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Efficacy of Interactive Scalp Acupuncture Combined with Hot Medicinal Compress Therapy on Stroke Patients

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Keywords

Stroke, Interactive scalp acupuncture, Hot medicinal compress therapy, Motor function

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Abstract

Objective This study investigates the efficacy of interactive scalp acupuncture combined with hot medicinal compress therapy on stroke patients. **Methods** 57 stroke patients who received interactive scalp acupuncture combined with hot medicinal compress therapy in our hospital from June 2021 to June 2023 were assigned into combination group, 56 patients who received interactive scalp acupuncture in the same department during the same period were allocated into interactive scalp acupuncture group, and 59 patients who received hot medicinal compress therapy were divided into hot medicinal compress therapy group. The clinical efficacy in the three groups of patients was compared, and the effects of different treatment modalities on motor function, living ability, and serum indexes were analyzed, and their safety was evaluated. **Results** According to the National Institutes of Health Stroke Scale score (NIHSS), the clinical efficacy in the combination group was higher than that in interactive scalp acupuncture group or hot medicinal compress therapy group, and the clinical efficacy in interactive scalp acupuncture group was higher than that in hot medicinal compress therapy group ($P<0.05$). After treatment, the scores of Fugl-Meyer Assessment (FMA) and modified Babbitt Index (MBI) as well as levels of brain-derived neurotrophic factor and nerve growth factor in the three groups were raised, and these in the combination group were elevated when compared with those in interactive scalp acupuncture group ($P<0.05$). The MBI score in interactive scalp acupuncture group was higher than that in hot medicinal compress therapy group ($P<0.05$). There was no statistically significant difference in the incidence of adverse reactions between the two groups ($P>0.05$). **Conclusion** Interactive scalp acupuncture combined with hot medicinal

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compress therapy may have a good efficacy on stroke patients through improving patients' motor function and living ability and repairing neurological function, with a good safety.

1 Introduction

Stroke is a major chronic non-communicable disease, seriously threating the health of the Chinese people. It includes ischemic stroke and hemorrhagic stroke, with the characteristics of sudden onset and rapid progression. Stroke is one of the main causes of death and disability among adults in China, and its incidence rate has been increasing in recent years [1,2]. At present, clinical treatment of stroke often relies on Western medicine, including neurotrophic and muscle relaxant drugs. Western medicine alone has certain clinical effects, but for some patients, the heavy economic burden and long treatment make their recovery difficult. Therefore, Western medicine combined with traditional Chinese medicine (TCM) is worth considering [3].

According to TCM, it is believed that post-stroke hemiplegia is caused by blood stagnation in the brain collaterals or blood spillage outside the veins to result in poor circulation and insufficient nutrition of blood and qi in the brain. Its treatment should be based on activating blood circulation and removing blood stasis to regulate and improve the main and collateral channels [4]. Previous study showed that Hot medicinal compress therapy has good effects of warming meridians, promoting blood circulation and relieving pain, alleviating the pain of stroke patients and improving the motor function of their upper limbs [5]. Abdominal acupuncture therapy and moxa steaming and ironing therapy have a synergistic effect on stage Ⅰ shoulder hand syndrome after stroke [6]. Further, interactive scalp acupuncture therapy combines traditional scalp acupuncture with modern rehabilitation training to alleviate clinical symptoms such as movement disorders and cognitive disorders, but the efficacy of interactive scalp acupuncture alone is not satisfactory [7, 8].

Taken together, this study analyzes the clinical characteristics of stroke patients and explores the efficacy of interactive scalp acupuncture combined with hot medicinal compress therapy, with the intention of providing reference and guidance for the treatment of stoke in the clinical practice.

2 Materials and methods

2.1 General data

57 stroke patients who received interactive scalp acupuncture combined with hot medicinal compress therapy in our hospital from June 2021 to June 2023 were assigned into combination group, 56 patients who received interactive scalp acupuncture in the same department during the same period were allocated into interactive scalp acupuncture group, and 59 patients who received hot medicinal compress therapy were divided into hot medicinal compress therapy group. Patients in the three groups aged 30-80, with a disease duration of 0.5-2.2 months. The difference of gender, age, Brunnstrom classification, and hemiplegic side in the three groups was not statistically significant but comparable, as shown in Table 1.

