

Research Progress of Traditional Chinese Medicine Tuina in Chronic Pain

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Abstract: Chronic pain is one of the common clinical symptoms, which seriously threatens patients' health and affects their quality of life. Drug analgesia is often used in clinic, but there are different degrees of adverse reactions. As one of the external treatment methods of traditional Chinese medicine, Tuina is effective in relieving patients with chronic pain. This article summarizes the treatment of pain relief by Tuina based on syndrome differentiation, development status and application, in order to provide more reference and theoretical basis for the clinical practice of Tuina treatment of chronic pain.

Keywords: Massage, Chronic pain, External therapy of Chinese Medicine, Review

1. Introduction

The World Health Organization(WHO) included chronic pain as a separate disease in the International Classification of Diseases(ICD-11) catalog for the first time in 2018^[1].The International Pain Society defines chronic pain as persistent pain lasting>3 months^[2].Chronic pain is often co-morbid with anxiety and depression, and long-term chronic pain affects the prognosis of the disease and may even Chronic pain not only affects the quality of life of patients, but also imposes a heavy economic burden on individuals and society, and has become a global concern^[3].Clinical analgesic methods include drugs, surgery, nerve block, physical therapy, etc. Drug therapy in the process of analgesia appeared in different degrees of toxic side effects, while the Traditional Chinese Medicine Tuina as one of the external treatment method, in the treatment of pain, but demonstrated a small trauma, does not disrupt the body's normal physiological functions, therapeutic effect is significant, the advantages of fewer complications, is becoming more and more important to the people^[4].

2. Chinese medicine's understanding of pain

The earliest recognition of pain in Chinese medicine can be traced back to the Yellow Emperor's Classic of Internal Medicine, which has long recorded more than 50 symptoms of pain throughout the body^[5].Through the discussion of pain in the Nei Jing, later generations summarized the pathogenesis of pain as "stagnation of Qi and blood may bring about pain.""If it is not glorified, it is painful"^[6].

2.1. "Stagnation of Qi and blood may bring about pain"

"Not through the pain" can be traced back to the "Nei Jing", "Su Wen - Lift the pain theory," pointed out that "the meridians are more than popular, around and around, cold into the meridians will be delayed, sobbing and can not be, guest in the veins of the gas is not fluent, and therefore, the pain is sudden"."Heat stays in the small intestine, pain in the intestines, (heat and thirst), then the firm dry can not come out, so the pain and closure is not carried out".This is the root cause of the so-called "pain when there is no circulation", whether the pain is caused by heat or cold invading the body, it is not smooth; whether the evil qi is in the meridians or collaterals, in the viscera or in the bowels, the pain caused by the stasis can not be dispersed, the qi and blood can not be passed.Until Li Dongyuan in the Jin-Yuan period in the "invention of medicine" clearly pointed out the "pain is not passable" theory of disease mechanism, later generations of doctors rely on this as the mechanism of pain to explain the disease^{[7][8]}.

2.2. *If it is not glorified, it is painful*

"If you don't glorify, you will have pain" can be traced back to "Suwen - Lifting Pain Theory", which says "..... yin qi is exhausted, yang qi has not entered, so the pain is sudden". In the Spiritual Pivot, "the medulla is reduced and lowered, and when it is lowered excessively, there is deficiency; for this reason, there is pain in the lower back and soreness in the shins", and "when blood and qi are low, one likes to turn the tendons, and there is pain in the lower part of the heel". Zhang Zhongjing "the theory of typhoid fever" in the ephedra soup ban example pointed out: "body pain ulnar in the late, not to sweat, how to know, in order to honor the gas is insufficient, the blood is also less". This is the record of "no glory is pain", no glory is pain, the pathogenesis can be summarized as qi and blood deficiency, yin essence deficiency, yang qi deficiency leading to viscera and meridians, organs, holes and orifices, limbs and bones are not moistened and warmed up and caused by pain^{[7][8]}.

2.3. *Psychosomatic responses to painful stimuli*

Chinese medicine attributes the sensory function to the category of the heart and spirit, "Nei Jing" said "all pain and itchy sores, all belong to the heart", therefore, the formation of pain and the heart and spirit of the pain stimulus factors related to the response^[9].

