Research Progress of Acupotomy in the Treatment of Adhesive Periarthritis of Shoulder under the Guidance of "Huangdi Neijing"

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Abstract: Periarthritis of shoulder joint, also known as exposed shoulder wind, shoulder coagulation disease or 50 shoulders in traditional Chinese medicine, is a common shoulder disease, which mainly affects the middle-aged and elderly people, and the number of female patients exceeds that of men in recent years. Periarthritis of the shoulder is characterized by pain and limited activity. Many clinical studies have proved that acupotomy therapy has a significant effect in the treatment of periarthritis of shoulder, but there are also many shortcomings, which still need further study.

***Keywords*:** Huangdi Neijing; periarthritis of shoulder; needle knife; restricted activities

1. Introduction

Periarthritis of the shoulder joint is a chronic disease. The typical manifestation of the disease is numbness and limited function of the shoulder joint. "Lingshu · Jingjin" records: Jingjin disease, cold reflex tendon urgent, hot tendon relaxation does not receive. The main reason is a chronic, aseptic inflammatory lesion that occurs after long-term strain of the shoulder joint capsule and soft tissue around the shoulder and degeneration with age[1]. The development of inflammation to a certain extent can lead to adhesion of these tissues, thus affecting the normal activity of the shoulder joint. Clinically, the initial stage of scapulohumeral periarthritis is dominated by paroxysmal pain in the shoulder. This study conducted an in-depth discussion on the patient's life experience during the experience of scapulohumeral periarthritis, and found that pain, impaired function, loss of independence, and severe psychological disorders have brought great distress to patients, which highlights the necessity of timely intervention in scapulohumeral periarthritis [2]. In recent years, Chinese scholars have done a lot of work in this area, but there are still many controversies. A foreign regression analysis pointed out that the treatment of surgery, the time required for surgery and the degree of pain are the key risk factors for scapulohumeral periarthritis[3]. Domestic scholars believe that it is related to social psychological factors. From a pathological point of view, this is mainly due to the chronic non-specific inflammatory reaction of soft tissues such as muscles, tendons, bursas and joint capsules near the shoulder joint. It is often caused or aggravated by weather changes and fatigue in clinical practice, and then the pain gradually becomes heavier and persists.

2. Etiology and pathogenesis

Western medicine etiology and pathogenesis: shoulder reason: with the increase of age, the shoulder tissue such as tendon, joint capsule and other degenerative changes, its elasticity and toughness decreased, easy to damage. Long-term excessive activity and poor posture of the shoulder, such as long-term desk work and frequent lifting of heavy objects, can cause chronic shoulder strain, resulting in local tissue congestion, edema, and inflammatory reaction. The incidence of scapulohumeral periarthritis is also relatively high in patients with systemic diseases such as diabetes, which may be related to the nutritional supply of shoulder tissue affected by glucose metabolism disorder and microvascular disease. The main pathological change of periarthritis of shoulder is inflammatory adhesion around the shoulder joint. From the perspective of traditional Chinese medicine, liver and kidney deficiency is its etiology and pathogenesis: in the theory of traditional Chinese medicine, liver is the master of tendons and veins, while kidney is the master of bones. Liver and kidney interact with each other, influence each other physiologically and influence each other pathologically. With the gradual increase of age, the liver and kidney function gradually declines, and the essence and blood are not sufficient, resulting in insufficient nutrition of the muscles and bones. The muscles and bones of the shoulder become more fragile and vulnerable to external evils, thus causing diseases. The main manifestations were pain and joint dysfunction. Affected by external wind, cold and dampness evil: When the shoulder is exposed and exposed to cold, water and rain, the wind, cold and dampness evil will take the opportunity to invade the meridians of the shoulder, resulting in poor meridians and blocked circulation of qi and blood, thus causing shoulder pain and limited activity qi and blood stasis stagnation; after shoulder trauma or strain, blood stasis stops, qi and blood movement is blocked, or long-term emotional distress, qi stagnation and blood stasis, can lead to shoulder qi and blood stasis, meridian obstruction, causing scapulohumeral periarthritis.