2.2 Inclusion and exclusion criteria

2.2.1 Inclusion

(1) Patients met the diagnostic criteria of ischemic stroke from Chinese Guidelines for Diagnosis and Treatment of Acute Ischemic Stroke 2018 [9]. (2) Patients were diagnosed by cranial magnetic resonance imaging (MRI) or computed tomography (CT). (3) Patients aged 20-80. (4) Patients with first-time onset of stroke. (5) Patients with unilateral hemiplegia and Brunnstrom Rating Scale grading of II-IV.

2.2.2 Exclusion criteria

(1) Patients who were allergic to the drugs used in this study. (2) Patients with other serious diseases such as cerebral hernia and intracranial hemorrhage. (3) Patients with coagulation disorders or a tendency to bleed. (4) Patients with immune dysfunction. (5) Patients' family members with poor adherence. (6) Pregnant and lactating women.

Table 1 Comparison of general data in the three groups

Groups	Cases	Gender (case)		Age (years old)	Average age (years old)	Disease duration (month)	Average duration of disease (month)	Brunnstrom classification (case)			Hemiplegic side (case)	
		Male	Female					Ⅱ	Ⅲ	Ⅳ	Left	Right
Hot medicinal compress therapy group	59	40	19	35-78	52.90±10.04	0.5-2.2	1.51±0.35	23	20	16	13	46
Interactive scalp acupuncture group	56	37	19	35-73	54.84±9.94	0.8-2.1	1.45±0.32	21	17	18	11	45
Combination group	57	39	18	34-77	56.21±10.17	0.8-2.0	1.40±0.30	20	21	16	14	43
χ^2/F/Z		0.076			1.593		1.627	0.193			0.397	
P		0.963			0.206		0.200	0.908			0.820	

2.3 Methods

2.3.1 Interactive scalp acupuncture group

Interactive scalp acupuncture therapy was given to the patients in this group. Patients were guided to keep in supine position, and the premotor area, balance area, and anterior oblique line of vertex-temporal were selected as acupuncture points. After disinfection of the hands with the seven-step washing method, the single-use sterile acupuncture needles (Wujiang City Cloud & Dragon Medical Device Co., Ltd.; specification: 0.3 mm×40 mm) were inserted into the underlying galea aponeurotica at 15 through the scalp. After the angle of the needles was changed to make the needles parallel to the scalp, the needle was inserted into a depth of 25-30 mm again. The needles were twisted once every 10 min at a frequency of 200 times/min for 3-4 min, and left in place for a total of 30 min. The needles were withdrawn by needle-holding hand, and needle-pressing hand was used to press the needle hole by a cotton swab to prevent bleeding. The treatment of interactive scalp acupuncture was performed once a day and 5 times a week, with a total of 4 weeks [10].

2.4 Hot medicinal compress therapy group

Hot medicinal compress therapy was given to the patients in this group. Formula: 50 g each of Semen Raphani, Tetradium ruticarpum, Cuscuta chinensis Lam, Semen sinapis, Pheretima, and Perilla frutescens. The medicinal formula was put into a small cloth bag, shaken well, and heated in a microwave oven at the temperature of 60-70℃ for 5-7 min. Then patients were instructed to keep supine position and acupuncture points of Quchi, Shaohai, Fengshi, Zusanli, Xiexi, Zhaohai, Jianyu, Hegu, Neiguan, Futu, Neixiyan, Waixiyan, and Kunlun on their affected limbs were selected for massage, followed by hot medicinal compress therapy. Medicine bags were wrapped by small towels and applied to push and massage the affected limb back and forth. With the gradual decrease of the temperature in the medicine bags, the massage intensity and stay time of Quchi and Hegu acupuncture points were increased. Hot medicinal compress therapy was performed twice a

day for a total of 4 weeks, with 20 min for each time. 1 course of treatment was 2 weeks [11].

2.3.3 Combination group

Patients in this group were treated with interactive scalp acupuncture combined with hot medicinal compress therapy. Interactive scalp acupuncture and hot medicinal compress therapy were performed as above for a total of 4 weeks.

