

# Innovative Application and Research Progress of Acupuncture Therapy in the Treatment of Rheumatoid Arthritis

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## Abstract

Rheumatoid arthritis (RA) is a chronic systemic disease characterized by symmetrical polyarthritis. Although medication is its mainstay of treatment, it is not the only option. In fact, acupuncture, herbal tonics, surgery, and Tibetan medicine are also widely used in the treatment of RA, especially acupuncture. Acupuncture is an important part of traditional Chinese medicine and has been practiced for thousands of years. It regulates the flow of qi and blood by stimulating specific points in the body to treat diseases. In the treatment of RA, acupuncture is believed to improve symptoms such as joint pain, swelling, and stiffness, as well as improve the quality of life of patients. However, the mechanism of action of acupuncture in the treatment of RA is not fully understood. Still, current studies suggest that it may be related to several aspects such as neurological, endocrine, and immunological aspects. Overall, acupuncture in the treatment of RA still requires further research and exploration to clarify its mechanism of action and optimize the treatment protocol. The purpose of this paper is to study and explore the practical application value of acupuncture therapy in the treatment of RA as well as its principle of action.

## Keywords

Rheumatoid arthritis, acupuncture, warming needles, moxibustion

## 1. Introduction

Rheumatoid arthritis (RA) is a refractory, chronic disease characterized by chronic, symmetrical polyarthritis, resulting in synovitis-based arthropathy and even joint swelling and pain; in advanced stages, it can lead to joint ankylosis, deformity, and severely impaired function [1]. Clinical treatments often use non-steroidal anti-inflammatory drugs (NSAIDs), glucocorticoids, botanical preparations, or surgical procedures, including joint replacement and synovectomy. To a certain extent, the clinical symptoms can be relieved, but the long-term use of medication can cause severe liver and kidney damage and gastrointestinal reactions in some patients, resulting in decreased patient compliance and difficulty in adhering to long-term regular treatment. Acupuncture and moxibustion belong to traditional Chinese medicine; through stimulating the human body acupuncture points, regulating the function of qi, blood, and internal organs, can effectively cure functional diseases, with the treatment of the respiratory system, gastrointestinal system, cervical spine, lumbar vertebrae, frozen shoulder, osteoarthritis, and other diseases, can alleviate the pain, and improve the clinical symptoms of the patients [2]. Currently, acupuncture treatment has been gradually applied to the

treatment of RA, and clinical efficacy has been achieved to a certain extent. This paper will discuss the relevant mechanism of action and the application value of acupuncture in treating RA.

## 2. Etiology and treatment status of RA

Modern medicine has so far been unable to clarify the cause of RA, but it is generally believed to be an autoimmune reaction caused by infection, resulting in synovitis-based joint ankylosis, deformity, and severely impaired function. Western medical treatment is based on anti-inflammatory and analgesic, preferring non-steroidal anti-inflammatory drugs, glucocorticoids, etc., combined with surgery and other treatment modalities, which can quickly and effectively alleviate the clinical symptoms of the patient's pain during the onset of the disease. However, long-term use of medication often causes severe gastrointestinal reactions or liver and kidney damage, resulting in patients being unable to adhere to regular medicines for an extended period and recurrent episodes of the disease [3].

According to Chinese medicine, RA belongs to the category of "paralysis," which is caused by wind, cold, and dampness attacking the joints for a long time, and pain is caused by the lack of qi and blood in the liver and kidneys, phlegm and blood stasis, and the depletion of positive qi [4]. The principle of Chinese medicine treatment is to support the positive and eliminate the evil, treating both the symptoms and the root cause, adopting the treatment method of warming the meridians and dispersing the cold, activating blood circulation and eliminating blood stasis, and treating the disease with Chinese herbal medicinal tonics, acupuncture and moxibustion, medicinal fumigation, and Tibetan and Mongolian medicinal baths. Commonly used Chinese herbal tonics for RA include dispelling wind, removing dampness, dispelling cold formula, Gui Zhi Paeoniae Zhi Mu Tang, coix seed soup plus flavor, etc. [5, 6]. Patients who take Chinese medicine for an extended period may refuse to take the medicine. Acupuncture and moxibustion are traditional Chinese medical treatments that can alleviate the symptoms of many diseases. Acupuncture and moxibustion can help the acute pain symptoms during the onset of the disease, and they can also stimulate the acupoints for a long time to achieve the therapeutic effect during the period of remission to reduce the probability of recurrence of the disease. Among them, to enhance the efficacy of traditional acupuncture, clinical use of warm acupuncture, long snake moxibustion, auricular acupuncture, fire needle, acupuncture point buried thread, acupuncture point injection, laser acupuncture point irradiation, electrical stimulation of acupuncture points, acupuncture point pressure, acupuncture point closure and so on [7]. The efficacy of different therapies varies, and the doctor should choose the appropriate acupuncture therapy for the patient's condition.

