

Clinical Research Progress of Acupuncture in the Treatment of Post-Stroke Shoulder-Hand Syndrome

Mingming Feng¹, Haoyu Dong¹, Zhaoxin Wan^{2,*}

¹School of Acupuncture and Massage, Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China

²Shaanxi Provincial Hospital of Chinese Medicine, Xi'an 710003, Shaanxi, China

*Correspondence Author

Abstract: *Shoulder-hand syndrome (SHS) is a common complication in hemiplegic patients after stroke, with core clinical manifestations including shoulder-hand pain, sensory dysfunction, vascular regulatory disorders, local tissue edema, and limited range of motion of limbs. These symptoms significantly delay the recovery of upper limb motor function and impair patients' ability of daily living. As a classic therapy in traditional Chinese medicine (TCM), acupuncture has demonstrated definite therapeutic effects in the clinical intervention of post-stroke SHS. This article systematically sorts out and summarizes various widely used acupuncture-related therapies in current clinical practice, including conventional filiform needle therapy, Dici needle therapy, floating needle therapy, wrist-ankle needle therapy, acupotomy therapy, and other special acupuncture techniques applied in the treatment of this disease, aiming to provide valuable reference for relevant clinical medical workers.*

Keywords: Shoulder-hand syndrome, Acupuncture, Research progress.

1. Introduction

Stroke, also known as apoplexy, is characterized by high morbidity, high disability rate, and high mortality. Such diseases greatly reduce patients' survival rate and severely affect their quality of life. Shoulder-hand syndrome (SHS) is a common sequela after stroke, and relevant studies have shown that its incidence ranges from 1.5% to 70% [1]. Although SHS is not a life-threatening sequela, the pain caused by this condition seriously hinders the rehabilitation of patients' limb function, and there is currently no long-term radical treatment plan for SHS in clinical practice. Western medical treatment mainly focuses on drug therapy, often combined with rehabilitation training. However, drug therapy can only alleviate symptoms at the surface level and cannot fundamentally block the progression of SHS, and it is accompanied by many side effects. For example, clinically commonly used corticosteroids can temporarily relieve pain [2], but long-term use may lead to adverse consequences such as increased blood glucose, sleep disorders, and blood pressure fluctuations. Compared with Western medical treatment, TCM therapy has more ideal therapeutic effects. Acupuncture is an important treatment method for post-stroke SHS, which has significant curative effects in relieving pain, eliminating edema, promoting neuromuscular rehabilitation, and restoring muscle tension and strength [3]. TCM therapy centered on acupuncture has good adaptability to SHS, with not only definite curative effect but also higher safety. Acupuncture therapy includes a variety of special needles, and common ones in current clinical application include elongated needle, floating needle, acupotomy, fire needle, and intradermal needle [4]. Despite the differences in the shape of these needles, effective analgesic effects can be achieved through standardized operating techniques. This article summarizes the application progress of acupuncture in the treatment of post-stroke SHS, aiming to expand the clinical application scope of acupuncture therapy.

2. Staging of SHS

The clinical progression of shoulder-hand syndrome (SHS)

can be divided into the following three stages [5]: Stage I (Early stage): Patients experience a heavy and uncomfortable feeling in both hands, accompanied by vascular motor dysfunction such as inflammation-related edema, skin flushing, or hyperhidrosis. Meanwhile, significant pain is felt during passive movement of the arms, elbows, wrists, and metacarpophalangeal joints; X-ray imaging examination shows focal decalcification of the bones in the hands and shoulders. Stage II (Late stage): Patients gradually develop neurotrophic disorders. The degree of limb swelling and pigmentation-related changes are significantly reduced, but the pain in the shoulders and hands is further aggravated. The skin of the hands and upper limbs tends to thin, the small muscles of the hands begin to atrophy, and the limited range of motion of the shoulder and hand joints persists or is slightly relieved. Stage III (Sequela stage): The pain and edema in the shoulder and hand areas gradually subside, the skin tissue contracts and becomes thinner, pigmentation is visible in the metacarpophalangeal joints, the abnormal vascular motor manifestations of the hands disappear completely, the motor function of the upper limbs is completely lost, and patients' daily activities are fully restricted; X-ray examination indicates osteoporosis. If effective treatment measures are not taken in a timely manner to control the progression of the disease, long-term tissue fixation and relative hypoxia will induce interosseous muscle atrophy, leading to contracture of the hand joints. At the same time, fibrosis of local exudates will aggravate tissue adhesion, eventually resulting in irreversible disability of patients.

