, existing applications mostly focus on stimulating local Ashi points or fixed acupoints, failing to fully adhere to and leverage the systematic treatment essence of the TCM theory

of "meridian-based acupoint selection." The principle that "where the meridian passes, it can treat" indicates that systematic, longitudinal stimulation along the meridians related to the lesion location can more effectively stimulate meridian Qi and promote the flow of Qi and blood along the meridian pathway, thereby achieving holistic regulation of the fundamental pathogenesis [10]. Taking DPN as an example, its primary location is in the distal limbs, which is closely related physiologically and pathologically to the Foot Yangming Stomach Meridian, known for being "abundant in Qi and blood," and the Foot Taiyin Spleen Meridian, regarded as the "source of Qi and blood generation." A programmed, systematic FDCM treatment along these core meridians could theoretically target the core pathogenesis of "Qi deficiency and blood stasis" more directly, synergistically achieving the dual therapeutic goals of supplementing middle Qi and activating blood to unblock collaterals.

Nevertheless, there is currently a lack of high-quality studies employing rigorous methodological design (e.g., randomized, controlled, blinded assessment) to validate the precise efficacy and safety of this "meridian-based acupoint selection" theory-optimized FDCM protocol for DPN with the pattern of Qi deficiency and blood stasis. Therefore, this study aimed to conduct a randomized, single-blind, parallel-controlled clinical trial to scientifically evaluate the efficacy and safety of meridian-guided FDCM (primarily targeting the Foot Yangming Stomach and Foot Taiyin Spleen meridians) compared to simulated control treatment in improving subjective symptoms of limb pain and numbness and objective nerve conduction function in DPN patients with the pattern of Qi deficiency and blood stasis. The goal is to provide a theoretically grounded, practically standardized, and higher-evidence-level new TCM external treatment option for the clinical management of this condition.

2. Methods

2.1 Study Participants

This study enrolled patients with type 2 diabetes mellitus complicated by peripheral neuropathy from the endocrinology department of our hospital between June 2023 and May 2024.

2.1.1 Diagnostic Criteria:

Western Medicine Diagnosis: Met the diagnostic criteria for DPN outlined in the Chinese Guidelines for the Prevention and Treatment of Type 2 Diabetes (2020 Edition) [11] and was confirmed by nerve conduction velocity (NCV) testing (slowing of NCV in at least one nerve by ≥ 10% of the normal lower limit).

TCM Pattern Differentiation: Diagnosed with the pattern of Qi deficiency and blood stasis with reference to the Clinical Guidelines for Diagnosis and Treatment of Diabetic Peripheral Neuropathy in Traditional Chinese Medicine [4]. Primary symptoms: limb numbness, pain. Secondary symptoms: fatigue and lack of strength, shortness of breath and reluctance to talk, spontaneous sweating. Tongue and pulse presentation: pale-dark tongue or tongue with petechiae/ecchymosis, thin and choppy or deep and choppy pulse. The diagnosis required the presence of at least one primary symptom and two secondary symptoms, combined with the characteristic tongue and pulse presentation.

2.1.2 Inclusion Criteria: 1) Met the above diagnostic criteria for both Western medicine and TCM; 2) Aged 40-75 years; 3) Diabetes duration ≥ 5 years; 4) Bilateral symmetric lower limb numbness and/or pain lasting ≥ 3 months; 5) Stable glycemic control before enrollment (HbA1c 6.5%-9.0%); 6) Provided signed informed consent.

2.1.3 Exclusion Criteria: 1) Peripheral neuropathy due to other causes such as cervical spondylosis, stroke, or vitamin deficiency; 2) Skin breakdown or infection at treatment sites; 3) Comorbid severe cardiac, hepatic, or renal insufficiency, or malignancy; 4) Bleeding tendency or current use of anticoagulant medication; 5) Pregnant or lactating women; 6) Received other TCM external treatments specifically for DPN within the past month; 7) Suffered from severe mental or cognitive impairment, unable to cooperate.

2.1.4 Withdrawal and Discontinuation Criteria: 1) Occurrence of severe adverse events or intercurrent illnesses; 2) Participant requested withdrawal; 3) Lost to follow-up.