3. Syndrome differentiation

Periarthritis of shoulder joint is divided into four types in the new edition of traditional Chinese medicine surgery textbook, namely wind cold dampness type, qi stagnation and blood stasis type, qi and blood deficiency type, liver and kidney deficiency type.

4. Treatment principles

The treatment principle of periarthritis of shoulder is to relieve pain, relieve the movement disorder of shoulder joint, prevent muscle atrophy and joint adhesion, etc. The main purpose is to improve the quality of life of patients. "Acupuncture and moxibustion A and B meridians": "Shoulder pain can not be lifted, lack of pelvic pain, Yunmen main", with special emphasis on the importance of Yunmen acupoint in shoulder pain and other symptoms, revealing the mechanism of qi and blood obstruction leading to meridian sinew obstruction [4], "Suwen · Xuanming five qi", "long-term vision injury blood, sedentary injury meat, long-term standing injury bone" also tells us that poor qi and blood will destroy the balance between bones and tendons. The treatment of traditional Chinese medicine focuses on the overall concept and dialectical treatment concept. The purpose is to dredge meridians, reconcile qi and blood, disperse cold and relieve pain, and restore shoulder function. For wind-cold-dampness obstruction type scapulohumeral periarthritis, it is appropriate to disperse cold, remove dampness, dredge impediment and relieve pain. For qi stagnation and blood stasis type, it is appropriate to dredge tendons and vessels, regulate qi and blood. For qi and blood deficiency type, it is appropriate to replenish qi and blood, nourish tendons and vessels. For liver and kidney deficiency type, it is appropriate to replenish liver and kidney, nourish tendons and vessels, or use multiple methods to greatly improve the therapeutic effect.

5. The theoretical basis of acupotomy in the treatment of periarthritis of shoulder

5.1 "Jingjin theory"

As an indispensable part of the meridian system of traditional Chinese medicine, the theory of "meridian sinew theory" has been recorded as early as the Yellow Emperor's Internal Classic, such as "spiritual pivot". In the article, the distribution, physiological function and pathological evolution of the twelve meridians are described in detail. Traditional Chinese medicine believes that meridian sinew disease belongs to the category of "Bi disease" and "Jinbi". The thirteenth "Miraculous Pivot · Tendons" was published[5]. Professor Fu Lixin [6]believes that the disease of meridian sinew is "caused by overuse". If the human body is depleted for a long time and the external evil invades, it can lead to the imbalance of qi, blood, yin and yang of the body, thus affecting the normal function of the meridian sinew. The meridian sinew theory, as the origin of modern human motion mechanics theory, fully embodies the idea of syndrome differentiation and treatment in traditional Chinese medicine, and has great guiding value for the clinical treatment of some modern diseases, especially periarthritis of shoulder. The five-body acupuncture method of skin, pulse, flesh, tendon and bone contained in "Neijing" has a significant effect on clustering diseases. The essence lies in "needle to disease location", that is, on the basis of careful identification of disease, syndrome, sex and position, it directly stimulates specific tissue structure[7] Although the current medicine has not yet systematically explained what the tendons are, it is undeniable that the tendons theory plays a vital role in the clinical treatment of periarthritis of shoulder with acupotomy.

5.2 Bowstring-mesh theory

On the basis of in-depth study of biomechanics and human anatomy, Professor Zhang Tianmin proposed the bowstring-mesh theory[8]. He believed that the bone is bow-shaped and the soft tissue is string-shaped. For example, the shoulder joint, the bow is the scapula, cervical vertebrae, skull, etc., and the string is the nuchal ligament and surrounding soft tissue. When the force balance of the shoulder joint anatomical system is out of balance, it will cause the mechanical balance of the shoulder bowstring to be out of balance and cause the adhesion and contracture of the soft tissue around the shoulder. Professor Zhang also proposed the mesh theory[9]. Therefore, in the process of using acupotomy combined with bowstring theory to carry out treatment, we can focus on the "bowstring junction" to adjust the tension of soft tissue in the junction area. So as to realize the normal function of shoulder joint.

