

Clinical Research Progress of Fire Needle Therapy in Treating Skin Diseases

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Abstract: Fire needle therapy, as one of the commonly used external treatment methods in traditional Chinese medicine, has been widely used in the It has a long history, wide indications, accurate curative effect, and has a good prospect. This paper summarizes the application of fire needle therapy in various skin diseases in recent years, in order to explore the mechanism and efficacy of This paper summarizes the application of fire needle therapy in various skin diseases in recent years, in order to explore the mechanism and efficacy of fire needle therapy in the This paper summarizes the application of fire needle therapy in various skin diseases in recent years, in order to explore the mechanism and efficacy of fire needle therapy in the treatment of skin diseases, in order to provide clinical reference for the future application of fire needle therapy.

Keywords: Skin disease; Fire needle therapy; The research progress

Fire needle, first proposed in the Jin Dynasty Chen Tingzhi "Xiao Pin Fang", also known as "burning needle, simmering needle", is the point of a red-hot needle quickly pierced into the skin of human acupuncture points and then immediately pulled out. It has a long history of application and has been used until now. Fire acupuncture has the dual role of acupuncture and moxibustion, not only can dredge the meridians, remove blood stasis, swelling and pain, but also has a variety of effects such as warming the Yang to relieve pain, dispel wind and dispel cold. Now it has been widely used in the treatment of various skin diseases, such as herpes zoster and post-neuralgia, eczema, neurodermatitis, nodular itchy rash, vitiligo, chloasma, etc., all have achieved good results. Therefore, this paper summarizes the progress of clinical research on the treatment of skin diseases with fire acupuncture in recent years as follows.

1. Painful skin diseases

Pain, an unpleasant subjective sensation and emotional experience when the body is injured, is one of the more common symptoms of a variety of clinical diseases, with herpes zoster and post-neuralgia being more common in dermatology. Fire acupuncture can effectively relieve pain, Chinese medicine believes that fire acupuncture pain local, can unblock the meridians, encourage the flow of qi and blood, and it makes the qi and blood flow smoothly and reduces pain. Modern research has found that it is mainly related to the following aspects.① Reducing inflammatory response: First, fire needling directly stimulates the painful local area, which can use its high temperature to have sterilization and anti-inflammatory effects on the local area; relieves local skin tissue calcification, adhesions, and promotes edema absorption; accelerates blood flow and improves blood circulation, thus promoting tissue metabolism and reducing inflammatory response^[1]. Second, the fire needle has a regulatory effect on leukocytes, fire acupuncture can increase leukocyte exudation, enhance their phagocytosis, reduce inflammatory response and relieve pain^[2].② Regulation of chemokines: the cause of pain in the body is closely related to various chemokines in the body, chemokines can not only cause pain, but also have an analgesic effect, acupuncture can regulate the body's pain-causing and analgesic chemokines, by reducing the expression of pain-causing factors or increasing the expression of analgesic factors to play the analgesic effect^[3], and fire acupuncture than simple milli-needle acupuncture stimulation is stronger, more conducive to the analgesic effect.③ Nociceptive stimuli overlap and affect the nociceptive system: the nociceptive nerve impulses produced by the local skin of fire needles will be transmitted to the cortical nociceptive center through the same pathway as the nociceptive impulses caused by the organism's own visceral inflammation, and the pain caused by its needling will reduce the reception of pain by the cerebral cortex to the output of visceral inflammatory impulses^[4].

Herpes zoster and post-herpetic neuralgia, which belongs to the category of "snake sores and tangles" in Chinese medicine, is a painful viral infection caused by infection with varicella-zoster virus, and its main lesions are clusters of papules, blisters and herpes in a band-like distribution. If left untreated, the pain can last for a long time and seriously affect the quality of life of patients. Chinese medicine believes that the basic pathogenesis of the pain is no more than the following two aspects: First, the evil toxins are not cleared, stasis and toxins are intertwined, blocking the meridians, qi and blood, that is, "pain if not pass". The second is that the course of the disease over time depletes the body's qi and blood or there is a deficiency of qi and blood in the body, and the meridians and channels are not moistened, that is, "if not honored, it hurts".