3. TCM Etiology and Pathogenesis

There is no clear corresponding disease name for shoulder-hand syndrome (SHS) in ancient TCM documents. Its related symptoms and pathogenesis discussions are scattered in categories such as "Bi syndrome", "Hemiplegia", "Hemiplegic shoulder", and "Wrist disorder". Its main pathogenesis is a syndrome of deficiency in origin and excess in superficiality, with qi deficiency as the root cause, and blood stasis, phlegm obstruction of collaterals as the superficial causes. The mutual accumulation of phlegm and

blood stasis leads to blockage of qi and blood, resulting in pain due to obstruction. Over time, the tendons and vessels lose nourishment. It is the result of the combined action of multiple pathogenic factors such as phlegm, blood stasis, and water dampness [6-7]. The disease involves the meridians, tendons, bones, skin, and muscles of the shoulders and hands, and is closely related to the dysfunction of the liver, spleen, and kidneys. “Huangdi Neijing·Suwen·Bi Lun” proposes that “the three qi of wind, cold, and dampness converge to form Bi syndrome”, clarifying that exogenous pathogenic factors are important inducements for Bi syndrome. The discussion that “when it is in the vessels, blood coagulates and does not flow; when it is in the tendons, they bend and cannot extend” accurately conforms to the core symptoms of pain, swelling, and limited activity in SHS patients. “Lingshu·Cijie Zhen Xie” points out that “deficient pathogenic factors invade one side of the body... resulting in hemiplegia”, revealing that qi deficiency after stroke and retention of pathogenic factors are the pathogenic basis of SHS as a sequela of hemiplegia. From the perspective of pathogenesis evolution, stroke leads to visceral deficiency. Insufficiency of the liver and kidneys results in malnutrition of tendons and bones; spleen deficiency leads to insufficient production of qi and blood, and weak blood circulation leads to stasis. “Poor blood circulation turns into water”, leading to overflow of water dampness into the skin and formation of swelling. If combined with invasion of wind, cold, and dampness pathogens, or internal heat generation, it will further aggravate meridian obstruction. As stated in “Yizong Bidu”, “Internal heat from zang-fu organs, combined with exogenous pathogens invading the meridians, leading to stagnation”, which corresponds to the manifestations of hot Bi syndrome such as skin flushing and increased skin temperature in the early stage of SHS. “Suwen·Jutong Lun” explains the mechanism of pain caused by cold pathogens: “Cold pathogens invade outside the vessels... resulting in sudden pain”. If the course of the disease is prolonged, the pathogen invades the collaterals over time. For example, “Zhenjiu Jiayi Jing” describes “hemiplegia, pain in the arms and wrists, inability to extend when bent”, and “Zhenjiu Dacheng” records “wrist soreness after stroke, inability to flex and extend, finger pain and inability to grasp objects”, which are consistent with the aggravated pain and limited activity in SHS Stage II. Eventually, due to continuous malnutrition of tendons, muscles, and bones, muscle atrophy and joint contracture occur, leading to irreversible disability.

4. Western Medical Pathophysiology

In 1994, shoulder-hand syndrome (SHS) was officially classified as Complex Regional Pain Syndrome Type I by the International Association for the Study of Pain (IASP), which is essentially different from the type of pain limited to peripheral nerves. A prospective observational study conducted by Kim et al. [8] explored the imaging manifestations of ultrasound in complex regional pain syndrome. The results suggested that the pathophysiological mechanism of SHS may be caused by the superposition of shoulder-hand soft tissue injuries induced by frozen shoulder, rotator cuff tear, and hemiplegia itself in hemiplegic stroke patients. At present, Western medicine has not formed a unified conclusion on the pathogenesis of SHS. The relatively recognized mechanism is: acute onset of cerebrovascular

