

Research Progress and Clinical Application of TCM Syndrome Differentiation and Treatment of Rheumatoid Arthritis

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Abstract: *Rheumatoid arthritis (RA) is a chronic, systemic autoimmune disease with a protracted course, high disability, and a significant impact on patients' quality of life. Traditional Chinese medicine (TCM) offers unique advantages in the treatment of RA, including syndrome differentiation and treatment, holistic regulation, and multi-target intervention, and is widely used in clinical practice. This article systematically reviews the pharmacological research progress of commonly used TCM herbs and representative prescriptions (such as Duhuo Jisheng Decoction and Simiao Yong'an Decoction), covering mechanisms of anti-inflammatory, immunomodulatory, antioxidant, and articular cartilage protection. The safety of drugs such as *Tripterygium wilfordii* is also discussed. The role of TCM external treatments such as acupuncture, massage, cupping, and fumigation, as well as local interventions such as Chinese herbal plasters and acupoint injections, in RA rehabilitation is further analyzed. The synergistic value of TCM rehabilitation concepts and modern rehabilitation methods is emphasized. Finally, addressing current issues such as inconsistent syndrome differentiation criteria, insufficient research on TCM mechanisms, and the conflict between individualization and standardization, future development directions are proposed, including precise syndrome differentiation, digitally assisted diagnosis, and the development of new TCM dosage forms. This article aims to provide theoretical support and practical references for the comprehensive treatment of RA, promote the integration of traditional Chinese and Western medicine, and enhance overall treatment capabilities.*

Keywords: Rheumatoid arthritis, TCM syndrome differentiation and treatment, Chinese herbal formulas, Integrated TCM and Western medicine, Acupuncture and massage.

1. Introduction

RA is an autoimmune disease characterized by chronic, symmetrical, and aggressive arthritis, often accompanied by synovitis, joint destruction, and dysfunction, which can lead to disability in severe cases [1]. According to epidemiological surveys, the global prevalence of RA is approximately 0.5% to 1%, with a significantly higher incidence in women than in men, and it is more common in middle-aged and elderly people. The disease has a protracted course and is prone to recurrence. In addition to joint symptoms, it can also affect multiple systems such as the heart, lungs, and kidneys, seriously affecting the patient's quality of life and social function [2]. Currently, Western medicine treatments for RA mainly rely on nonsteroidal anti-inflammatory drugs (NSAIDs), glucocorticoids, disease-modifying antirheumatic drugs (DMARDs), and biological agents [3]. Although these drugs have achieved certain efficacy in controlling inflammation and relieving symptoms, long-term use is often accompanied by side effects such as gastrointestinal reactions, liver and kidney damage, and immunosuppression, and some patients have drug resistance or poor efficacy. In addition, the etiology of RA is complex and individual differences are significant. Western medicine treatment models are still insufficient in responding to the diversity of diseases and individual needs. Traditional Chinese medicine has accumulated rich experience in treating RA in long-term clinical practice, classifying it as "bi syndrome" and emphasizing the core concept of "differentiation and treatment" [4]. Traditional Chinese medicine identifies the cause and pathogenesis of the disease through observation, listening, questioning and palpation, and formulates individualized treatment plans based on the patient's constitution, disease course and symptoms, reflecting the

holistic advantage of "adapting to the individual, time and place". Traditional Chinese medicine treatment not only focuses on eliminating evil, but also emphasizes strengthening the body. It has shown unique efficacy in regulating immunity, improving microcirculation, and alleviating inflammatory reactions, and has relatively few side effects, making it suitable for long-term use [5].

This article aims to systematically sort out the research progress and clinical application status of traditional Chinese medicine differentiation and treatment of RA, and explore its value and development potential in the modern medical system. Through a comprehensive analysis of traditional Chinese medicine theory, commonly used prescriptions, external treatments, clinical efficacy and the integration of traditional Chinese and Western medicine, it is hoped to provide theoretical support and practical reference for the diversified treatment of RA and promote the in-depth development of traditional Chinese medicine in the field of rheumatism.