## 3. Overview of acupuncture RA

Acupuncture and moxibustion therapy is the collective name of acupuncture and moxibustion, under the guidance of the fundamental theories of traditional Chinese medicine, based on the idea of meridians and acupoints, the use of lifting and inserting the twisting of the needle or goat's intestine threads into the body of the patient, the stimulation of acupuncture points to achieve the therapeutic effect of the traditional means of treatment, the difference between the conventional treatment of medication, acupuncture and moxibustion therapy without significant gastrointestinal reactions, liver and kidney damage, with simple operation, the effect of the advantages of sustained [8]. Acupuncture therapy has been proven to improve the clinical symptoms of a variety of diseases [9, 10]; for example, acupuncture therapy can reduce the incidence of coronary heart disease; researchers found that the use of traditional Chinese medicine, hand acupuncture, electro-acupuncture, or a combination of both the incidence of coronary heart disease is lower than the patients who did not use acupuncture treatment [11]. Acupuncture can also be used to treat simple obesity, which can effectively reduce body mass and regulate blood lipid levels. In addition, acupuncture has begun to be used in treating rheumatic diseases, such as acupuncture and bone piercing methods for gout fire acupuncture for knee osteoarthritis.

### 3.1 Conventional acupuncture treatments

Currently, there are clinical reports that the use of acupuncture alone or acupuncture combined with other treatment modalities can, to a certain extent, achieve anti-inflammatory, antioxidant, and immune system regulation effects, thereby enhancing joint function, improving quality of life, and improving clinical symptoms of patients with RA, with few reports of adverse effects [12]. The researchers used Xuanpai Tang alone and acupuncture combined with Xuanpai Tang to treat cold-damp paralytic blockage type RA. They found that the total effective rate of acupuncture combined with the Xuanpai Tang group was significantly higher than that of Xuanpai Tang alone. The acupuncture combined with the Xuanpai Tang group had more adverse effects on joint flexion, extension, wind-cold pain, cold pain, swelling, morning stiffness, morning stiffness, walking time, 20m walking time, two-handed grip, node,

pressure-pain index, joint resting index, pain index, and swelling, which was the most critical factor in the improvement of joint function. Index, pressure pain index, combined rest pain index, CRP, ESR, and RF index levels improved more significantly, and thus, the researchers concluded that acupuncture therapy could dramatically improve the clinical symptoms of cold-damp paralytic RA. At the same time, a study found that acupuncture combined with the formula for dispelling wind and dampness and dispersing cold can also improve clinical efficiency [13]. Clinical results showed that acupuncture combined with the recipe for dispelling wind and water and spreading cold in the treatment of RA can reduce the VAS and HAQ scores of the patients and alleviate the clinical symptoms of the patients, which confirms that acupuncture can be used as an adjunctive treatment for RA.

### 3.2 Specialized acupuncture treatments

In addition to conventional acupuncture, acupuncture therapy includes long snake moxibustion, auricular acupuncture points, acupuncture point buried thread, bee needle therapy, etc. These acupuncture therapies are derived from traditional methods of acupuncture, combined with the different physical conditions of the patient, to improve the time of the conventional needle or a combination of a variety of therapeutic modalities to develop; the purpose is to enhance the acupuncture point stimulation effect, to improve the therapeutic efficacy of acupuncture. Among them, long-snake moxibustion is a kind of acupuncture therapy of the dugu vein; its application of moxibustion treatment range is the largest, a moxibustion treatment time is the longest, can be added to the integrated stimulation effect of drugs and acupoints, to achieve the effect of strengthening the yuan and solidifying the root, warming the meridian and dispersing the cold, eliminating blood stasis and removing the dampness, which is often suitable for the health care treatment of the chronic diseases of cold and deficiency, and subfertility. After researchers used long snake moxibustion to treat RA, they found that RF, ESR, and CRP levels decreased more. The effective rate of treatment class RA was as high as 95%, indicating that long snake moxibustion has a significant therapeutic effect on RA [14]. Auricular acupoint therapy, or auricular acupuncture, belongs to acupuncture and moxibustion therapeutics, which refers to the stimulation of ear acupuncture points or sensitive points through different methods such as acupuncture, patch, massage, etc., to play the regulation of internal organs and qi, warming and activating the channels and collaterals, analgesic, sedative, sleeping and other effects, to achieve the prevention and treatment of disease, a method. Auricular acupoint therapy as the main or auxiliary means of treatment of disease research more, involving a wide range of clinical researchers using auricular acupoint therapy combined with methotrexate for the treatment of RA found that auricular acupoint therapy can effectively alleviate the pain, improve joint function, alleviate the use of methotrexate alone caused by digestive stimulation, fatigue, oral ulcers, and other adverse reactions, and to improve the patient's quality of sleep. Further, the researchers concluded that auricular acupoint therapy can improve patients' quality of life.