disease can involve the vascular motor center above the human motor center, leading to vascular motor nerve paralysis, which in turn results in increased sympathetic nerve excitability of the affected limb, vascular spasm, abnormal increase in peripheral blood flow, causing local tissue nutritional and metabolic disorders, and ultimately the occurrence of edema, pain and other symptoms in the affected limb. Pain further stimulates peripheral sensory nerves and transmits to the spinal cord, inducing abnormal excitatory discharge of intermediate spinal nerves, which again aggravates vascular motor dysfunction, forming a vicious circle. Therefore, Western medicine also names this condition “reflex sympathetic dystrophy” [9].

5. Acupuncture Treatment

Conventional body acupuncture is often used as the basic method for the treatment of SHS. Due to individual differences in acupoint selection ideas among different clinicians, there is currently no recognized standardized acupoint matching scheme in the academic community. In clinical practice, a combined intervention model of body acupuncture and other therapies is mostly adopted to improve the curative effect. With the continuous development and innovation of TCM acupuncture discipline, modern acupuncture treatment has been further enriched and expanded in multiple dimensions: in terms of needles, the selection of materials, specifications, sizes, and shape designs have been continuously optimized; in terms of treatment operations, the diversity of needling techniques, individualized adjustment of needle retention time, and the combined application of various auxiliary therapies have been gradually improved. In this context, a variety of acupuncture treatment schemes have emerged, providing clinicians with a wealth of choices. For example, filiform needle therapy, Dici needle therapy, floating needle therapy, wrist-ankle needle therapy, acupotomy therapy, etc. are widely used in clinical practice.

5.1 Filiform Needle Therapy

Yu Xueping et al. [10] divided 57 patients into a control group (conventional acupuncture method) with 28 cases and a treatment group (Baihu Yaotou needling method) with 29 cases. Both groups were given conventional drugs for stroke treatment and basic treatment to control complications such as hypertension and diabetes. The treatment group adopted Baihu Yaotou needling method at Jianyu (LI15), Quchi (LI4), Jianliao (TE14), and Hegu (LI4). After obtaining qi, the needle tip was lifted to the superficial layer (Tianbu), then inserted to the deep layer (Dibu) while twisting the needle body to the left and shaking it smoothly along an arc to form a semicircle. When lifting the needle, the needle body was twisted to the right and shaken along a square path with vibration at the corners, repeating the operation 3-4 times. Pingbu Pingxie (even reinforcing-even reducing) method was applied at Waiguan (TE5) and Houxi (SI3), with continuous treatment for two weeks. The control group selected the same acupoints as the treatment group but adopted Pingbu Pingxie method, retaining the needle for 50 minutes with continuous treatment for 2 weeks. The results showed that the Visual Analogue Scale (VAS) score, Fugl-Meyer Assessment (FMA) score, and swelling score of the treatment group were all

superior to those of the control group; the marked effective rate of the treatment group was 65.52%, and that of the control group was 28.57%, with a statistically significant difference between the two groups ($P < 0.05$).

5.2 Dici Needle Therapy

Wang Shurong et al. [11] treated 30 SHS patients with Dici needle acupoint pressing combined with Jiansanshen (three shoulder points) acupuncture. Common acupoints for shoulder pain on the affected side were selected, including Jianzhongshu (SI15), Jianwaishu (SI14), Naoshu (SI10), Shousanli (LI10), Quchi (LI11), and Yangxi (LI5). Each acupoint was pressed for 1 minute, followed by Jiansanshen acupuncture. The operation is simple with a large treatment dosage. The results showed statistically significant differences in pain and motor function between the two groups, and the upper limb function of the treatment group was effectively improved.