6. Mechanism of acupotomy in the treatment of periarthritis of shoulder

6.1 Biomechanical mechanism

The shoulder joint has become one of the most active joints in the human body due to its special structural characteristics, and it is also one of the most unstable joints in the human body. It is mainly manifested in biomechanics as static stability and

dynamic stability. Static stability refers to the anatomical structure and internal negative pressure of the joint, joint labrum and joint capsule, while dynamic stability refers to the tension of muscles, tendons and other structures to maintain different ranges of motion through biomechanical effects, which can offset the force that may lead to shoulder instability[10]. For example, when soft tissue lesions occur around the shoulder joint, the stability of the above structure can be destroyed, resulting in pain and dysfunction of the shoulder joint. By using acupotomy to release the soft tissue and myofascial trigger points of patients with scapulohumeral periarthritis, it can effectively promote the biomechanical balance of the shoulder joint and enhance the blood circulation of the muscles, thereby reducing the inflammatory response and inflammatory substances. The production effectively alleviates the joint function and pain symptoms of patients with scapulohumeral periarthritis.[11][12]

6.2 Molecular biological mechanism

Inflammatory factorsThe current study confirmed that inflammation and fibrosis are the basic pathological changes of periarthritis of shoulder. Inflammation can lead to symptoms such as tissue adhesion, swelling and pain, resulting in a decrease in shoulder joint activity, thereby accelerating shoulder joint fibrosis and bursa thickening, adhesion and other symptoms[13]. Current experiments have shown that the mechanisms leading to inflammation are mainly cox-1, cox-2, IL-1, IL-6, etc. An effective mechanism of acupotomology in the treatment of periarthritis of shoulder may be to reduce the release of inflammatory factors and tissue pro-inflammatory factors[13]. Zhang and his team[14] observed in animal experiments that after acupotomy treatment of rabbits with scapulohumeral periarthritis model, the release of inflammatory factors such as TNF-α and IL-6 in the shoulder joint decreased significantly. Zhou Dan and other experts[15]found that the use of acupotomy can reduce the number of pro-inflammatory factors IL-1β, TNF-α, IL-6 in the synovial membrane of the shoulder joint, so as to achieve the therapeutic effect of alleviating the inflammatory response of local tissue and reducing the hyperalgesia.

7. Clinical application of acupotomy in the treatment of periarthritis of shoulder

7.1 Simple needle knife therapy

Clinically, the curative effect of acupotomy in the treatment of periarthritis of shoulder is clear. Direct acupuncture of the lesion site is used to relax and remove the soft tissue adhesion around the shoulder joint, accelerate the microcirculation circulation of the shoulder and surrounding tissues, reduce the internal pressure of the bursa, joint capsule and other tissues, and relieve neurological symptoms. Professor[16]in the clinical use of 110 patients with periarthritis of shoulder as the experimental object, and in turn these patients were divided into two groups, the study group and the control group, and the control group of patients with local closure and acupuncture treatment, once a day; at the same time, we used acupotomy to treat the patients in the study group. The results showed that the treatment effect of the patients in the study group was significantly better than that of the control group. From this we can conclude that the use of acupotomy therapy.

7.2 Massage combined with needle knife therapy

Tuina has the effects of soothing the meridians and relieving pain, smoothing the joints, and regulating the tendons, which can promote the rehabilitation of shoulder joint function[17]. The study found that massage can stimulate nerve endings, enhance the function of tissues and organs, and promote the metabolism of the body.[18] Chen Jianying and other experts[19]will use 120 patients with periarthritis of shoulder and make 60 of them accept routine treatment (control group). The remaining 60 patients were treated with acupotomy and massage (treatment group). By observing the range of shoulder joint activity, symptom relief, and VAS score at 2 weeks and 4 weeks, the treatment effect was significantly stronger than that of the control group. At the same time, it shows that acupotomy combined with massage can greatly reduce the clinical symptoms of patients and improve the range of shoulder activity. Greatly improve the quality of life of patients. Jin Xiaoyu and other experts[20]used the method of rotating the shoulder joint, and in different directions of the shoulder joint, using the axial armpit of the affected limb to make the shoulder joint loose, to treat scapulohumeral periarthritis. After comparing and analyzing the simple application of conventional treatment methods such as oral non-steroidal drugs and physical therapy with the combined use of bone-setting techniques on the basis of conventional treatment, a clear conclusion can be drawn that the addition of bone-setting techniques to the conventional treatment plan has a more significant therapeutic effect.