Zhang Qihua^[5] et al. divided 128 patients with herpes zoster into 64 cases in the control group (oral western medicine) and 64 cases in the observation group (oral western medicine + fire acupuncture at the Ashi and Jiaji points), and found that the total effective rate, VAS pain score, SP level, serum IL-2 and γ -IFN levels in the observation group were better than those in the control group after treatment ($p < 0.05$). Chen Hongqiang^[6] compared the efficacy of oral Western medicine alone (42 cases) and fire acupuncture (flat prick) combined with oral Chinese tonics (42 cases) in the treatment of herpes zoster with liver meridian and heat, and found that the efficacy and healing time of lesions in the fire acupuncture group were better than those in the oral Western medicine alone group ($p < 0.05$). In the subsequent follow-up, the incidence of posterior neuralgia in the fire-acupuncture group (7.14%) was found to be significantly lower than that in the oral Western medicine alone group (21.43%). In a study of 50 cases of postherpetic neuralgia, Sun Ying, Liu Jing^[7] et al. gave the observation group (25 cases) superficial stabbing of painful points with percutaneous stabbing of the corresponding dorsal points, etc. with fire acupuncture, and the control group (25 cases) selected acupuncture point injections at the Ashi point. After treatment, it was found that the degree of pain, depression and sleep quality were significantly better in the observation group than in the control group ($p < 0.05$). Jin Zhixiong^[8] et al. selected 64 patients with postherpetic neuralgia, in which 32 cases in the treatment group were treated with fire acupuncture (2-5 mm direct puncture) at the Ashi points and 32 cases in the control group were treated with oral pregabalin alone, and the results showed that the treatment group had better efficacy than the control group ($p < 0.05$). In a study by Zhou Yalan^[9] et al. in the treatment of 60 cases of posterior neuralgia, the control group (30 cases) was treated with oral pregabalin, and the observation group (30 cases) was treated with oral western medicine together with fire acupuncture points (depth 6-8 mm) for the heart and diaphragm. After 10 d of treatment, the VAS and DLQI scale scores of the observation group were better than those of the control group ($p < 0.05$), which indicated that the effect of fire acupuncture combined with oral western medicine was better than that of oral western medicine alone, and that fire acupuncture puncture of the heart and diaphragm had some significance in improving the pain level and quality of life of patients with posterior neuralgia. In conclusion, the efficacy of fire acupuncture in the treatment of herpes zoster and posterior neuralgia is significant, which can effectively improve the degree of pain and sleep and quality of life of patients, promote the regression of skin lesions, and also reduce the incidence of posterior neuralgia, which is significant in reducing the expression of endogenous pain-causing substances in SP, improving body immunity, and inhibiting serum inflammatory response.

2. Pruritic skin disease

Itching is a more common self-conscious symptom of skin diseases, which can affect the quality of life and physical and mental health of patients in serious cases. Chinese medicine believes that itching is most closely related to the "wind", the wind is the longest of all diseases. Chao Yuan Fang believes that "wind itch is the body deficiency by the wind, the wind into the coup... Therefore, but also itchy", and the fire needle stimulation of local skin can directly open the coup, to dispel the wind and relieve itching. "Surgery Qixuan" said: "all painful and itchy sores belong to the heart fire..." The heart is responsible for the operation of the blood vessels in the body, heart fire is hyperactive, the heat evil reaches the surface of the machine, then itching, if the blood is deficient, the skin is not moistened, can also produce itching. Fire acupuncture can not only draw the evil out to relieve heat and itch, but also harmonize the qi and blood to nourish the deficiency and relieve itch, i.e. "the wind will be extinguished when the blood moves. In addition, the use of fire acupuncture high temperature, local sterilization, anti-inflammatory, etc. to kill insects to relieve itching^[10]. Modern research shows that the generation of itchiness is closely related to a variety of itch-causing factors in the body, such as histamine (HA), 5hydroxychrome (5-HT), acetylcholine, endothelin, protease, bradykinin, etc. Under the stimulation of various factors, the body produces itch factors, itch receptors and itch-causing factors combined to produce nerve impulses, which are transmitted to the corresponding cortex of the brain to produce itchiness, and fire acupuncture can directly regulate itch Fire acupuncture can directly regulate the itching medium, thus reducing the itching

sensation^[11-12].