2.4 Observational indicators

2.4.1 Clinical efficacy

Clinical efficacy in the three groups was compared. Criteria for assessment of efficacy referred to National Institutes of Health Stroke Scale (NIHSS). Significantly effective: the reduction of NIHSS score by more than 45%; effective: the reduction of NIHSS score by 18-45%; ineffective: the reduction of NIHSS score by less than 18% [12]. Total effective rate = the number of (significantly effective + effective) cases /total number of cases × 100%.

2.4.2 Motor function

Motor function in the three groups of patients was assessed and compared before and after 4 weeks of treatment. The Fugl-Meyer Assessment (FMA) Scale was used to assess the motor function through analyzing the reflex activity of muscles, hyperreflexia, joint flexor synergism, extensor synergism, activity out of synergism, etc. This scale was divided into two categories of upper limb (0-66 points) and lower limb (0-34 points), with the higher score implying the better motor function of the patients [13].

2.4.3 Living ability

The life function scores of the patients in the three groups were measured and compared before and after 4 weeks of treatment, and Modified Babbitt Index (MBI) scale was used to assess the patients' daily living ability from 10 aspects, such as bathing, dressing, toileting, grooming, eating, controlling urination and defecation, etc., with a total of 0-100 points. The higher score indicated the better daily living ability of the patients [14].

2.4.4 Serum indexes

The serum indexes in the three groups of patients before and after 4 weeks of treatment were analyzed and compared. 5 mL of fasting elbow venous blood was collected from the patients in the early morning within 24 h before and after treatment, respectively, and then left to stand at room temperature for 30-60 min. Then the blood was centrifuged at 3000 r/min for 10 min, and the serum was separated and stored at -20℃ for measurement. Serum brain-derived neurotrophic factor (BDNF) and nerve growth factor (NGF) levels were measured by ELx800 automatic microplate reader (BioTech, USA).

2.4.5 Adverse reactions

The incidence of adverse reactions such as reddening in the three groups of patients during the treatment was evaluated and compared.

2.5 Statistical methods

SPSS 20.0 was applied for statistical analysis. Count data were displayed as percentages (%). The comparison between two groups was conducted using χ^2 test. Measurement data were expressed as mean ± standard deviation ($\bar{x}$ ± s). One-way ANOVA or Kruskal-Wallis H test was used for comparison among multiple groups, LSD test was used for pduo comparison between groups, and paired sample t test was used for comparison at different time points in the same group. $P<0.05$ was considered to be statistically significant.

3 Results

3.1 The three groups of patients were compared in terms of clinical efficacy

According to the NIHSS, the clinical efficacy in the combination group was higher than that in interactive scalp acupuncture group and hot medicinal compress therapy group, and the clinical efficacy in interactive scalp acupuncture group was higher than that in hot medicinal compress therapy group ($P<0.05$), as displayed in Table 2.

Table 2 Comparison of clinical efficacy among the three groups [cases (%)]

Groups	Cases	Significantly effective	Effective	Ineffective	Effective rate
Hot medicinal compress therapy group	59	20 (33.90)	15 (25.42)	24 (40.68)	35 (59.32)
Interactive scalp acupuncture group	56	25 (44.64)	18 (32.15)	13 (23.21)	43 (78.79)$^{\#}$
Combination group	57	32 (56.14)	21 (36.84)	4 (7.02)	53 (92.98)$^{\#\wedge}$
χ^2					18.111
P					0.000

Note: $^{\#}$P<0.05 compared with hot medicinal compress therapy group; $^{\wedge}$P<0.05 compared with interactive scalp acupuncture group

3.2The three groups of patients were compared in terms of motor function scores

Before treatment, there was no statistically significant difference in the comparison of upper limb, lower limb, and cognition FMA scores among the three groups (P>0.05). After treatment, the upper limb, lower limb, and cognition FMA scores in the three groups were increased (P<0.05), and these in combination group were elevated when compared with those in interactive scalp acupuncture group or in hot medicinal compress therapy group (P<0.05), as shown in Table 3.