3. Discriminative treatment of pain by Tuina and the current development of TCM Tuina in China

3.1. *Diagnosis and treatment of pain by Tuina therapy*

"Not passable" and "not glorified" constitute the pathogenesis of pain, the human body as a whole, a variety of pathologies affect each other or even appear at the same time, so, in the treatment of pain, it is necessary to identify whether the various pathologies appear at the same time or alternately. Therefore, in the treatment of pain, it is necessary to identify whether the various pathologies occur simultaneously or alternately. Chinese medicine is characterized by evidence-based treatment, and evidence-based treatment is a comprehensive analysis of the information, symptoms and signs collected from the four diagnostic methods of Chinese medicine (looking, smelling, questioning and cutting) to identify the cause of the disease, the nature of the disease, the location and the relationship between evil and positive, and to summarize and judge the evidence to be of a certain nature. There are various methods for recognizing the evidence in Tui Na, and each has its own advantages. Liu Zhifeng^[10] summarized the dialectic method of massage commonly used in the clinical practice of injury medicine, which is mainly based on the identification of tendons and bones, supplemented by the identification of meridians and collaterals, the identification of internal organs, the identification of the eight principles, and the identification of temporal phases. Sinew and bone identification is one of the most commonly used methods in clinical massage, where palpation is used to clarify the location of the lesion, the degree of damage and the form of injury. This method originated in the Warring States period and developed during the Sui Dynasty. Diseases caused by external force are the dominant types of diseases treated by Tui Na. When the human body is impacted by external force, it firstly injures the tendons and bones, and then pathological changes such as tendons jumping out of the groove and bones opening up the sutures occur. Therefore, when treating injuries, TuiNa should focus on the "equal importance of tendon and bone" as the core, and in TuiNa treatment, the focus should be on evaluating whether the tendon and bone are balanced or not, and identifying the primary and secondary conditions of tendon and bone injuries^[11]. When treating injuries, the focus should be on evaluating whether the muscles and bones are balanced, identifying the primary and secondary conditions of the injuries to the muscles and bones, and then applying treatments based on the evidence, so as to give the appropriate techniques to manage the muscles and bones. Tuina is mainly based on the identification of muscles and bones, supplemented by other identification.

3.2. *Current Development of TCM Tuina in China*

3.2.1. *Numerous styles and different approaches*

Schools of TCM Tuina refer to groups whose theoretical systems and operational techniques for treating diseases have their own characteristics and styles, and are passed down from generation to generation by famous practitioners. The theories, massage techniques and skills of each school of TCM massage are different^[12].

3.2.2. The mechanism of action of Tuina on analgesia is unclear

Tuina, as a traditional Chinese medicine specialty therapy in China, has been shown to have a relatively good analgesic effect in a large number of clinical studies, but the analgesic mechanism of Tuina is still controversial and no consensus has been reached. From the perspective of traditional Chinese medicine, Tuina fits in with Chinese medicine theories such as "pain as acupoint" and "balance between muscles and bones". According to modern medicine, Tuina is to take pain as the acupoint, exert an external force on the skin surface, and promote blood circulation by squeezing the local skin or produce a certain chemical substance to produce a series of effects, so as to achieve therapeutic effects^[13].

3.2.3. Specific acupoints, which are not considered to be of high quality

TCM Tuina families have passed on their knowledge to each other, and the location and number of commonly used acupoints in the treatment of diseases vary from one family to another. The definition and positioning of the spleen meridian points of the three Qilu schools differ from each other, and the research statistics of the diseases treated with spleen meridian points of the three schools show that there are 19 kinds of the same disease, and in the process of treating the diseases with spleen meridian points of the three schools, the acupuncture points used with them are not the same, and the points used with the spleen meridian points of the three schools, such as the spleen meridian point of Sun Chongsan and Zhang Hanchen, have the highest frequency of being used with the spleen meridian points, followed by the internal eight trigrams point, and the points of the three-word school with the highest frequency of being used with the spleen meridian point of the three-character school are The most frequent combination in the Three Character Meridian school is the two Shangma points, which have the effect of nourishing yin and tonifying the kidney, followed by the Liver points, which are good at regulating the flow of qi^[14].

3.2.4. Different standards of diagnosis and treatment

Traditional Chinese medicine (TCM) is widely used in clinical practice according to the four diagnostic signs. However, there is a lack of standardized criteria for the identification and treatment of TCM Tuina in clinical practice. In clinical treatment, different doctors have different experience and understanding, which leads to differences in the identification and pattern of symptoms, as well as differences in the methods of treatment. The combination of techniques and skills in the process of massage is not the same, which makes it difficult to ensure the therapeutic efficacy of Tuina^[12].