2.1 Eczema

Eczema, also known as "wet sores" in Chinese medicine, is one of the pruritic skin diseases caused by various factors. Its main lesions are symmetrically distributed papules and herpes, with obvious oozing and intense itching, which can easily become chronic. In Chinese medicine, the onset of the disease is closely related to the "dampness", which is caused by the weakness of the spleen and stomach, or the lack of diet and the preference for fatty, sweet and thick flavors, resulting in the improper transport and transformation of the spleen and stomach, and the internal growth of dampness and heat, plus the external exposure to wind, dampness and heat, which leads to the internal and external erosion and immersion in the muscle surface. In chronic cases, itching is aggravated by depletion of yin and blood, loss of moistening of the skin, and external wind.

Liu Yin^[13] et al. divided 66 patients with chronic eczema into a control group (33 patients) who were given oral antihistamines, and a treatment group (33 patients) who were given superficial (0.5-1 mm) fire acupuncture at the Ashi point with deep (15-20 mm) stabs at the Blood Sea, Feng Shi, Qu Chi, and Tian Shu. RESULTS: The efficacy, EASI score, pruritus score, and decreased levels of EOS, IL-18, and Ig E in serum were significantly better in the treatment group than in the control group ($P < 0.05$). Jia Hailing^[14] et al. used fire acupuncture to treat 30 cases of chronic eczema (with superficial and peripheral acupuncture of Ashi point together with deep acupuncture of Di Yu, Tian Shu, Blood Sea, Feng Shi and Qu Chi), and 30 cases in the control group were treated with topical compound flumethasone ointment. Huang Shu^[15] et al. used fire acupuncture to treat 35 cases of chronic eczema (with percutaneous acupuncture of the Ashi point together with puncture of the double spleen and lung yu); the control group (32 cases) used topical Pirexone ointment, and by comparing the onset of action time of the two groups, it was found that 80% of the fire acupuncture took effect within 1-2 h to stop itching, while 50% of the Pirexone took effect within 2 weeks, indicating that the onset of action time of fire acupuncture for chronic eczema was fast and effective. The above findings suggest that fire acupuncture in the treatment of chronic eczema can effectively improve the degree of itching and lesion area of patients, and also has a certain association with the reduction of serum levels of inflammatory factors (EOS, IL-18, Ig E), providing some ideas for future research on its mechanism of action.

2.2 Neurodermatitis

Neurodermatitis, also known as "regenerative sore" in Chinese medicine, is one of the chronic pruritic skin diseases. Its main clinical manifestations are intense itching, mossy skin and rough hypertrophy, often in the neck, upper eyelids and other places, the disease is long and easy to repeat. Chinese medicine believes that this disease is mostly triggered by emotional factors, such as liver depression and qi stagnation, depression and fire, or heart fire hyperactivity, poor qi and blood flow, stagnation of the skin; or long-term disease depletion of qi and blood, blood deficiency and wind dryness, skin loss of nourishment, can lead to this disease.

Mo Hongchun^[16] et al. treated 53 cases of neurodermatitis with fire acupuncture local lesions without adverse reactions. By comparing the degree of itching and lesion area of patients before and after treatment, it was found that the degree of itching and lesion area of patients decreased after treatment than before treatment ($P < 0.05$). Li Yan^[17] et al. In a study observing the treatment of neurodermatitis with fire acupuncture, 60 patients with neurodermatitis were divided into two groups, and the treatment group (30 cases) was given fire acupuncture to localize the lesions (1-2 mm direct puncture, puncturing from the edge to the center), and the control group (30 cases) was treated with topical tretinoin urea ointment, and after 4 weeks of treatment, it was found that fire acupuncture was significantly better than topical ointment alone in improving itching ($P < 0.05$). In a study by Zhang Xiaoshu^[18] et al, 27 patients with hormone-failed neurodermatitis were given localized lesions by fire acupuncture (puncture depth about 0.5 mm, which could be increased to 1 mm if the lesions were hypertrophic, or puncture papules if they were new lesions) and topical safflower ointment, and the total effective rate after treatment was 81%. In conclusion, the effect of fire acupuncture in the treatment of neurodermatitis is ideal, which can effectively relieve itching and improve the patient's skin lesions, and it is effective and safer for neurodermatitis with hormone failure.