7.3 Oral administration of traditional Chinese medicine combined with needle knife therapy

Traditional Chinese medicine believes that liver and kidney deficiency, qi and blood deficiency, wind, cold and dampness invasion and other causes of shoulder joint qi and blood running poor lead to the occurrence of scapulohumeral periarthritis[21]. Professor Chen Rongzhuang and other scholars [22]used a combination of acupotomy therapy and modified

Danggui Sini Decoction in the treatment of patients with periarthritis of shoulder in the study group. For patients in the control group, acupoints such as Jianzhen and Jianyu on the shoulder, as well as Tiaokou, Binao and Ashi points can be selected to implement routine treatment operations.The results showed that when combined with acupotomy therapy and decoction of Danggui Sini Decoction to treat patients with scapulohumeral periarthritis, the effect of effectively relieving shoulder pain and promoting the recovery of its function was significantly stronger than that of the control group ($P < 0.05$). At the same time, if some patients have more serious postoperative reactions after acupotomy therapy, we can also use this method for treatment[23]. Professor Chen Teng[24]used the prescription Chaihu Huangqin Shaoyao Banxia Gancao Decoction plus acupoint application to treat scapulohumeral periarthritis of wind cold dampness type. The control group was given acupoint application, and the observation group was given Chaihu Huangqin Shaoyao Banxia Gancao Decoction on the basis of the control group. Both groups took 4 weeks as a course of treatment. The results showed that the VAS score of the observation group was significantly lower than that of the control group, indicating that the degree of pain was lighter. At the same time, the CMS score and the range of motion of the shoulder joint in the observation group were better than those in the control group. These results fully show that the treatment plan of Chaihu Huangqin Shaoyao Banxia Gancao Decoction combined with acupoint application has a significant effect on patients with periarthritis of shoulder with wind-cold-dampness obstruction.Professor Chen Yong[25]selected 80 patients with scapulohumeral periarthritis of phlegm-dampness blocking collaterals as experimental subjects and randomly divided them into two groups: control group and observation group. Both groups were treated with acupuncture and massage. The observation group was treated with modified Niubangzi decoction based on the above methods. If the pain was severe, Corydalis yanhusuo and Rhizoma Arisaematis were added. If the patients were old and physically weak, Radix Astragali seu Hedysari and Caulis Spatholobi were added. If the activity was hard, Rhizoma Ligustici Chuanxiong and Herba Lycopodii were added. The course of treatment was four weeks. The results showed that in this study, the curative effect of the observation group was excellent, and its effectiveness was as high as 97.50 %, which was 80.00 % higher than that of the control group. The advantage is very significant. After the treatment, the level of serum inflammatory factors in the observation group also showed a significant decrease trend, which was in stark contrast to the control group, and the CMS score was also better. Professor Dong Xiaoye's[26] research results show that the treatment effect of Shubi Decoction combined with shoulder six on wind-cold-dampness type periarthritis of shoulder is significantly stronger than that of western medicine alone. In summary, the use of acupotomy therapy to improve the patient's shoulder joint and its surrounding tendons, joint capsule and other parts of the adhesion and local blood circulation and other issues at the same time, with oral Chinese medicine treatment, can improve the patient's tendons from the source Bizu, Qi and blood is not smooth, etc., to supplement Qi and blood, Tongjin pain relief effect, improve the quality of life of patients.