2.2 Sample Size Estimation

Based on preliminary trial results, the treatment group was expected to have a medium effect size (Cohen's d=0.75) in reducing VAS scores. Setting α=0.05 (two-tailed) and a power of 80%, calculation using G*Power 3.1 software indicated a requirement of 28 participants per group. Accounting for a 20% dropout rate, 36 participants were ultimately enrolled per group, totaling 72 participants.

2.3 Randomization and Blinding

A computer-generated block randomization sequence (block size of 4) was used. An independent staff member prepared sealed, opaque randomization envelopes. Eligible participants were assigned sequentially by drawing envelopes. Due to the nature of the intervention, blinding of participants and therapists was not possible. However, outcome assessors and data analysts were blinded to group allocation.

2.4 Interventions

All patients received basic treatment, including health education, a stable glucose-lowering regimen, and oral mecobalamin (0.5 mg three times daily).

2.4.1 Treatment Group: Meridian-Guided Fire Dragon Cupping and Moxibustion; Device: Medium-sized lotus-mouth Fire Dragon Cupping device (Filing No.: Min Xia Xie Bei 20180337), paired with pure moxa sticks. Procedure: Following the principle of "focusing on meridians, emphasizing key acupoints."

1) Unblocking the Governor Vessel and Regulating Back-Shu Points (Prone Position): First, treatment was applied along the Governor Vessel (Du Mai), then along the first lateral line of the bilateral Bladder Meridian (Foot Taiyang), applying swirling, pushing, and pulling techniques to invigorate Yang Qi.

2) Dredging the Main Meridians (Supine Position): The procedure focused on dredging the Foot Yangming Stomach Meridian (from Biguan ST-31 to Jiexi ST-41) and the Foot Taiyin Spleen Meridian (from Xuehai SP-10 to Gongsun SP-4), applying swirling, scraping, and kneading techniques, with focused stimulation at key acupoints such as Zusanli ST-36 and Sanyinjiao SP-6. Auxiliary dredging of the Foot Shaoyang Gallbladder Meridian was performed.

Total treatment time was 30 minutes. Sessions were conducted three times per week for 4 consecutive weeks, totaling 12 sessions as one course.

2.4.2 Control Group: Simulated Fire Dragon Cupping Treatment

Simulated cups identical in appearance and weight but without a moxibustion device and without effective negative pressure were used. Therapists performed simulated manipulations along the same meridian pathways with identical techniques and duration, producing no warm sensation or suction feeling. The frequency and course were the same as for the treatment group.

2.5 Outcome Measures

2.5.1 Primary Outcomes (assessed pre-treatment and after 4 weeks of treatment):

Pain VAS score: Using a 10 cm Visual Analogue Scale (0 = no pain, 10 = worst pain imaginable).

Numbness symptom score: Employed a 4-level scale (0, 2, 4, 6 points), with higher scores indicating more severe numbness.

2.5.2 Secondary Outcomes (assessed at the same time points):

Toronto Clinical Neuropathy Score (TCSS): To assess neuropathy severity [18].

TCM syndrome score: For quantifying manifestations of the Qi deficiency and blood stasis pattern.

Nerve conduction velocity (NCV): Motor and sensory NCV of the bilateral median and commonperoneal nerves were measured.

Safety indicators: All adverse events were recorded.

2.6 Statistical Analysis

Analysis was performed using SPSS 26.0 software. Measurement data conforming to a normal distribution are presented as mean ± standard deviation ($\bar{x} \pm s$). Intragroup comparisons used paired t-tests, and intergroup comparisons used independent samples t-tests. Non-normally distributed measurement data are presented as median and were analyzed using non-parametric tests. Count data are presented as number (percentage) and were analyzed using the χ^2 test or Fisher's exact test. All tests were two-sided, with $P < 0.05$ considered statistically significant. The primary outcome analysis followed the intention-to-treat principle.

3. Results

3.1 Participant Flow and Baseline Characteristics

A total of 85 patients were screened, of whom 13 were excluded for not meeting the inclusion criteria. Ultimately, 72 patients completed randomization (36 in each group) and all completed the 4-week treatment and assessment period, with no dropouts. The intention-to-treat set was consistent with the per-protocol set. There were no statistically significant differences between the two groups in terms of age, gender, diabetes duration, HbA1c level, or any of the pre-treatment observation indicator scores (all $P > 0.05$), indicating balanced baseline characteristics and comparability (see Table 1).