2. The Traditional Chinese Medicine's Understanding of the Etiology and Pathogenesis of Rheumatoid Arthritis

Rheumatoid arthritis (RA) is classified as a "bi syndrome" in traditional Chinese medicine. Its etiology and pathogenesis are closely related to the "wind, cold, dampness, and heat" mentioned in the Yellow Emperor's Classic of Internal Medicine: "the three qi of wind, cold, dampness, and heat come together to form bi". Traditional Chinese medicine believes that external pathogens such as wind, cold, dampness, and heat invade the human body, blocking the meridians and causing poor circulation of qi and blood, leading to symptoms

such as joint pain, swelling, and limited movement [6]. Especially in the case of insufficient vital energy, qi and blood deficiency, and liver and kidney deficiency, external pathogens are more likely to take advantage of the situation and form a pathological state of bi syndrome [7].

The pathogenesis of RA is staged and complex. In the early stage, wind, cold, and dampness are the main pathogens, which are the stage of excess syndrome; in the middle stage, dampness and heat are accumulated internally, and phlegm and blood stasis block the meridians; in the late stage, due to long-term damage to vital energy, liver and kidney deficiency, qi and blood deficiency, and other mixed symptoms of deficiency and excess syndrome appear [8]. This pathogenesis transformation process reflects the TCM treatment principle of “taking both the symptoms and the root cause into account” and “strengthening the body’s resistance and eliminating pathogenic factors”, and also provides a theoretical basis for syndrome differentiation and treatment. “If the body is unobstructed, there will be no pain; if there is pain, it is obstructed” is the classic TCM explanation of the pain mechanism. The joint pain, stiffness, and movement disorders of RA patients are caused by the obstruction of the flow of qi and blood and the blockage of meridians [9]. Therefore, in treatment, according to the changes in the pathogenesis, the principles of expelling wind and dampness, clearing heat and detoxifying, activating blood circulation and unblocking meridians, and nourishing the liver and kidneys should be flexibly applied to achieve the purpose of unblocking the meridians, harmonizing qi and blood, and alleviating symptoms.

3. Syndrome Differentiation and Treatment Principles

TCM syndrome differentiation and treatment of RA emphasizes the formulation of individualized treatment plans “according to the person, time, and place”, and syndrome differentiation is carried out according to the etiology, pathogenesis, clinical manifestations, and physical differences [10]. Syndrome differentiation not only helps to clarify the treatment direction, but also provides theoretical support for improving clinical efficacy.

The wind-cold-dampness type is more common in the early stages of the disease or in patients who develop the disease in a cold and damp environment. The main cause of the disease is exogenous wind-cold-dampness, which blocks the meridians and causes poor circulation of qi and blood [11]. Clinical manifestations include wandering joint pain, which worsens when exposed to cold, mild swelling, limited mobility, chills, heaviness of limbs, white greasy tongue coating, and slow pulse [12]. Treatment focuses on dispelling wind and cold, removing dampness and unblocking the meridians. Commonly used herbs include *Saposhnikovia divaricata*, *Qianghuo*, *Duhuo*, *Guizhi*, and *Atractylodes macrocephala*. Representative prescriptions include *Mahuang Fuzi Xixin Decoction* combined with *Guizhi Jia Lingshu Decoction* or *Duhuo Jishe Decoction*, which can dispel rheumatism, nourish the liver and kidneys, and strengthen the bones and muscles [13-14]. The damp-heat type is mostly caused by the long-term retention of dampness and heat, or exogenous damp-heat evil toxins, which accumulate in the