5.3 Floating Needle Therapy

Floating needle therapy is an acupuncture method that uses disposable floating needles to perform scanning and other needling activities in the superficial fascia around localized painful areas. Li Qing [12] randomly divided 60 SHS patients into a control group (acupuncture group) and a treatment group (floating needle + acupuncture group), with 30 cases in each group. Both groups were given conventional basic treatments such as neurology management, proper limb positioning, and exercise therapy-based functional training. The control group selected Temporal Three Points of scalp acupuncture on the affected side, with rapid needling and Pingbu Pingxie method; for body acupuncture on the affected upper limb, Luan Sanshen (three spasm points) and Jiansanshen were selected with oblique insertion and Pingbu Pingxie method, and conventional acupuncture was applied according to syndrome differentiation. The treatment group was combined with floating needle therapy. Patients were instructed to take a lateral position with the affected limb exposed upward. The insertion point was determined 6-8 cm near the tender point. After disinfection, the needle was inserted obliquely into the subcutaneous tissue at a fast speed, the needle body was placed flat and close to the skin for manipulation, and the skin was lifted to advance the needle body forward. When reaching the tender point, with the insertion point as the fulcrum, the needle body was moved in a fan shape, and the needle handle was used as the diameter for scanning until linear elevation of the patient's skin was observed. After treatment, the needle core was withdrawn, the needle handle was fixed, the needle hole was covered and then secured with adhesive tape, and the needle tube was removed after 24 hours of retention. The total effective rate of the treatment group was 93%, and that of the control group was 70%, indicating that floating needle combined with acupuncture has a significant effect in the treatment of post-stroke SHS.

5.4 Wrist-Ankle Needle Therapy

Wrist-ankle needle therapy follows the principles of "treating upper disorders from lower points, treating lower disorders from upper points, treating left disorders from left points, and

treating right disorders from right points". Insertion points are flexibly selected near the wrist and ankle joints according to the location of the lesion, keeping the needle in the superficial fascia with the needle tip pointing to the lesion [13]. Li Ruiqing et al. [14] compared wrist-ankle needle therapy with conventional acupuncture in the treatment of patients with SHS Stage I, retaining the needle for 30 minutes. The results showed that the total effective rate of the wrist-ankle needle group was 96.9% by comparing indicators such as pain, edema, and motor function between the two groups, indicating a significant curative effect. Wrist-ankle needle acts on the superficial subcutaneous layer without penetrating deep muscle tissue, so no conventional deqi sensations such as soreness, numbness, distension, or pain are required after needle insertion, and no manipulation is performed. Therefore, it can reduce patients' pain and the risk of needle syncope. It also has a significant curative effect when combined with oral TCM medicine and external application of TCM packs, which is worthy of further promotion [15-16].

5.5 Acupotomy Therapy

Li Yanyao [17] divided 60 patients into a control group (acupuncture group) and a treatment group (acupotomy group) by random number table method, with 30 cases in each group. Both groups were given basic drug treatment and rehabilitation functional training. The control group received scalp acupuncture at Dingnieqianxiexian (Anterior Oblique Line of Vertex-Temporal), Dingpang 1xian (Paravertebral Line 1 of Vertex), and Dingpang 2xian (Paravertebral Line 2 of Vertex), as well as body acupuncture at Hegu (LI4), Neiguan (PC6), Shousanli (LI10), Chize (LU5), Jianyu (LI15), and Ashi points. The treatment was performed once a day, continuously for 6 days with 1 day of rest. The treatment group included neck treatment, shoulder and upper arm treatment, upper limb flexor treatment, and upper limb extensor treatment. For neck treatment, longitudinal and horizontal incisions were made 1-2 times along the blade line 1.5-2.5 cm lateral to the spinous processes of C3-C7; for treatment of tender points in the shoulder and upper arm, the blade was inserted along the direction of muscle and ligament fibers, first performing longitudinal stripping, then swinging perpendicular to the muscle fibers, and repeatedly lifting and inserting several times; for upper limb flexor treatment, the blade was inserted perpendicular to the muscle fibers; for upper limb extensor treatment, the blade was inserted parallel to the muscle fibers. After penetrating the muscle belly, horizontal incisions were made 2-3 times for both muscle groups. Acupotomy treatment was performed on the first day of each course. Both groups had a course of 7 days, with a total of 4 courses of treatment. The results showed that the improvements in VAS score, FMA score, and swelling score of the treatment group after treatment were all superior to those of the control group. The total effective rate of the acupotomy group was 96.67%, and that of the simple acupuncture group was 86.67%, indicating that acupotomy has a significant effect in the treatment of SHS.