Acupuncture, as an adjunctive treatment for RA, is often combined with a variety of therapeutic modalities for comprehensive treatment, including the combination of Western medicine, traditional Chinese medicine, and medicinal fumigation. Ozonized autologous blood transfusion therapy can reduce the levels of MMP-3 and MMP-9, which can effectively inhibit the inflammatory response [15]. The researchers used ozonated autologous blood transfusion combined with acupuncture therapy, which can play the anti-inflammatory effect of ozone, combined with warm acupuncture's warm meridians and collaterals to relieve the inflammatory reaction of patients with RA, effectively reducing the pain symptoms of the patients, but also has the advantages of lower cost, efficacy, easy to operate, and so on. Acupuncture and moxibustion treatment with drug fumigation can improve the therapeutic effect; clinical research has found that after herbal fumigation combined with acupuncture and moxibustion treatment, the therapeutic efficiency was 93.33%, which can effectively alleviate the symptoms of patients with RA and provide a variety of therapeutic ideas for the clinical treatment of RA. The above studies confirm that both the traditional acupuncture therapy and the new acupuncture method combined with modern technology can alleviate the clinical symptoms of RA patients to varying degrees and have the advantages of easy operation, sustained therapeutic effect, and no apparent gastrointestinal stimulation. These liver and kidney damage side effects can be used as an adjuvant therapy for clinical RA [16].

### 4. Mechanisms related to acupuncture treatment

Current research shows that signaling pathways play an essential role in the pathogenesis and development of diseases, affecting cell proliferation and apoptosis and mediating the release of a variety of inflammatory factors. Modern research has found that acupuncture therapy can improve the symptoms of RA patients by regulating the relevant signals of the signaling pathway [17]. After treating RA patients with wind-cold-damp obstruction syndrome with hot tonic acupuncture, it was found that the patients' GSH-Px, SOD, and MDA levels were improved. Thus, the

researchers concluded that hot tonic acupuncture could improve the body's antioxidant damage capacity and oxidative stress indicators. The researchers found that electroacupuncture could effectively reduce the levels of pro-inflammatory IL-1 and IL-6 and increase the levels of IL-4 and IL-10 in the peripheral blood and synovial fluid of RA patients, reducing the synovial inflammatory response and slowing down the process of joint structure destruction. Electroacupuncture therapy can also reduce TNF- $\alpha$  and VEGF levels, attenuate inflammatory mediator-induced synovial inflammatory response, and thus alleviate the clinical symptoms of RA patients, especially the pain and swelling symptoms following the inflammatory response, which is crucial for improving both treatment compliance and quality of life. Wang *et al.* randomly divided 48 male SD rats into a regular group, model group, flat tonic, and flat diarrhea group, and hot tonic acupuncture group; the results showed that the toe volume of rats in the hot tonic acupuncture group was significantly reduced, and the plantar pain reaction time was particularly prolonged. Hot tonic acupuncture achieves an anti-inflammatory effect and adjusts the secretion of synovial cells by improving the expression of cytokines SOCS1 and SOCS3 of the JAK-STAT signaling pathway in synovial cells of model rats. Zhang *et al.* found that after the treatment of RA with acupuncture combined with paralytic therapy, the patients' morning stiffness, limb heaviness, pale tongue, and tight pulse were lower than those of the control group, and the levels of C-reactive protein (CRP) and interleukin-6 (IL-6) were also reduced, suggesting that warm acupuncture combined with paralytic therapy has anti-inflammatory effect, can reduce the level of inflammatory factors and alleviate the condition [18]. In addition, some researchers found that warm acupuncture and moxibustion can significantly reduce the swelling index of osteoarthritic joints and serum IL-1 level, increase IL-10 expression, and improve the arthritic injury condition. It can also promote the increase of SIRT1 expression and decrease of NF- $\kappa$ Bp65 expression in knee cartilage synovial tissue, which has better anti-inflammatory analgesic and immunomodulatory effects. The above studies confirm that different acupuncture methods can achieve anti-inflammatory impacts by affecting the level of oxidative stress molecules and signaling pathways and reducing inflammatory factors, thus relieving pain and other symptoms.

## 5. Summary and prospect

RA is a refractory chronic disease, and clinical treatment is based on medication combined with a variety of therapeutic methods for comprehensive treatment. Acupuncture and moxibustion therapy belong to China's traditional medical medicine and are widely used in various diseases. Existing studies have found that traditional acupuncture, warm acupuncture, moxibustion, "He's the three-way method," auricular acupuncture, bee-needle therapy, etc. can play an anti-inflammatory role to a certain extent by affecting signaling pathways, inflammatory factors, etc., to alleviate the symptoms of pain, and to improve the quality of life of patients with gout. In addition, acupuncture therapy has the advantages of easy operation, long-lasting effect, and reducing gastrointestinal, liver, and kidney damage in patients, which can be used as a necessary adjunctive therapy for RA.

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