Table 3 Comparison of FMA scores among the three groups ($\bar{x}$±s, points)

Groups	Cases	Upper limb		Lower limb		Cognition	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Hot medicinal compress therapy group	59	24.36±5.16	32.61±4.99*	17.29±1.50	21.92±1.78*	16.44±2.16	19.47±2.67*
Interactive scalp acupuncture group	56	24.38±5.04	33.25±5.18*	17.52±1.56	22.23±1.75*	16.61±2.27	19.86±2.72*
Combination group	57	24.49±2.30	39.88±7.96$^{*\wedge\#}$	17.65±1.65	27.51±2.17$^{*\wedge\#}$	17.04±2.15	24.81±2.96$^{*\wedge\#}$
F		0.016	24.223	0.786	154.858	1.128	65.351
P		0.984	0.000	0.457	0.000	0.326	0.000

Note: *P<0.05 compared with the same group before treatment; $^{\#}$P<0.05 compared with hot medicinal compress therapy group; $^{\wedge}$P<0.05 compared with interactive scalp acupuncture group

3.3 The three groups of patients were compared in terms of living ability scores

Before treatment, there was no statistically significant difference in MBI score among the three groups (P>0.05). After treatment, MBI score in the three groups was increased (P<0.05), with MBI score in

combination group being higher than that in hot medicinal compress therapy group or interactive scalp acupuncture group (P<0.05) and MBI score in interactive scalp acupuncture group being higher than that in hot medicinal compress therapy group (P<0.05), as seen in Table 4.

Table 4 Comparison of MBI score among the three groups ($\bar{x}$±s, points)

Groups	Cases	MBI	
		Before treatment	After treatment
Hot medicinal compress therapy group	59	68.41±5.73	73.90±7.14*
Interactive scalp acupuncture group	56	68.13±5.67	79.61±6.41*#
Combination group	57	68.54±5.74	87.16±6.57*#^
F		0.079	56.675
P		0.924	0.000

Note: *P<0.05 compared with the same group before treatment; #P<0.05 compared with hot medicinal compress therapy group; ^P<0.05 compared with interactive scalp acupuncture group.

3.4 The three groups of patients were compared in terms of serum indexes

Before treatment, there was no statistically significant difference in the levels of BDNF and NGF among the three groups (P>0.05). After treatment, the levels of BDNF and NGF in all three groups were increased (P<0.05), and the levels in combination group were higher than those in hot medicinal compress therapy group or interactive scalp acupuncture group (P<0.05), as exhibited in Table 5.

Table 5 Comparison of BDNF and NGF among the three groups ($\bar{x}$±s, ng/mL)

Groups	Cases	BDNF		NGF	
		Before treatment	After treatment	Before treatment	After treatment
Hot medicinal compress therapy group	59	2.59±0.42	3.56±0.32*	4.40±0.98	7.76±1.16*
Interactive scalp acupuncture group	56	2.57±0.43	3.67±0.39*	4.38±1.01	7.85±1.11*
Combination group	57	2.63±0.30	4.95±0.30*^#	4.42±1.03	8.82±1.39*^#
F		0.353	301.238	0.022	17.113
P		0.703	0.000	0.978	0.000

Note: *P<0.05 compared with the same group before treatment; #P<0.05 compared with hot medicinal compress therapy group; ^P<0.05 compared with interactive scalp acupuncture group.

3.5 The three groups of patients were compared in terms of adverse reactions

There was no statistically significant difference in the incidence of adverse reactions among the three groups (P>0.05), as shown in Table 6.

Table 6 Comparison of adverse reactions among the three groups [cases (%)]

Groups	Cases	Reddening
Hot medicinal compress therapy group	59	3(5.08)
Interactive scalp acupuncture group	56	0(0.00)
Combination group	57	2(3.51)
χ^2		4.187
P		0.123

4 Discussion

This study explores the clinical efficacy of interactive

scalp acupuncture combined with hot medicinal compress therapy in the treatment of stroke patients, with the aim of improving the clinical efficacy of the patients. Our study has demonstrated that interactive scalp acupuncture combined with hot medicinal compress therapy may have a good efficacy on stroke patients.