joints and block qi and blood, leading to redness, swelling, heat, and pain. Clinical manifestations include redness, swelling, heat, and pain in the joints, obvious local burning sensation, limited mobility, bitter taste in the mouth, irritability, yellow urine, red tongue with yellow greasy coating, and slippery and rapid pulse. Treatment is mainly based on clearing heat and dampness, unblocking meridians and relieving pain, and commonly used herbs include *Phellodendron chinense*, *Coix seed*, *Smilax glabra*, *Honeysuckle vine*, and *Forsythia suspensa* [15]. Representative prescriptions include *Simiao Yong’an Decoction* with modifications, or *Jiawei Ermiao Powder*, which can clear heat and dampness, unblock meridians and relieve pain [16]. Phlegm and blood stasis blocking meridians is more common when the disease has entered the meridians for a long time, phlegm and dampness and blood stasis are combined, blocking the meridians, causing poor circulation of qi and blood, and persistent pain [17]. Clinical manifestations include joint swelling and stiffness, fixed pain, obvious limitation of movement, joint deformity or deformation, dark tongue or ecchymosis, greasy tongue coating, and sluggish pulse. Treatment is mainly based on clearing phlegm and blood stasis, unblocking meridians and relieving pain, and commonly used herbs include *Salvia miltiorrhiza*, *Trillium*, *Curcuma zedoaria*, *Pinellia ternata*, *Zedoariae rhizome*, and *Peach kernel*. Representative prescriptions include *Taohong Siwu Decoction* combined with *Erchen Decoction* with modifications, or *Tongluo Huoxue Decoction*, which can improve microcirculation and relieve pain. The liver and kidney deficiency type is mostly caused by long-term illness, which damages the body’s health. The liver and kidneys are deficient, the muscles and bones are not nourished, and the meridians are not moistened, leading to joint deformation and dysfunction [18]. Clinical manifestations include joint stiffness, difficulty in flexion and extension, soreness of the waist and knees, dizziness and tinnitus, pale tongue with little coating, and weak pulse. Treatment focuses on tonifying the liver and kidneys and strengthening the muscles and bones. Commonly used herbs include *Rehmannia glutinosa*, *Cornus officinalis*, *Eucommia ulmoides*, *Achyranthes bidentata*, and *Cibotium barometz*. Representative prescriptions include *Duhuo Jisheng Decoction* with modifications, or *Liuwei Dihuang Wan* combined with *Bu Guzhi Wan*, which can regulate the liver and kidneys and improve joint function [19]. The qi and blood deficiency type is mostly caused by long-term illness, which consumes qi and damages blood, resulting in insufficient qi and blood biochemical production, malnutrition of muscles and bones, and decreased joint function. Clinical manifestations include dull joint pain, fatigue, sallow complexion, palpitations and shortness of breath, pale tongue with thin coating, and weak pulse [20]. Treatment focuses on tonifying qi and blood and harmonizing the Ying and Wei. Commonly used herbs include *Astragalus membranaceus*, *Codonopsis pilosula*, *Angelica sinensis*, *Atractylodes macrocephala*, and roasted licorice [21]. Representative prescriptions such as *Bazhen Decoction* or *Guipi Decoction* can nourish qi and blood, and improve fatigue and pain. Syndrome differentiation and treatment of RA should be flexibly adjusted according to the stage of the disease: in the stage of excess syndrome, the focus is on dispelling wind and dampness, clearing heat and detoxifying, and resolving phlegm and removing blood stasis, with an emphasis on removing pathogens and unblocking the

meridians; in the stage of deficiency syndrome, the focus is on tonifying the liver and kidneys, harmonizing qi and blood, and strengthening the body, with an emphasis on restoring the physical condition; in the stage of mixed deficiency and excess syndrome, both the symptoms and the root cause are taken into account, with equal emphasis on removing pathogens and strengthening the body, and overall conditioning. In addition, during the treatment process, the patient's physical condition, age, duration of the disease, and complications should be taken into consideration to rationally select prescriptions and medications, and if necessary, acupuncture, fumigation, massage and other external treatments should be used to enhance the efficacy [22].

TCM syndrome differentiation not only reflects a deep understanding of the pathogenesis of RA, but also provides theoretical support for individualized treatment. With the deepening of modern pharmacological research, the effects of many traditional prescriptions and Chinese herbal ingredients in anti-inflammatory, immune regulation, and joint protection have gradually been confirmed, providing a scientific basis for TCM treatment of RA. In the future, we should strengthen the standardized research on syndrome differentiation and classification, and promote the clinical application and international development of traditional Chinese medicine in the field of rheumatism.

4. Research Progress on Commonly Used Chinese Medicine and Prescriptions

Traditional Chinese medicine has accumulated rich experience in prescriptions and prescriptions for the treatment of RA in long-term clinical practice, and has formed a treatment system with syndrome differentiation and treatment as the core. On the basis of syndrome differentiation, Chinese medicine often uses a variety of classic prescriptions and drugs in combination, which not only has significant efficacy in relieving joint pain and improving functional disorders, but also shows good biological activity in modern pharmacological research.