5.6 Other Characteristic Needling Therapies

Based on in-depth analysis of the pathogenesis of this disease and combined with patients' specific clinical symptoms, many scholars have accumulated valuable practical

experience in the diagnosis and treatment of this disease and flexibly adopted a series of characteristic acupuncture treatment methods. Li Lixia proposed that the occurrence of stroke is closely related to the functional state of the spleen and stomach. Dysfunction of the spleen in transporting clear yang leads to easy obstruction of the clear orifices by turbid yin pathogens, and at the same time, spleen deficiency and malnutrition easily lead to excessive liver qi, and liver wind disturbing the clear orifices induces this disease. In clinical diagnosis and treatment, she used “Lingnan Fire Needle Therapy” in the treatment of phlegm-stasis blocking collaterals type SHS and achieved good results. During treatment, main acupoints such as Quchi (LI11), Waiguan (TE5), Hegu (LI4), Baxie (EX-UE9), Jianyu (LI15), and Jianliao (TE14) were selected to regulate Yangming meridian qi and smooth Shaoyang meridian qi. Among them, needling Baxie (EX-UE9) can quickly improve patients’ finger movement function [18]. Huang Xinman et al. [19] adopted “Zishui Hanmu Needling Therapy” to regulate patients’ liver and kidney functions, combined with acupoints such as Jianyu (LI15), Quchi (LI11), and Waiguan (TE5) of the Stomach Meridian of Foot-Yangming, and assisted with electroacupuncture stimulation for comprehensive treatment. Multi-channel synergistic effect achieves both symptom and root treatment, and ultimately achieves good clinical efficacy. Most stroke patients are elderly and weak with deficient healthy qi, and exogenous pathogens are likely to invade and cause disease. Based on this, Shao Bin et al. [20] proposed that the core principle of treatment should be to consolidate the root and cultivate vitality, and created the “Fuzheng Butu Needling Therapy”. Through the mechanism of tonifying qi and generating blood, patients’ pain symptoms are relieved after treatment, muscle contraction ability is significantly improved, and nerve activity is effectively restored. “Qinglong Baiwei Needling Therapy” is similar to the above treatment methods, both belonging to the “shaking method” in needling techniques. Li Huihui et al. [21] applied Qinglong Baiwei Needling Therapy in clinical treatment and conducted a comparative study with the Pingbu Pingxie needling method adopted by the control group. The results showed that there were significant statistical differences in various observation indicators between the treatment group using Qinglong Baiwei Needling Therapy and the control group, and the analgesic effect was more prominent. Zhang Gong [22] believed that the occurrence of stroke is mostly due to brain injury, leading to insufficient nourishment of the clear orifices, which in turn causes disorders of qi movement, abnormal control and transportation of essence substances such as qi, blood, and body fluids, and ultimately affects limb and joint function. Therefore, the treatment should take refreshing the mind and opening the orifices as the core principle, selecting acupoints such as Renzhong (GV26), Jiquan (HT1), Chize (LU5), and Neiguan (PC6) to exert the effects of refreshing the mind and opening the orifices, regulating qi and blood, and dredging meridians, combined with conventional limb movement rehabilitation training. Clinical practice has shown that the 51 patients who received this treatment plan had significant improvements in edema symptoms, pain degree, and limb movement function.