According to TCM, post-stroke hemiplegia may belong to the category of hemiplegia, and its pathogenesis is the deficiency of qi in middle-jiao, qi stagnation, and blood stasis causing water retention, with post-stroke limb disuse, qi deficiency, and blood stasis as the symptoms [15,16]. By interactive scalp acupuncture, premotor area, balance area, and anterior oblique line of vertex-temporal were selected as the acupuncture points, diagonally across multiple veins and foot Shaoyang meridians, thus regulating the whole body's yang meridians and qi [17]. Interactive scalp acupuncture is different from the traditional simple superimposition of acupuncture and training, it is a combination of scalp acupuncture and rehabilitation therapy. This treatment focused on improving the stroke patients' active activities, and it can promote them to experience normal movement patterns [18]. Interactive scalp acupuncture is effective in improving motor function and further enhancing living ability of the patients with post-stroke hemiplegia [19]. Previous study showed that the effects of interactive dynamic scalp acupuncture on lower-limb motor function and walking ability of post-stroke patients were superior to simple combination therap and traditional scalp acupuncture [20, 21].

Besides, Euodia rutaecarpa is effective in moving qi, relieving pain, promoting blood circulation, and calming the adverse-rising energy [22]. It has been acknowledged that Euodia rutaecarpa can restore motor function in stroke patients [23]. Semen sinapis and Perilla frutescens are effective in dispersing knots, expelling phlegm, and stimulating the flow of vital energy [22]. A study has demonstrated that Semen sinapis exerts a meridian-dredging effect on stroke patients [24]. Heating multiple TCM herbs can collectively enhance the efficacy of activating blood circulation and removing blood stasis [22]. At the same time, hot medicinal compress therapy can make the medicine penetrate the skin and acupuncture points, and deliver qi to the affected sites, which has the effect of warming meridians, expelling cold, freeing urination, reducing swelling and alleviating pain. The therapy works synergistically through the drug effect and thermal effect, thus reducing the severity of the condition of stroke patients, promoting the recovery of motor function, improving the function of their limbs, and enhancing daily living ability [25,26]. This study has revealed that interactive scalp acupuncture combined with hot medicinal compress therapy improves motor function and enhances living ability of the stroke patients. Therefore, interactive scalp acupuncture combined with hot medicinal compress therapy may be more advantageous in terms of recovering daily living ability, activating blood circulation, and eliminating blood stasis, which may help to restore patients' motor function.

As Li et al. proposed, NGF and BDNF are important protein factors for nerve cell regeneration and repair, involving the pathological process of brain injury in stroke, with higher levels of NGF and BDNF implying less severe injury, which can be used as reference indexes for assessing neurological functions [27]. This study revealed that interactive scalp acupuncture combined with hot medicinal compress therapy facilitated the recovery of neurological function of the stroke patients. Interactive scalp acupuncture promotes the recovery of neurological function through repeated needle stimulation of the relevant nerve tissue in the treatment area of the head [28]. Hot medicinal compress therapy combines the dual role of drugs and heat. By heat, the drugs are able to penetrate the body through the skin, directly targeting various acupuncture points [29]. Hot medicinal compress therapy can improve the patients' blood circulation, exert the effects of warming and activating meridians, and facilitate the recovery of neurological function [30]. Therefore, interactive scalp acupuncture combined with hot medicinal compress therapy may help to repair neurological function of stroke patients.

Compared with interactive scalp acupuncture or hot medicinal compress therapy, interactive scalp acupuncture combined with hot medicinal compress therapy did not increase the incidence of adverse reactions such as headache, nausea, and vomiting, indicating the good safety of this method. However, due to the limited number of sample cases in this study, the data collected may be biased, so we need to include more samples to explore the efficacy and safety of interactive scalp acupuncture combined with hot medicinal compress therapy for stroke patients.

In conclusion, interactive scalp acupuncture combined with hot medicinal compress therapy may have a good efficacy on stroke patients through improving patients' motor function and living ability as well as repairing neurological function, with a good safety.

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Not applicable

Conflict-of-Interest

The authors declare no conflicts of interest.

Authors' contributions

Conceptualization: Xiaoyang Chen; Data curation: Chenfei Huang; Formal analysis:Xiaoyang Chen; Methodology: Chenfei Huang; Writing – original draft:Xiaoyang Chen; Writing – review and editing:Chenfei Huang; All authors have read and agreed to the published version of manuscript.