Among the representative prescriptions, Duhuo Jishe Decoction is one of the most classic prescriptions for the treatment of RA. It originated from the "Prescriptions for Emergencies" and has the effects of removing rheumatism, nourishing the liver and kidneys, and strengthening the bones and muscles. Duhuo and Qinjiao in the prescription dispel wind and dampness, while Eucommia and Achyranthes bidentata nourish the liver and kidneys and strengthen the bones and muscles. It is combined with ginseng, Poria cocos, and Angelica sinensis to nourish qi and blood. It is suitable for patients with liver and kidney deficiency and rheumatism-type RA [12]. Modern studies have shown that Duhuo Jishe Decoction can regulate immune function, inhibit the expression of inflammatory factors, and improve the pathological state of joint synovium [19]. Simiao Yong'an Decoction mainly clears heat and dampness, dredges the meridians and relieves pain, and is suitable for RA with damp-heat-type RA. In the formula, Phellodendron chinense clears heat and dries dampness, Atractylodes macrocephala strengthens the spleen and removes dampness, Achyranthes bidentata guides the downward movement of the medicine, and Coix seed promotes diuresis and eliminates dampness.

This formula is often used in clinical practice for patients with joint redness, swelling, heat, pain, and limited mobility. Pharmacological studies have shown that Simiao Yong'an Decoction has anti-inflammatory and antioxidant effects, can reduce the levels of inflammatory factors such as TNF- α and IL-6 in serum, and alleviate joint tissue damage [17]. Guizhi Shaoyao Zhimu Decoction comes from the Golden Chamber Synopsis. It was originally used to treat rheumatoid arthritis and has been widely used in the wind-cold-dampness type of RA. In the formula, cinnamon warms the meridians and promotes yang, peony relieves pain, and Zhimu clears heat and nourishes yin. Combined with wind-dispelling and cold-dispersing drugs such as Saposchnikovia divaricata and Ephedra, it has the effect of harmonizing the Ying and Wei, and dispelling wind and dampness. Modern studies have found that this formula can improve joint blood perfusion, inhibit synovial hyperplasia, and has a certain immune regulatory function [23].

In terms of commonly used Chinese medicines, Tripterygium wilfordii is one of the important drugs for the treatment of RA, with strong anti-inflammatory and immunosuppressive effects. Its main active ingredient, triptolide, can inhibit T cell activation and reduce the expression of inflammatory factors, and is used clinically to control the symptoms of acute RA. However, the toxic side effects of triptolide are also quite prominent. Long-term use may lead to liver and kidney damage, reproductive system effects, etc., so the dosage and course of treatment must be strictly controlled [24]. White peony root has the effects of nourishing blood and softening the liver, relieving acute pain, and is a commonly used drug in many prescriptions for treating RA. Its active ingredient, paeoniflorin, has anti-inflammatory, antioxidant, and immunomodulatory effects, which can inhibit the inflammatory response of the synovial membrane and protect the cartilage structure [25]. Astragalus is known for its qi-tonifying, strengthening the exterior, and regulating immunity. It can enhance the body's resistance and improve the fatigue and weakness symptoms of RA patients [26]. Angelica sinensis promotes blood circulation, improves microcirculation, and promotes tissue repair; Notopterygium wilfordii dispels wind and dampness, relieves pain and dredges the meridians, and is often used for RA of the wind-cold-dampness type [25].

Modern pharmacological research has conducted in-depth explorations into the mechanisms of traditional Chinese medicine in treating RA, and found that many traditional Chinese medicines and compound prescriptions have anti-inflammatory, immunomodulatory, antioxidant, and articular cartilage protection effects. For example, blood-activating and blood-stasis-removing drugs such as Danshen and Safflower can improve joint microcirculation and reduce synovial congestion [27]; heat-clearing and detoxifying drugs such as Scutellaria baicalensis and Forsythia suspensa can inhibit the release of inflammatory mediators [28]; tonic drugs such as ginseng and deer antler can enhance immune function and improve the constitution of deficiency syndrome. Although traditional Chinese medicine has shown good efficacy in the treatment of RA, its safety issues cannot be ignored [29]. Powerful drugs represented by Tripterygium wilfordii, although effective, have significant toxic side effects and need to be used under professional

guidance. Therefore, future research should strengthen the toxicological evaluation of traditional Chinese medicine, promote the standardization and modernization of traditional Chinese medicine preparations, and improve the safety and controllability of its clinical application.