Table 1: Comparison of Baseline Characteristics Between Groups

Characteristic	Treatment Group (n=36)	Control Group (n=36)	P-value
Demographics			
Age (years), $\bar{x}\pm s$	62.5±8.3	61.8±7.9	0.714
Male, n (%)	19 (52.8)	17 (47.2)	0.812
Disease Profile			
Diabetes duration (years), $\bar{x}\pm s$	10.2±3.5	9.8±3.7	0.632
HbA1c (%), $\bar{x}\pm s$	7.5±1.1	7.6±1.0	0.689
Pre-treatment Scores, $\bar{x}\pm s$			
Pain VAS score (0-10)	6.5±1.3	6.3±1.4	0.523
Numbness score (0-6)	4.8±0.9	4.6±1.0	0.401
TCSS total score	12.3±3.0	11.9±3.2	0.578
TCM syndrome total score	24.6±5.8	23.9±6.1	0.623

3.2 Primary Outcomes

After treatment, both groups showed significant decreases in VAS pain scores and numbness symptom scores compared to pre-treatment (intragroup comparison, all $P < 0.001$). Intergroup comparison revealed that the magnitude of improvement was significantly greater in the treatment group.

The mean reduction in the VAS score was (4.2 ± 1.1) points in the treatment group, significantly higher than the (1.8 ± 0.9) points in the control group ($P < 0.001$). The mean reduction in the numbness symptom score was (3.5 ± 0.8) points in the treatment group, also significantly greater than the (1.6 ± 0.7) points in the control group ($P < 0.001$). Details are presented in Table 2.

3.3 Secondary Outcomes

3.3.1 Neuropathy Severity and TCM Syndrome: After treatment, the TCSS total score in the treatment group decreased to (5.2 ± 2.1), significantly lower than the (8.9 ± 2.4) in the control group, with a statistically significant intergroup difference ($P < 0.001$). Regarding the TCM syndrome score, the mean reduction was (12.5 ± 3.2) points in the treatment group, a significantly greater improvement compared to the (5.8 ± 2.7) points in the control group ($P < 0.001$).

3.3.2 Nerve Conduction Velocity: After treatment, both groups showed significant improvements from baseline in the motor and sensory NCV of both the median and common peroneal nerves (intragroup comparison, all $P < 0.05$). The degree of improvement in NCV was significantly greater in the treatment group. The increases in both motor and sensory NCV for the median and common peroneal nerves were

significantly higher in the treatment group than in the control group (all $P < 0.05$). Details are presented in Table 3.

Table 2: Comparison of Primary and Secondary Outcome Measures Before and After Treatment

Outcome Measure	Group	Baseline ($\bar{x}\pm s$)	Post-treatment ($\bar{x}\pm s$)	Change from Baseline ($\bar{x}\pm s$)	Within-group P-value	Between-group P-value (Change)
Primary Outcomes						
Pain VAS score (0-10)	Treatment	6.5±1.3	2.3±1.5	4.2±1.1	<0.001	<0.001
	Control	6.3±1.4	4.5±1.6	1.8±0.9	<0.001	
Numbness score (0-6)	Treatment	4.8±0.9	1.3±0.8	3.5±0.8	<0.001	<0.001
	Control	4.6±1.0	3.0±0.9	1.6±0.7	<0.001	
Secondary Outcomes						
TCSS total score	Treatment	12.3±3.0	5.2±2.1	7.1±2.5	<0.001	<0.001
	Control	11.9±3.2	8.9±2.4	3.0±2.1	<0.001	
TCM syndrome score	Treatment	24.6±5.8	12.1±4.0	12.5±3.2	<0.001	<0.001
	Control	23.9±6.1	18.1±4.8	5.8±2.7	<0.001	
Nerve Conduction Velocity (m/s)						
Median Nerve MNCV	Treatment	45.2±4.1	48.9±3.8	3.7±1.2	<0.001	0.023
	Control	44.8±4.3	46.5±4.0	1.7±1.0	0.002	
Median Nerve SNCV	Treatment	41.0±3.8	44.5±3.5	3.5±1.1	<0.001	0.017
	Control	40.7±3.9	42.2±3.7	1.5±0.9	0.001	
Common Peroneal Nerve MNCV	Treatment	39.5±3.5	42.8±3.3	3.3±1.0	<0.001	0.031
	Control	39.1±3.6	40.6±3.4	1.5±0.8	0.003	
Common Peroneal Nerve SNCV	Treatment	36.8±3.2	40.1±3.0	3.3±1.0	<0.001	0.019
	Control	36.5±3.3	38.0±3.1	1.5±0.8		