Ethics approval and consent to participate

This study was approved by Medical Ethics Committee, and patients were informed and agreed.

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Availability of Data and Materials

The analyzed data sets generated during the study are available from the corresponding author on reasonable request.

Supplementary Material

Not applicable

References

[1] Wang L, Peng B, Zhang H, et al. Summary of the Chinese Stroke Prevention and Treatment Report 2020 [J]. Chin J Cerebrovasc Dis, 2022, 19 (2): 136-144.

[2] Wang L, Liu J, Yang Y, et al. The Prevention and Treatment of Stroke Still Face Huge Challenges-Brief Report on Stroke Prevention and Treatment in China, 2018 [J]. Chin Circ J, 2019,34 (2): 105-119.

[3] Tang Y, Yao Z. Progress in the study of acupuncture combined with traditional Chinese medicine rehabilitation for the treatment of post-stroke trunk control disorders [J]. Shaanxi J Tradit, 2023,44 (7): 987-989.

[4] Cao X, Zhang H, Chen C, et al. The effects of traditional Chinese medicine massage combined with modern rehabilitation on spasticity, limb motor function and quality of life of elderly stroke patients [J]. Chin J Geront, 2018,38 (22): 5397-5399.

[5] Wang X, Wang L, Chen H, et al. Clinical Study on Modified Medicine -ironing Therapy for Shoulder -hand Syndrome after Stroke [J]. Journal of new traditional Chinese medicine, 2019, 51 (12): 282-285.

[6] He Shengsan, Yang Haoran, Jin Xin, et al. Evaluation of Curative Effect of Abdominal Acupuncture Combined with Moxa Steaming and Ironing Therapy on Stage I Shoulder Hand Syndrome after Stroke [J]. Journal of Emergency in Traditional Chinese Medicine, 2022, 31 (12): 2173-2177.

[7] Zhang C, Zhang S, Wang Y, et al. Interactive scalp acupuncture for cognitive dysfunction after stroke: a randomized controlled trial. Zhongguo Zhen Jiu. 2021 Mar 12;41(3):252-6.

[8] Liao Y, Liu F, Yang J, et al. Analysis of the Efficacy of Acupuncture Combined with Rehabilitation Training in the Treatment of Upper Limb Spasm after Stroke: A Systematic Review and Meta-Analysis. Biomed Res Int. 2022:8663356.

[9] Chinese Society of Neurology, Cerebrovascular Disease Group of the Neurology Branch of the Chinese Medical Association. Guidelines for the Diagnosis and Treatment of Acute Ischemic Stroke in

China 2018 [J]. Chin J Neurol, 2018,51 (9).

[10] Liu Y, Mao H, Li Y, et al. Interactive scalp acupuncture for hemiplegic upper extremity motor dysfunction in patients with ischemic stroke: a randomized controlled trial [J/OL]. Chin Acupunc, 1-7.

[11] Qu Z. Analysis of the application value of medicinal ironing with Chinese massage to promote limb rehabilitation of hemiplegic patients with stroke [J]. Clin J Chin Med, 2019,11 (6): 32-34.

[12] Di M, Hu L, Kong L, et al. The effect of Buyang Huanwu Tang on clinical efficacy, neurological function scores, and inflammatory factor levels in elderly patients with ischemic stroke [J]. Pract Geriatr, 2019 (4): 386-388.

[13] Peng C, Wu X. Effects of Fuzheng-Butu Acupuncture and Moxibustion on Strength of Lower Limb Muscles, Balance and Walking Function in Patients with Post-Stroke Hemiplegia [J]. J Clin Acupunc Moxibus. 2019. 35 (9): 4-7.

[14] Chen J. Effects of massage therapy with task-oriented training on balance function and daily living ability of stroke patients [J]. Nursing Pract Rese. 2021.18 (21): 3228-3232.

[15] Meng F, Wen J. Effect of warming acupuncture stimulation of Waiguan (TE5) on post-stroke should-hand syndrome [J]. Acupunc Rese, 2014,39 (3): 228-231+251.