5. Existing Problems and Future Development Directions

Although traditional Chinese medicine has shown unique advantages in the treatment of rheumatoid arthritis (RA), its clinical application and research still face many challenges. First, the lack of uniformity in syndrome differentiation standards is one of the core problems of the current traditional Chinese medicine treatment of RA. Because Traditional Chinese Medicine (TCM) syndrome differentiation emphasizes individual differences and dynamic changes, different physicians may reach different conclusions for the same patient, leading to inconsistent treatment plans and comparability and reproducibility of efficacy evaluations. Furthermore, TCM components are complex, and their efficacy often relies on the synergistic effects of multiple components and targets. Although studies have revealed mechanisms such as anti-inflammatory and immunomodulatory, the overall pathway of action remains unclear, and the identification of active ingredients and the mechanisms of toxic and side effects require further exploration. Furthermore, the conflict between TCM's philosophy of individualized treatment and the standardized approach of modern medicine has also hindered the promotion and standardization of TCM in clinical trial design and guideline development.

To address these issues, the future development of TCM in RA treatment can be pursued in several directions. First, promoting precise syndrome differentiation and intelligent assisted diagnosis, leveraging artificial intelligence and big data technologies to construct quantitative syndrome differentiation models to improve diagnostic consistency and efficiency. Second, developing new dosage forms and modern formulations of TCM, such as nanoformulations, sustained-release formulations, and transdermal preparations, can enhance drug bioavailability and targeting, and promote the standardization of TCM products. Third, we should strengthen high-quality randomized controlled studies and adopt internationally recognized efficacy evaluation indicators (such as DAS28, CRP, and ESR) to enhance the credibility and international influence of Traditional Chinese Medicine research. Fourth, we should further explore the synergistic mechanisms of Chinese and Western medicine, clarify the advantages and risks of combined treatments, and provide theoretical support and practical guidance for integrated Chinese and Western medicine treatment.

In summary, while Traditional Chinese Medicine has made significant progress in the treatment of RA, continued breakthroughs are needed in areas such as syndrome differentiation standards, mechanism research, and clinical norms. By promoting deep synergy between Traditional Chinese Medicine and modern medicine through technological innovation and the integration of concepts, we can hopefully build a more scientific, precise, and efficient comprehensive RA treatment system, providing patients with

higher-quality, sustainable medical services.

6. Conclusion

RA is a complex autoimmune disease whose treatment goals are not only to control inflammation and alleviate symptoms, but also to delay the course of the disease and improve quality of life. Traditional Chinese Medicine (TCM) demonstrates unique advantages in the treatment of RA. It emphasizes tailoring treatment to individual needs, time, and location, achieving personalized treatment through holistic adjustment and syndrome differentiation. Traditional Chinese medicine (TCM) plays a vital role in both controlling symptoms in the acute phase and promoting recovery in the chronic phase. In recent years, with the advancement of modern medical research, the clinical efficacy of TCM has been increasingly validated. Numerous basic and clinical studies have demonstrated that TCM formulas and external treatments have multiple mechanisms, including anti-inflammatory, immunomodulatory, antioxidant, and articular cartilage protection, demonstrating promising results in improving DAS28 scores and reducing CRP and ESR levels. Furthermore, the integration of TCM external treatments with rehabilitation concepts provides more comprehensive treatment support for RA patients. The promotion of integrated Chinese and Western medicine treatment models marks a transformation and advancement in RA treatment concepts. The combined use of DMARDs and TCM can enhance efficacy while mitigating toxic side effects, improving patient compliance and quality of life. In the future, we should further promote the integration of traditional Chinese and Western medicine, strengthen mechanism research and clinical pathway optimization, and establish a scientific, systematic, and personalized comprehensive RA treatment system.

In summary, the value of Traditional Chinese Medicine in RA treatment is becoming increasingly prominent. Its synergistic development with modern medicine is expected to comprehensively enhance the overall treatment level of rheumatoid arthritis and provide patients with safer, more effective, and sustainable treatment options.

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