4. Traditional Chinese Medicine TuiNa in Various Types of Chronic Pain

4.1. Application in Orthopedic Pain

4.1.1. Lumbar muscle strain, lumbar disc herniation

In the current context of rapid social development, people's lifestyles have undergone radical changes, years of bad habits also lead to the incidence of lumbar pain is increasing year by year, the lumbar muscle groups are subjected to repetitive stress to increase muscle tone and muscle strength decline, causing chronic lumbar muscle strain, due to long-term work, the lumbar disc herniation incidence tends to be younger^{[15][16]}. Low back pain in Chinese medicine has been a variety of treatment means (Chinese medicine, fumigation, Tuina, traction, etc.), Tuina as a complementary therapy and one of the alternative therapies, in the treatment of low back pain has been quite good efficacy, its operation is simple, reproducibility, compliance is good, by the people generally acceptable. Yu Changzhi^[17] randomly divided 90 patients with lumbar muscle strain injury into three groups. They were divided into three groups, the observation group was given oral painkillers and tui na repositioning manipulation, the control group I was given oral painkillers, and the control group II was given tui na repositioning manipulation, and the intervention lasted for 3 weeks. The results showed that Tuina therapy for lumbar muscle strain injury had significant efficacy and low recurrence rate. Liu Boyuan^[18] divided 86 patients with lumbar disc herniation into research group and control group, the control group was given lumbar spine rehabilitation exercise, and the research group was given orthopedic massage treatment, and the intervention was 4 weeks. The results showed that traditional Chinese medicine Tuina could improve the therapeutic effect, relieve patients' lumbar pain and improve their quality of life. The study showed that patients with chronic lower back pain have pain with central properties, i.e., the persistence of pain is related to the brain^[19]. Huo Miao^[20] collected 13 patients with chronic lower back pain as the intervention group and 13 healthy individuals as the control group; the intervention group used six sessions of Tuina within 20 days and completed the visual analog scale (VAS), Chinese reduced version of the Oswestry dysfunction index

(C-SFODI), and the PCC brain region before treatment, the first, third (day 10), and sixth (day 20) sessions of treatment; the control group did not do any intervention but only completed four 1H-MRS examinations at the same time. 1HMRS examination; the control group did not do any intervention and only completed four 1H-MRS examinations at the same time. Results showed that TCM Tuina not only relieved lower back pain, but also improved the patients' brain function abnormalities. Yang Yuchan^[21] collected resting-state functional magnetic resonance (fMRI) from 20 patients with chronic lower back pain and 20 healthy controls, and gave Tuina treatment to patients in the chronic lower back pain group. The results showed that specific brain function abnormalities existed in subjects with resting state lower back pain, and TCM Tuina not only relieved pain but also improved brain function abnormalities in patients.

4.1.2. Frozen shoulder

Frozen shoulder is also known as periartthritis of the shoulder joint, frozen shoulder, shoulder condensation, fifty shoulders, and leaky shoulder wind. It is a common disease in Chinese orthopedics. It is recorded in the "Medical Jinjian - The Essentials of Bone Setting" that "pressing its meridians and channels to pass the depressed and closed qi, and moistening its congestion and aggregation to dissipate the swolleness of the depressed and knotted" points out that TuiNa has the effect of promoting qi and blood circulation, dispersing fatigue and eliminating knots, and affirms its therapeutic efficacy in the treatment of periartthritis^[22]. TCM Tuina therapy is effective, non-invasive, economical and safe, and has become the first choice of conservative treatment for patients with frozen shoulder. Deng Jinde^[23] concluded that ordinary acupuncture was too single and limited in its effectiveness in the treatment of frozen shoulder, by recruiting 74 patients with frozen shoulder to carry out a clinical study, comparing the efficacy of Tuina combined with acupuncture and simple acupuncture for analgesia, with a 2-week intervention. The results showed that Tuina could relieve pain and improve symptoms, signs and quality of life of patients with frozen shoulder. Tu Jian^[24] believes that although the drug and closed treatment of frozen shoulder has a certain effect, but the long-term use of the efficacy of the poor, recruited 100 cases of frozen shoulder patients as subjects to carry out the study, observed that compared with the simple drug acupoint injection, massage with drug acupoint injection is more effective in relieving the patient's pain state to improve the therapeutic effect.