[16] Xie L, Chen S, Wang Y, et al. Observation on the therapeutic effect of modified Shaoyao Gancao Tang combined with exercise training on elbow joint flexion spasms in patients with hemiplegia after stroke [J]. Mod J Integr Tradit Chin West Med, 2016,25 (7): 750-752.

[17] Wang Z, Zhou, Liang Z, et al. The Clinical Effect of Acupuncture, Hot Medicinal Compress Therapy Combined with Sling Exercise Therapy for the Treatment of Stage Ⅰ Shoulder-Hand Syndrome after Stroke [J]. World Chin Med, 2020,15 (18): 2808-2812.

[18] Wang J, Cui X, Ni H, et al. The effect of interactive scalp acupuncture treatment on motor function in stroke patients [J]. Chinese J Rehabilitation Med, 2012,27 (10): 941-943.

[19] Zhao G, Yang T. Feasibility analysis of interactive scalp acupuncture for improving physical and physiological functions in hemiplegic patients after stroke [J]. Jilin J Tradit Chin Med, 2019,39 (3): 404-406+420.

[20] Zhang S, Wang Y, Zhang C, et al. Effects of Interactive Dynamic Scalp Acupuncture on Motor Function and Gait of Lower Limbs after Stroke: A Multicenter, Randomized, Controlled Clinical Trial. Chin J Integr Med. 2022 Jun;28(6):483-491.

[21] Zhang S, Wang Y, Zhang C, et al. Effect of Interactive Dynamic Scalp Acupuncture on Post-Stroke Cognitive Function, Depression, and Anxiety: A Multicenter, Randomized, Controlled Trial. Chin J Integr Med. 2022 Feb;28(2):106-115.

[22] Guo T. Study on the Effect of Hot Medicinal Compress Therapy Combined with Traditional Chinese Medicine Massage Nursing On Limb Rehabilitation of Stroke Patients with Hemiplegia [J]. Chin Med Mode Dist Educa Chin, 2022-20 (9): 163-164+197.

[23] Kong L, Ma X, Zhang L. Application of Wuzhuyu on Yongquan acupoint for early rehabilitation of patients with limb movement disorders after stroke [J]. Chin J Rural Med Pharm, 2023,30 (10): 23-24.

[24] Wei H, Liu L, Chen X. Clinical Observation on the Treatment of Shoulder Hand Syndrome after Stroke with Traditional Chinese Medicine Acupoint Application Combined with Low Frequency Pulse Therapy [J]. J Guangxi Univ Tradit Chin Med, 2022,25 (5): 29-32.

[25] Luo W, Li Z, Zhang H, et al. Meta analysis of herbal ironing therapy for upper limb motor dysfunction after stroke [J]. J Guizhou Univ Tradit Chin Med, 2023,45 (4): 55-61.

[26] Liu J. Acupoint Massage Combined With Hot Compress in The Treatment of Shoulder Hand Syndrome in Acute Stage of Cerebral Apoplexy [J]. Chin Med Record, 2017,18 (2): 96-99.

[27] Li X, Huang X, Mo J, et al. Effect of Peiyuan Huanwu Decoction Combined with Rehabilitation Training on NGF and BDNF Protein for Cerebral Ischemic Stroke Recovery Patients [J]. J Sichuan

Tradit Chin Med, 2017,35 (7): 143-145.

[28] Zha P, Cong L. A systematic evaluation and meta-analysis of the therapeutic effect of scalp acupuncture on acute hypertensive intracerebral hemorrhage [J]. Guangming Tradit Chin Med, 2023,38 (18): 3510-3514.

[29] Luo X. Traditional Chinese Medicine Intervention Combined with Early Rehabilitation Nursing for Neuromotor Ability and Quality of Life in Stroke Patients [J]. J Sichuan Tradit Chin Med, 2016,34 (4): 214-216.

[30] Zhang W, Chen S, Lu G. A Study on the Correlation between the Efficacy, Nature, Taste and Meridian of Cuscuta chinensis and Modern Pharmacology [C]. Traditional Chinese Medicine Professional Committee of Zhejiang Traditional Chinese Medicine Association. Proceedings of 2009 Annual Meeting of Zhejiang Provincial Traditional Chinese Medicine Conference [Publisher unknown], 2009:90-95.