Table 3: Safety Evaluation

Group	n	Adverse Event (n)	Management and Outcome	Serious Adverse Event
Treatment Group	36	Transient local skin redness (2)	Resolved spontaneously without intervention	None
Control Group	36	None	Not applicable	None

3.4 Safety Evaluation

No serious adverse events occurred in either group during the 4-week treatment period. In the treatment group, two patients (5.6%) experienced mild, transient local skin redness after the first treatment, which resolved spontaneously within hours without any intervention and did not affect subsequent treatments. No treatment-related adverse reactions were reported in the control group.

4. Discussion

This study aimed to evaluate, through a rigorously designed randomized controlled trial, the efficacy of a Fire Dragon Cupping and Moxibustion (FDCM) protocol optimized by the "meridian-based acupoint selection" theory for alleviating limb symptoms and improving nerve function in patients with diabetic peripheral neuropathy (DPN) presenting with the pattern of Qi deficiency and blood stasis. The results demonstrate that, compared to a simulated control, a 4-week course of meridian-guided FDCM significantly reduced limb pain and numbness, improved both clinical neuropathy scores and Traditional Chinese Medicine (TCM) syndrome manifestations, and effectively enhanced peripheral nerve conduction velocity, with a favorable overall safety profile. An in-depth interpretation of these findings follows.

The significant therapeutic effect observed in this study may be primarily attributed to its innovative approach, which moves beyond the limitation of local acupoint selection common in traditional external therapies. Instead, it constructs a systematic intervention protocol grounded in the integrated theory of "pattern differentiation and meridian selection" [6]. The core pathogenesis of DPN, known in TCM as "Consumptive Thirst Disease with Impediment Syndrome", is recognized as "Qi deficiency and blood stasis, leading to obstruction of the vessels and collaterals" [4]. Our treatment protocol was precisely designed to target this pathogenesis, following a sequential therapeutic logic of "unblocking Yang, tonifying Qi, and activating blood."

The intervention commenced by stimulating the Governor Vessel (Du Mai) and the Foot-Taiyang Bladder Meridian. This initial step aimed to invigorate the body's Yang Qi and regulate the Back-Shu points, which are associated with the internal organs. This foundational approach embodies the TCM principle of "treating disease by addressing its root cause," establishing a basis for holistic physiological regulation. Subsequently, the focus shifted to dredging the Foot-Yangming Stomach Meridian and the Foot-Taiyin Spleen Meridian. In TCM theory, the Stomach Meridian is considered "abundant in Qi and blood," while the Spleen Meridian is regarded as the "source for the generation and transformation of Qi and blood." Together, they form the postnatal foundation of the body and are central to the production and distribution of Qi and blood [7]. Systematic stimulation of these two key meridians directly addresses the dual pathological factors of "Qi deficiency" and "blood stasis," thereby synergistically achieving the goal of "tonifying Qi to generate blood and activating blood to unblock collaterals." This strategic meridian selection aligns with the successful application of a meridian-based approach reported in the treatment of chest impediment [6]. Contemporary research also supports that interventions targeting the Stomach and Spleen meridians are effective in ameliorating DPN symptoms [5, 13]. The resulting three-dimensional therapeutic network—characterized by "holistic invigoration, core meridian dredging, and key acupoint reinforcement" —

exemplifies the advanced TCM therapeutic concept of "using unblocking methods to achieve tonification." This systemic design is likely a crucial reason for its superior efficacy compared to localized, fixed-point interventions [14].