4.1.3. Osteoarthritis

Osteoarthritis of the knee is usually caused by degenerative diseases of the knee joint, trauma, overwork and so on, and it is a kind of chronic knee cartilage damage disease. Patients are mostly middle-aged and old people, Chinese medicine believes that this disease is caused by the deficiency of liver and kidney, wind, cold and dampness blocking the meridians, which belongs to the category of "paralysis"^[25]. Total knee replacement is an effective treatment for osteoarthritis^[26]. Postoperative pain after total knee surgery is often accompanied by pain, which belongs to the category of "blood stasis syndrome" in Chinese medicine. Surgical trauma leads to damage of the meridians and veins, blood overflows out of the veins, and stagnation of qi and blood, and pain is caused when there is no communication. Qi stagnation and blood stasis is the basic mechanism of the disease, therefore, the basic treatment principle is to move qi to relieve pain, activate blood circulation and eliminate blood stasis. As a common clinical non-pharmacological treatment method, Tuina has good efficacy in relieving postoperative pain of total knee joint. Xu Hui^[27] included 134 cases of osteoarthritis patients who were proposed to undergo total knee arthroplasty as study subjects, randomly divided into blank group and intervention group, with pressure pain threshold as the main observational index, it was observed that compared with postoperative conventional analgesia, massage combined with conventional analgesia could more effectively reduce the local pain threshold and alleviate pain. Guhua^[25] recruited 89 patients with osteoarthritis of the knee as subjects for a study and randomized them into groups; the control group was given ibuprofen for oral analgesia, and the observation group was given acupuncture and Tuina treatment on this basis. The results showed that, compared with single ibuprofen analgesia, Tuina could significantly relieve the pain of patients with osteoarthritis of the knee and had fewer side effects. Ding Xutong^[28] concluded that although traditional local massage can improve patients' pain by regulating qi, blood, tendons and bones, musculoskeletal muscles are the body as a whole, and pathologically affect each other, so the Tuina technique based on the overall diagnosis and treatment mode of "spine-pelvis-knee" can effectively reduce the stiffness of knee joints of patients with osteoarthritis and relieve pain, and the clinical efficacy is better than that of traditional local Tuina.

Tendon injury is one of the most common clinical disorders, the human body's joints, body, muscle by violent impact, strong twisting, pulling pressure or accidental fall channel, or overworked body, or continuous activities and other factors caused by the prolonged accumulation of labor injury without fracture dislocation or skin damage are called tendon injury. It has been proven in countless clinical

practices that Tui Na is most effective in treating injured tendons. Due to the blood away from the meridians, meridians blocked, the flow of qi and blood can not, "not through the pain", not the root cause of pain is also the essence of the pathology of the injured tendon, massage is precisely from the "loose", "smooth", "move" three aspects to solve the key "not pass", so as to achieve the therapeutic purpose. Tui na is to solve the key of "not being able to pass" from the three aspects of "loosening", "smooth" and "moving", so as to achieve the therapeutic purpose^[29].

4.2. Neuropathic pain

Neuropathic pain is one of the common types of chronic pain, which can cause anxiety, depression, and sleep disorders, seriously affecting the quality of life of patients^[30]. The pathogenesis of neuropathic pain is complex, and Li Yuxiang et al^[31] confirmed that massage can relieve pathologic pain by conducting animal experiments. The study of Feng Yin hao^[32] also showed that acupressure was effective in relieving neuropathic pain.

4.2.1. Trigeminal neuralgia

Primary trigeminal neuralgia belongs to the category of "face wind", "alveolar wind" and "migraine wind" in Chinese medicine, which mainly manifests as transient and recurrent severe pain in the distribution area of the sensory branch of the trigeminal nerve. The main manifestation is transient and recurrent severe pain in the area of trigeminal nerve sensory branch distribution. Qu Chongzheng^[33] recruited 30 patients with trigeminal neuralgia as subjects for a 6-week study, and the results showed that, compared with single carbamazepine medication, Tuina could effectively reduce the pain of the patients and improve their therapeutic effects. Mou Yue^[34] found that acupuncture and Tuina were more effective than carbamazepine medication in reducing patients' pain and improving their physical fitness. This is consistent with the study of Chen Lei^[35].

4.2.2. Centralized pain after chronic stroke

Stroke is a common cerebrovascular disease in clinical practice with a high disability rate, posing a great threat to the health of the elderly. Central poststroke pain (CPSP) is a chronic (more than 3 months) neurological condition after stroke^[36]. Shoulder-hand syndrome is more common, with a prevalence rate of up to 70%, which has a serious impact on the lives of elderly patients. Ren Mengqiang^[37] conducted a 4-week randomized controlled trial with 60 subjects. All subjects were stroke patients with shoulder pain. The results showed that acupressure could reduce shoulder pain, improve mobility, and enhance patients' compliance with the treatment process. According to Zhang^[38], conventional rehabilitation exercises are single-targeted, with limited efficacy and a 2-week intervention period. The results showed that compared with conventional rehabilitation therapy, Tuina combined with exercise head acupuncture could improve insomnia, depression, and relieve pain in patients with spasticity in stroke.