2.3 Nodular itchy rash

Nodular itchy rash, which belongs to the category of "horse scabies" in Chinese medicine, is mainly

characterized by itching and dome like nodules, and the nodules often exist in isolation, most often on the extremities, especially on the extensor side of the lower leg, with a long duration of illness, and does not heal after a long time. In Chinese medicine, the disease is considered to be related to "dampness and blood stasis".

In the observation of fire acupuncture for nodular itchy rash, Deng Qiaofeng^[19] et al. divided 66 patients with nodular itchy rash into a study group (needle puncture of local lesions) and a control group (topical halomethasone + topical sealing). Chen Hui^[20] et al. compared the clinical efficacy of topical compound flumethasone ointment alone (35 cases) and fire acupuncture combined with topical compound flumethasone ointment (35 cases), and the results showed that the effect of fire acupuncture combined with topical compound flumethasone ointment (total effective rate 91.43 %) was better than that of topical compound flumethasone ointment alone (total effective rate 77.14 %), indicating that fire acupuncture was significantly effective in the treatment of nodular itchy rash with fewer adverse effects. Qu Liying^[21] et al. randomly divided 50 patients with nodular itchy rash into two groups: the control group (25 cases) was given oral tripterygium glycosides and the treatment group (25 cases) was given fire acupuncture to the rash on top of the control group. Treatment results: the efficiency and DLQI scores of the treatment group were better than those of the control group ($P < 0.05$). In conclusion, in the treatment of nodular itchy rash, fire acupuncture directly punctures the nodular area, which can directly induce dampness and toxicity to drain out and open the couples to dispel wind and relieve itching, move blood stasis and invigorate blood, eliminate hardness and disperse knots to improve the degree and effect of skin lesions and itching, and also improve patients' quality of life and reduce recurrence rate.

3. Pigmented skin disease

Pigmented skin diseases, which can be divided into hypopigmentation and hyperpigmentation, mainly manifest as changes in skin color, patients usually have no significant discomfort, and most of them will have some mental stress due to aesthetic problems. The patients usually have no obvious discomfort, and most of them have some mental stress due to aesthetic problems. Clinically, melasma and vitiligo are more common.

Chinese medicine believes that the occurrence of chloasma is mostly related to blood stasis, as the "Ling Shu - meridians" cloud: "blood does not flow then the color of the fashion is not lustrous, so its face is as dark as lacquer wood." Fire acupuncture can invigorate blood and remove blood stasis to produce new blood, thus lightening the pigmentation. Modern research found that the occurrence of chloasma may be related to the lowering of SOD activity in blood, the increase of oxygen free radicals, and the accumulation of LPO and MDA to form pigmentation^[22], while fire acupuncture can improve the SOD activity in blood, remove excess oxygen free radicals, reduce the level of LPO and MDA, and improve local pigmentation^[23-24]. Some scholars believe that the impaired skin barrier at the pinhole after localized skin lesions with fire needling facilitates better absorption of topical discoloration agents^[25].

In the treatment of vitiligo, based on the theory of Chinese medicine "white is cold", under the guidance of "cold is hot" treatment principle, fire needles directly puncture the local skin, can use its warm effect to induce fire to help Yang, dispel wind and dispel cold, so as to effectively treat vitiligo^[26]. The antioxidant enzyme activity in the blood of vitiligo patients decreases, leading to an imbalance in the Oxidation-antioxidation system and melanocyte damage, resulting in local skin pigmentation loss^[27]. Fire acupuncture on local skin lesions of vitiligo patients can accelerate local blood circulation, reduce melanocyte destruction, enhance tyrosinase activity and increase the level of antioxidant enzymes (CAT, SOD) in the patient's blood to promote melanogenesis^[28-29]. In addition, some inflammatory factor-mediated autoimmune damage is associated with the development of vitiligo^[30], Dale Yuhui^[31] et al. found that fire acupuncture therapy can reduce the level of inflammatory factors (IL-17, IL23) in the blood of vitiligo patients.