7.4 Chinese herbal fumigation combined with needle knife treatment

The fumigation and washing method of traditional Chinese medicine has a long history. This method can spread the efficacy of traditional Chinese medicine through pores to the body so as to achieve the effect of promoting blood circulation and removing blood stasis, soothing the meridians and activating the collaterals, and improving the tendon injury around the shoulder joint. Some domestic scholars have used traditional Chinese medicine fumigation combined with pain point pulse to treat periarthritis of shoulder. The fumigation prescription is as follows: 15 g of lycopodium, 15 g of tougucao, 10 g of schizonepeta, 10 g of fangfeng, 10 g of chuanxiong, 10 g of safflower, 10 g of weilingxian, 9 g of liu jinu, 12 g of guizhi, 10 g of sappanwood, 12 g of qiannianjian. Compared with the simple use of pain point pulse, it can more obviously relieve pain and improve shoulder muscle strength and function[27]. Professor Wang Junnan[28]selected 76 patients with scapulohumeral periarthritis of cold-dampness obstruction type, and randomly divided them into control group and treatment group. The patients in the control group were treated with extracorporeal shock wave therapy and oral celecoxib. On the basis of the above treatment methods, the patients in the treatment group were treated with traditional Chinese medicine packet hot compress therapy. The packet Chinese medicine components included 30 grams of mulberry branches, 30 grams of vines, 30 grams of honeysuckle, 30 grams of spatholobus stem, 30 grams of stone vine, 15 grams of grass, 30 grams of clematis, 30 grams of pure hawthorn, 15 grams of Sichuan black, 15 grams of continued pieces, 30 grams of smilax, 30 grams of rhizoma drynariae, 15 grams of rhubarb and 15 grams of asarum. After 4 weeks of treatment, the results showed that the VAS score and serum inflammatory factor levels (peripheral blood IL-6 and tumor necrosis factor α) in the treatment group were significantly lower than those in the control group, while the shoulder joint activity and CMS score were better than those in the control group. In addition, Chen Yangsheng and other scholars[29] conducted a similar study on 128 patients with scapulohumeral periarthritis, and the patients were also randomly divided into control group and observation group.The control group received the combined treatment of celecoxib capsules and massage, while the observation group added external application of traditional Chinese medicine (Duhuo 50 g rhubarb and Fangfeng 30 g asarum 10 g angelica 20 g) and joint mobilization treatment on this basis. The clinical treatment effect showed that the treatment effect of the

observation group was significantly greater than that of the control group. In addition, the levels of IL-1β and IL-6 in the observation group were significantly lower than those in the control group, which indicated that the external treatment of traditional Chinese medicine could reduce the inflammatory response of the patients and promote the blood circulation of the affected limbs. The use of traditional Chinese medicine fumigation combined with needle knife therapy in the treatment of patients with periarthritis of shoulder can greatly alleviate the clinical symptoms of patients and greatly restore the motor function of patients' shoulders.

8. Conclusion

In recent years, the incidence of scapulohumeral periarthritis in China has increased year by year. Most patients are due to lack of understanding of the disease, leading to aggravation of the disease, thus reducing the activity function of the affected limb and ultimately affecting the quality of life of patients. [30]We should take precautions, increase health promotion efforts, and strive to enhance people's awareness of the disease prevention, reduce the incidence of the disease. The use of "Huangdi Neijing" in the theory of the use of acupotomy therapy in the treatment of periarthritis of shoulder is widely used in the clinical treatment, usually take a variety of methods to combine the way, such as the combination of massage, traditional Chinese medicine internal treatment, traditional Chinese medicine fumigation and washing method. Acupotomy therapy can directly act on the lesion site, apply accurate treatment to this site, regulate local qi and blood, relieve local stimulation, relax local blood vessels, reduce inflammation level, and restore normal physiological activities of the shoulder joint. However, there are still great risks in specific clinical operations, which may injure nerves, blood vessels and add new damage to patients. I believe that in the future, with the progress of medical level and the improvement of science and technology, as well as the further understanding of "Huangdi Neijing", the efficacy and safety of acupotomy in the treatment of periarthritis of shoulder will be greatly improved.

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