4.3. Application in cancer pain

ASCO guidelines state that chronic pain may be a serious negative consequence of survival in cancer patients and that pain should be explored as a late phenomenon in cancer and its treatment^[39]. Chronic pain is one of the most harmful symptoms exhibited by cancer patients. Cancer pain is caused by changes in the skin, bones, nerves and other tissues that are directly involved or metastasized, by the effects of treatments (e.g., diagnostic procedures, surgery, chemotherapy, radiation), or by a combination of these, and while conventional therapies for treating pain are available, many people with cancer have turned to complementary therapies to help them maintain their physical, emotional, and spiritual well-being. Tui Na can be effective in relieving cancer pain, especially pain associated with surgery^[40].

Breast cancer belongs to the categories of "breast rock", "jealous breast" and "breast stone" in traditional Chinese medicine^[41], and is the most common cancer among women and the second leading cause of cancer deaths in women. Persistent pain after breast cancer surgery affects patients' mental health, activities of daily living, and quality of life^[42]. Upper extremity edema is very likely to occur after breast cancer surgery, which seriously affects the surgical outcome and the quality of life of patients^[43]. Zhao Wenxia^[44] conducted a randomized controlled trial by carrying out 4 courses of treatment (one course of one week) containing 82 patients with postoperative upper limb lymphedema after breast cancer, and the results showed that tui na combined with medication was more effective in improving the joint mobility of patients with postoperative upper limb lymphedema after breast cancer than medication alone, and greatly alleviated the patients' pain. Xu Xiaodong^[1] concluded that postoperative upper limb edema after breast cancer is mostly caused by poor qi, qi stagnation and blood stasis, and it is appropriate to dredge

the liver, regulate qi, activate blood circulation and eliminate blood stasis treatment. Conventional rehabilitation therapy is single and ineffective, so the intraosseous effect patch with the effect of activating blood circulation and removing blood stasis was given in combination with Tuina for 28 days. The results showed that tuina could effectively relieve upper limb pain and reduce upper limb edema in postoperative breast cancer patients.

Cancer is one of the greatest threats to human life and health, and most cancer patients suffer from cancer pain, which can affect their mental health and quality of life. So far, there is no research on the treatment of malignant tumors with TuiNa, but many studies have shown that Tui Na combined with medication can effectively alleviate the pain of patients and can improve patients' adherence to treatment, which is worth promoting.

5. Conclusions

To summarize, after a large number of clinical studies, TCM Tuina has inherited the basic theories of Chinese medicine and accumulated a large amount of clinical experience, and is characterized by simplicity, ease of operation and economy. The traditional theory of the mechanism of chronic pain is that "stagnation of Qi and blood may bring about pain" and "if you don't glorify it, it hurts", and the treatment of pain by TuiNa has been documented in many places in Nei Jing (The Classic of Internal Medicine). TuiNa, as a kind of external treatment, is designed to stimulate the meridians and acupoints of human beings to dredge the meridians and channels, so as to treat the disease. The western medical treatment for chronic pain is mainly surgery and medication, but there are different degrees of adverse reactions to medication, and Tui Na, as a unique treatment method in China, has been proved by a large number of studies to be effective for chronic pain. The following deficiencies exist in the treatment of chronic pain with massage: 1. Tui na is often combined with other therapies in clinical practice as an adjunct to other therapies. In clinical practice, Tuina is often combined with other therapies as an adjunct to other therapies, but the optimal combination of Tuina and other therapies for the treatment of chronic pain has yet to be finalized; 2. There has been no research on how to improve the standardization of the manipulation of Tuina repositioning techniques in the treatment of chronic pain and to avoid the influence of the subjective behavior of the Tuina practitioner; 3. The existence of chronic pain diseases usually have a long course, but the intervention cycle is generally shorter in the current study, it can be appropriate to extend the intervention time, in order to it to achieve better efficacy; 4. Current studies have different criteria for evaluating efficacy and lack large sample sizes, multicenter, and large amounts of data, so the sample size as well as the number of studies can be increased in clinical research; 5. There is little mention in the literature of the drawbacks as well as adverse events of nudging. Therefore, in future clinical studies, the sample size should be increased, the nudging technique should be standardized, the intervention time should be appropriately extended, the efficacy criteria should be clarified, and the occurrence of adverse events of nudging should be cautiously studied with a view to alleviating the suffering of patients with chronic pain.

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