6. Summary and Prospect

In the early stage of stroke onset, patients often attribute

relevant symptoms to limb movement limitation caused by stroke itself, and sensory abnormalities in the affected limb also easily lead to patients failing to detect pain and edema symptoms in a timely manner. If such manifestations are ignored and not intervened, the condition is likely to progress to joint deformity, which not only seriously interferes with patients’ daily life but also further increases the risk of disability. Therefore, early identification and intervention of this disease are of crucial significance for the subsequent rehabilitation process [23]. Acupuncture therapy has the advantages of high safety, low treatment cost, and can reduce liver and kidney function damage caused by oral drugs, so it has unique value in clinical application. However, there are still many urgent problems to be solved in the clinical research and practice of acupuncture therapy for SHS: Firstly, the implementation of acupuncture operations needs to fully consider the feasibility of the process. For example, after determining the acupoints, if the area where the acupoints are located cannot be fully exposed, how to scientifically guide patients to adjust to a suitable position to ensure the smooth progress of the operation; Secondly, whether the duration of needle retention and the difference in needling depth have a significant impact on the clinical efficacy of the acupuncture scheme, and the relevant mechanisms still need to be further clarified; Thirdly, the needling skills of characteristic needling therapies have high requirements for the operation level of clinicians, resulting in difficulty in popularizing and promoting some effective therapies in primary medical institutions; Fourthly, there is currently a lack of exclusive TCM syndrome differentiation and classification standards for SHS. Clinical treatment is mostly based on speculation of etiology and pathogenesis, or directly adopts the syndrome classification of stroke for diagnosis and treatment, resulting in insufficient pertinence; Fifthly, existing studies have not formed individualized and targeted treatment plans for each stage of SHS Stage I-III, and the treatment priorities of different disease stages have not been effectively distinguished; Sixthly, in recent years, new characteristic needling therapies such as intradermal needle and eye needle have shown significant curative effects in the treatment of various sequelae of stroke, and relevant studies are relatively abundant, but clinical research literature on the application of these therapies in the treatment of SHS is relatively scarce. The above research shortcomings can be used as key research directions in the future, providing entry points for further deepening the research on acupuncture treatment of SHS.

References

- [1] Gao Q, Nie H, Zhu C, et al. Non-pharmaceutical therapy for post-stroke shoulder -hand syndrome: Protocol for a systematic and network meta -analysis[J]. *Medicine* (Baltimore), 2020, 99 (23):e20527.
- [2] Zhang Xiaoli, Tang Chaozheng, Jia Jie. Analysis of Current Status in the Treatment of Post-stroke Shoulder-Hand Syndrome with Traditional Chinese and Western Medicine [J]. *Chinese Journal of Rehabilitation Medicine*, 2015, 30(03):294-298.
- [3] Wang Ruiqi, Wu Zhonghua, Huang Chunhua, et al. Network Meta-Analysis of Four Acupuncture Therapies for Post-Stroke Shoulder-Hand Syndrome [J]. *Chinese Acupuncture & Moxibustion*, 2021, 41(05):563-569.