Regarding the pathogenesis of melasma and vitiligo, both are closely related to the reduced SOD activity of patients, but the main difference is that melasma is mainly due to the reduced SOD activity, which cannot remove lipid peroxide in time, resulting in the accumulation of lipid metabolites and the release of a large amount of copper ions for melanin synthesis, which accelerates pigment production. Vitiligo is due to reduced SOD activity inhibiting tyrosinase activity, resulting in melanocyte damage or formation disorder and pigment loss. But fire acupuncture therapy in the treatment of melasma and vitiligo have achieved certain efficacy, the author guesses that fire acupuncture therapy on pigment loss and pigmentation has a two-way regulatory effect, the specific mechanism of action to be further studied.

3.1 Melasma

Melasma, which belongs to the category of "sallow spots" in Chinese medicine, is a kind of hyperpigmented skin disease. The main manifestation is brown and light black patches on the face, with different sizes and shapes, isolated and scattered or fused into patches, with clear borders. According to Chinese medicine, the occurrence of this disease is especially closely related to liver, kidney and spleen.

In a study by Luo Daihong^[32] et al. on the treatment of chloasma with qi stagnation and blood stasis, the treatment group (30 cases) was administered with fire acupuncture (superficial stabbing of the pigmented areas with puncturing of Tai Chong and Blood Sea), while the control group (30 cases) was given oral medication with topical medication. The treatment results showed that the improvement of the pigmentation area score and the degree of depression in the treatment group was better than that in the control group ($p < 0.05$). In a study by Wu Panhong^[25] et al, the treatment group (65 cases) was given oral and topical medication with fire acupuncture (puncturing the pigmented area until the epidermis was slightly white), while the control group (64 cases) was given oral and topical medication. The treatment results showed that the clinical efficacy, lesion score, quality of life score and facial VISIA test were better in the fire-acupuncture group than in the control group ($p < 0.05$). Huang Qiong^[24] et al. divided 90 patients with melasma into 45 patients in the fire acupuncture group and 45 patients in the control group. The control group was given oral medication and the fire acupuncture group was treated with fire acupuncture (superficial pricking). In conclusion, fire acupuncture can invigorate blood, move qi, remove blood stasis and generate new energy to improve skin lesions on the face and reduce pigmentation, and it is also important to improve the quality of life of patients.

3.2 Vitiligo

Vitiligo, called "white barge" in Chinese medicine, is a relatively common acquired pigment loss skin disease. The main manifestation is the appearance of single or widely distributed white spots on the skin with clear borders, and the hair of the lesion may also turn white.

According to Chinese medicine, the external cause of the disease is closely related to "wind evil", as stated in the Treatise on the Origin of Diseases: "This is also caused by wind evil fighting against the skin and blood disharmony." The internal causes are attributed to the imbalance of the liver and kidney. Firstly, the liver collects blood, and likes to regulate but not depressed. If one worries too much, the liver will be depressed, and the stagnant blood will be stagnant, and the external wind will fight against the skin, causing the local skin to lose harmony with the blood and Qi.

In a clinical study by Chen Hulin^[33] et al, 100 vitiligo patients were divided into a control group (48 cases) and an experimental group (52 cases). The control group was treated with 308 nm excimer laser irradiation and the experimental group was treated with fire acupuncture (localized at the white spots) on top of laser irradiation. The treatment results showed that the experimental group had better efficacy than the control group ($p < 0.05$). Yang Tao^[34] In the study of vitiligo treatment by fire acupuncture, 116 cases of vitiligo were randomly divided into 58 cases in the conventional group (topical cabotriol betamethasone ointment) and 58 cases in the treatment group (fire acupuncture + cabotriol betamethasone ointment). The results showed that the clinical efficacy, lesion area and pigment score of the treatment group were better than those of the conventional group. Zhao Yang^[35] et al. In the observation of the efficacy of fire acupuncture in the treatment of vitiligo, 78 vitiligo patients were randomly divided into two groups of 39 cases each, in which the control group (oral Chinese tonics); the treatment group (fire acupuncture + oral Chinese tonics), the treatment results showed that the efficacy of fire acupuncture combined with oral Chinese tonics was significantly better than that of oral Chinese tonics alone ($p < 0.05$). In conclusion, fire acupuncture can directly unblock meridians, harmonize qi and blood, remove wind and disperse evil to restore skin color, accelerate blood flow and local metabolism, stimulate tyrosine enzyme activity, promote local melanin production in skin lesions, and also regulate body immunity, which can effectively treat vitiligo^[36].