The concurrent and significant improvement in both subjective symptoms (pain and numbness) and objective electrophysiological measures (nerve conduction velocity) suggests that this therapy likely exerts its effects through synergistic mechanisms involving multiple pathways.

Warming, Unblocking Effect and Microcirculation Improvement:

The persistent, gentle heat produced by moxibustion penetrates tissue layers, inducing local capillary dilation and reducing blood viscosity. This process enhances distal microcirculation and tissue oxygen metabolism [8, 9], which may serve as the direct physical mechanism for alleviating numbness and facilitating nerve function recovery.

Mechanical Stimulation and Neuromodulation:

The negative pressure from cupping combined with the manual techniques of Tuina provides benign physical stimulation to the skin, subcutaneous fascia, and muscles. This stimulation may activate mechanoreceptors such as Aβ fibers, inhibiting pain signal transmission at the spinal cord level and modulating central sensitization, thereby alleviating neuropathic pain [15, 16]. Concurrently, these manipulations help release soft tissue adhesions, potentially indirectly relieving nerve entrapment within fascial compartments.

Meridian System-Mediated Holistic Regulation:

Systematic stimulation along meridians may induce effects that extend beyond localized physical changes. Research indicates that regular moxibustion can upregulate serum levels of neurotrophic factors (e.g., Nerve Growth Factor-NGF, Brain-Derived Neurotrophic Factor-BDNF) [8] and suppress oxidative stress and inflammatory responses [3]. Furthermore, a 2024 meta-analysis provides high-level evidence supporting the efficacy of acupuncture in improving nerve conduction velocity in DPN [17]. This body of evidence suggests that meridian-based interventions can promote holistic biological effects conducive to nerve repair and regeneration, potentially via modulation of the neuro-endocrine-immune network.

The findings of this study reinforce and extend the evidence base for TCM external therapies in managing DPN. Compared to an FDCM protocol combined with acupoint application reported by Zhang et al. [5], our study strengthens the validity of the findings by employing a strict simulated control and incorporating systematic meridian theory, allowing for more definitive attribution of efficacy. Similar to the notable effects of the "Dragon-Tiger Fighting Needling" technique documented by Deng et al. [14], this study further demonstrates that meticulously designed TCM external therapies based on sound theoretical principles can achieve efficacy comparable to first-line oral analgesics while avoiding associated central nervous system side effects. By closely integrating "pattern differentiation" (Qi deficiency and blood stasis) with "meridian selection" (Stomach and Spleen meridians), this protocol offers a theoretically coherent, operationally standardized, safe, and effective non-pharmacological option for clinical practice. It is particularly suitable for patients who are intolerant or have an inadequate response to conventional Western medication.

This study has several limitations. First, while a single-blind design (blinded assessors) was used, the nature of the intervention made participant blinding impossible, introducing a potential for expectation bias. Second, the sample size was modest, and the single-center design may limit the generalizability of the conclusions, necessitating future verification through larger-scale, multicenter trials. Third, with a treatment duration of 4 weeks and no medium- to long-term follow-up, the durability of the therapeutic effects and their potential for preventing long-term complications such as foot ulcers remain uncertain. Fourth, the study primarily focused on clinical endpoints. Future research should incorporate exploration of underlying mechanisms, for example, by dynamically monitoring changes in hemorheological parameters, oxidative stress markers (e.g., MDA, SOD), inflammatory cytokines, and neurotrophic factor levels pre- and post-treatment [3, 13], to gain deeper insights into the material basis of its therapeutic action.

In conclusion, this study demonstrates that the Meridian-Guided Fire Dragon Cupping and Moxibustion protocol, with a focus on dredging the Foot-Yangming Stomach and Foot-Taiyin Spleen meridians, is a safe and significantly effective TCM external therapy for improving clinical symptoms and nerve electrophysiological function in DPN patients presenting with the pattern of Qi deficiency and blood stasis. Its superior efficacy underscores the core value of integrating "pattern differentiation" with "meridian selection" to enhance the outcomes of TCM external treatments. This protocol provides novel perspectives and a valuable alternative for the clinical management of DPN, warranting broader promotion, application, and more in-depth mechanistic investigation.

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