- [4] Mo Zhizhen. Research Progress on the Treatment of Post-Stroke Shoulder-Hand Syndrome with Specialized Acupuncture Needles [J]. Guangming Journal of Chinese Medicine, 2023, 38(18):3656-3659.
- [5] Kong Fane, Wang Nan, Zheng Zuncheng. Research Progress on Rehabilitation for Post-Stroke Shoulder-Hand Syndrome [J]. Medical Innovation of China, 2020, 17(34):164-168.
- [6] Lu Xun, Chen Rui. Clinical Characteristics and Risk Factors of Traditional Chinese Medicine in Post-Stroke Shoulder-Hand Syndrome [J]. Inner Mongolia Journal of Traditional Chinese Medicine, 2016, 35(15):61-62.
- [7] Dai Guoqing. Observation on the Clinical Efficacy of Cross-Electroacupuncture at Cervical Jiaji Points for Stage I Post-Stroke Shoulder-Hand Syndrome [D]. Hei Longjiang University of Chinese Medicine, 2024.
- [8] Kim YW, Kim Y, Kim J'M. Is poststroke complex regional pain syndrome the combination of shoulder pain and soft tissue injury of the wrist? A prospective observational study: STROBE of ultrasonographic findings in complex regional pain syndrome [J]. Medicine (Baltimore), 2016, 95 (31) :e4388.
- [9] Guo Zhengang, Guo Dongjing, Guo Dongchao, et al. Forty Cases of Shoulder-Hand Syndrome Treated Primarily with Chaihu Guizhi Decoction [J]. China Health Care & Nutrition, 2019, 12:352-353.
- [10] Yu Xueping, Cao Hongtao, Ma Huihui. Clinical Efficacy Observation of Baihu Yaotou Needling Technique for Post-Stroke Shoulder-Hand Syndrome [J]. Journal of Clinical Acupuncture and Moxibustion, 2017, 33(02):21-24.
- [11] Wang Shurong, Liu Genli. A Study on the Application of Di-Needle Point Pressing Combined with Jian San Zhen in Patients with Post-Stroke Shoulder-Hand Syndrome [J]. Journal of Clinical Acupuncture and Moxibustion, 2022, 38(04):37-40.
- [12] Li Qing. Clinical Efficacy Observation of Floating Acupuncture Combined with Needling Therapy for Post-Stroke Shoulder-Hand Syndrome [D]. Guang Zhou University of Chinese Medicine, 2015.
- [13] Zheng Yi, Yu Yonghui, Fang Fanfu. Progress in the Research of Wrist-Ankle Acupuncture Therapy [J]. Hebei Journal of Traditional Chinese Medicine, 2014, 36(04):631-633.
- [14] Li Ruiqing, Wang Yiyang, Mei Jinjin, et al. Clinical Efficacy Observation of Wrist-Ankle Acupuncture for Stage I Post-Stroke Shoulder-Hand Syndrome [J]. Chinese Acupuncture & Moxibustion, 2022, 42(07):721-725.
- [15] Xu Jun, Huang Yisheng, Chen min, et al. Clinical Efficacy Observation of Wrist-Ankle Acupuncture for Stage I Post-Stroke Shoulder-Hand Syndrome [J]. Journal of Hubei University of Chinese Medicine, 2022, 24(04):97-99.
- [16] Jiang Wanming, Tang Yunmei, Yan Jiamin. Clinical Analysis of Wrist-Ankle Acupuncture Combined with Wuzi Powder Heat Compress Therapy and Pain Management in Patients with Post-Stroke Shoulder-Hand Syndrome [J]. Chinese Community Doctors, 2021, 37(24):172-173.
- [17] Li Yanyao. Progress in Clinical Research on Acupotomy for the Treatment of Post-Stroke Shoulder-Hand Syndrome [D]. Heilongjiang Academy of Chinese Medicine Sciences, 2017.
- [18] Wu Dandan, Li Lixia. Experience of Li Lixia in Treating Post-Stroke Shoulder-Hand Syndrome [J]. Journal of Changchun University of Chinese Medicine, 2022, 38(09):968-971.
- [19] Huang Xinman, He Lixin, Huang Chong, et al. Efficacy Observation of Electroacupuncture with the "Nourishing Water to Nourish Wood" Needling Method for Post-Cerebral Infarction Shoulder-Hand Syndrome [J]. Journal of Guangzhou University of Traditional Chinese Medicine, 2022, 39(05):1097-1103.
- [20] Shao Bin, Wang Jianbin, Jin Xing, et al. Clinical Observation of 32 Cases of Post-Stroke Shoulder-Hand Syndrome with Qi Deficiency Syndrome Treated by the "Strengthening Vital Qi and Nourishing the Spleen" Acupuncture Method Combined with Conventional Rehabilitation Training [J]. Journal of Gansu University of Chinese Medicine, 2022, 39(04):82-87.
- [21] Li Huihui, Wang Ying, Ji Haisheng, et al. Efficacy Observation of Qinglong Baiwei Needling Technique for Post-Stroke Shoulder-Hand Syndrome [J]. Clinical Journal of Traditional Chinese Medicine, 2022, 34(01):159-163.
- [22] Zhang Gong. Clinical Observation of Xingnao Kaiqiao Acupuncture Combined with Quantified Rehabilitation Training for Post-Stroke Shoulder-Hand Syndrome [J]. Journal of Practical Traditional Chinese Medicine, 2022, 38(03):472-474.
- [23] Wang Guojun, Bai Rui, Lei Haijun. Study on Huangqi Guizhi Wu Decoction in the Treatment of Post-Stroke Shoulder-Hand Syndrome [J]. Liaoning Journal of Traditional Chinese Medicine, 2023, 50(11):170-173.