4. Discussion

As one of the traditional Chinese medicine external treatments, fire acupuncture has a long history and is more acceptable to patients because of its wide range of indications, low adverse effects, low price and ease of operation. A summary of recent literature reports shows that the use of fire acupuncture by various practitioners is becoming more and more flexible and diversified in the treatment of various skin diseases, and good clinical results have been achieved. Although fire acupuncture is rarely used as a

stand-alone treatment, it usually has a significant synergistic effect in combination with other treatment modalities such as oral or topical medications. A visual analysis of the literature search on the Internet revealed 916 articles on the topic or title "fire acupuncture for herpes zoster", 224 articles on "fire acupuncture for eczema", 179 articles on "fire acupuncture for vitiligo", and 179 articles on "fire acupuncture for neuropathy. 179, "fire acupuncture neurodermatitis" 158, "fire acupuncture nodular itchy rash" 77, and "fire acupuncture chloasma" 11. The above results show that the research and clinical application of fire acupuncture in the treatment of herpes zoster and post-herpetic neuralgia is more widespread, just as the "Ling Shu - official acupuncture" cloud "quenching acupuncture, stabbing burnt needles to take paralysis also. Fire acupuncture not only has the effect of unblocking the meridians, activating blood circulation, removing blood stasis, reducing swelling and relieving pain, but also can "induce heat with heat", opening the door with its fiery nature and inducing the direct discharge of evil heat and fire toxins, which means "fire is depressed and hairy". It is effective in the treatment of herpes zoster and neuralgia.

The literature summarizes and concludes that there are certain commonalities in the application of fire acupuncture in dermatological diseases, although the practitioners have different practices and prescriptions for point selection.

First, in the treatment of all skin diseases, the point of acupuncture is the main point, and the depth of needling is mostly adjusted appropriately according to its acupoint site and the hypertrophy of the skin lesion. Some chronic pruritic skin diseases, long-term scratching, friction can cause local skin hyperplasia, hypertrophy, in acupuncture due to appropriate increase its acupuncture depth. Fire acupuncture in the treatment of chloasma, vitiligo, this kind of skin disease in addition to pigmentation changes, no other rash, skin hypertrophy, etc., fire acupuncture depth are shallow to the pigmentation lesion area epidermis-based.

Second, in the treatment of herpes zoster and post-herpetic neuralgia, in addition to the acupuncture point Ah Yes, the pinched spine point (located between the Governor's Vessel and the foot solar bladder meridian) is used more frequently. This is related to the fact that acupuncture at the pinched spine point can indirectly regulate the function of the internal organs and support the righteousness and dispel evil. On the other hand, the disease is painful due to the inflammatory response of the affected ganglion. From the anatomical location, more nerves are distributed under the pinched spine points, and fire needling of the corresponding nodes can directly block their nerve fiber conduction and improve the pain in their innervated areas^[37].

Third, in the treatment of itchy diseases, fire acupuncture can be used to treat wind and regulate blood points such as Blood Sea, Wind City, Diaphragm Yu, etc. This is mainly related to the "wind moves itch", which means "treating wind first treats blood, and the wind will be extinguished when the blood moves".

The fourth, fire acupuncture therapy in the treatment of melasma and vitiligo, such patients are more common in the type of qi stagnation and blood stasis, can be equipped with fire acupuncture puncture tai-chong, blood sea, etc. to dredge the liver to regulate qi and activate blood.

At the same time, there are areas for improvement in the treatment of skin diseases with fire needling. ① Insufficient research on the mechanisms of fire acupuncture in the treatment of various types of skin diseases. ② The sample size of clinical studies is not large and lacks convincing power. ③ Clinical operation is not yet unified standard operation technique, point selection rule and acupuncture density and frequency, etc., mostly by the subjective judgment of the practitioner. Therefore, in future clinical studies, a large sample size should be used to further standardize the treatment protocol and strengthen the clinical research and exploration of its mechanism of action. Visual and objective quantifiable indicators can be added to its evaluation criteria to make it more scientific and provide new ideas for the treatment of skin diseases with fire acupuncture, in order to obtain more optimal treatment protocols and bring into play the potential advantages of traditional fire acupuncture therapy in the treatment of skin diseases.

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