

Integration of Traditional Chinese Medicine and Western Medicine in the Treatment of Knee Osteoarthritis: Research Progress on the Combination of Acupuncture and Diclofenac Sodium

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Knee osteoarthritis is a common chronic joint disease, and although conventional western medical treatments are effective, they also have certain limitations. Therefore, the integration of traditional Chinese medicine and western medicine has attracted attention as a potential treatment approach. Acupuncture, as a traditional Chinese medicine therapy with a long history, can alleviate pain and improve function by regulating the nervous and immune systems. Diclofenac sodium can reduce inflammation and relieve pain. The combined application of traditional Chinese medicine and western medicine can leverage the complementary advantages of both approaches, achieving better treatment outcomes. Although existing research supports the effectiveness of acupuncture combined with diclofenac sodium in the treatment of knee osteoarthritis, further large-scale and rigorously designed clinical studies are needed to validate its long-term efficacy and safety. The comprehensive evaluation of the combined therapy's effectiveness for knee osteoarthritis includes clinical efficacy, pain relief, functional improvement, enhancement of quality of life and safety. With the continuous progress of scientific research, this therapy is expected to become a more comprehensive and individualized treatment option, improving patients' quality of life and treatment outcomes.

Key words: Knee osteoarthritis, traditional Chinese medicine, western medicine, acupuncture, diclofenac sodium, steroids

Knee Osteoarthritis (KOA) is a common chronic joint disease characterized by degenerative changes in the articular cartilage^[1], leading to joint pain, functional impairment, and a significant impact on the patients' quality of life. With the aging population and lifestyle changes, the incidence of KOA has been increasing annually, becoming a global health problem. Traditional Western medical treatments mainly include non-steroidal anti-inflammatory drugs, pain relievers, physical therapy, and joint replacement surgery. Although these methods have some effects in relieving pain and improving function, they also have limitations. For example, long-term use of medications may lead to adverse reactions, and the risks and complexity of surgery restrict its applicability. Traditional Chinese Medicine (TCM), as an important part of Chinese traditional medicine, has accumulated rich

experience in the treatment of KOA^[2]. TCM believes that the development of KOA is related to insufficiency of the liver and kidney, as well as disorders in qi and blood circulation. TCM treatment emphasizes overall regulation and targeted therapy based on the etiology and pathogenesis. The effectiveness of this integration of TCM and western medicine has gained widespread attention and recognition in the medical field. By comparing and integrating TCM and western medical approaches, it is hoped to find more individualized and comprehensive treatment options to improve the quality of life and treatment outcomes for KOA patients. However, attention should also be paid to the scientific rigor, safety and reliability of research to ensure the rationality and feasibility of treatment plans. The effectiveness study of the integration of TCM and western medicine can integrate the

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treatment advantages of both approaches, fully leveraging their respective roles, and thus improve the treatment efficacy of KOA. TCM emphasizes overall regulation and treats the root causes, targeting treatment based on individual patient conditions, which can help improve constitution and regulate pathogenesis^[3]. Western medicine's drug therapy and surgery can quickly relieve pain and improve joint function. By combining the treatment methods of TCM and western medicine, complementary advantages can be achieved, complementing each other's strengths, and achieving better treatment results. Moreover, traditional western medical treatments often require long-term medication, which may lead to a series of adverse reactions such as gastrointestinal discomfort, liver and kidney damage. TCM acupuncture therapy is a non-invasive treatment method without medication, relatively low in side effects. Through the integration of TCM and western medicine, the occurrence of some adverse reactions can be reduced or avoided, improving the medication safety and tolerance for patients. KOA is a chronic and progressive joint disease characterized by degenerative changes in the articular cartilage and chronic inflammatory reactions. The disease most commonly affects the knee joint, particularly the synovium, subchondral bone and surrounding structures, leading to decreased joint function, pain, and stiffness. The etiology of KOA involves multiple factors that are not yet fully understood, but many factors are considered important causes of its onset. The main causes include aging, in which the joint cartilage gradually loses elasticity and shock absorption capacity, prolonged repetitive stress, excessive motion or overuse of the knee joint. Joint trauma, intra-articular injury, or surgery can all lead to damage to the joint structures and abnormal joint development or morphological abnormalities, such as hip dysplasia, or varus/valgus deformities of the knee. There are various treatment methods for KOA, including non-pharmacological treatments, pharmacological treatments, physical therapy and surgical treatments^[4,5]. Non-pharmacological treatments and physical therapy have limited effectiveness in providing sustained pain relief and improving functional impairment. Pharmacological treatments may cause adverse reactions, and long-term use carries certain risks. Surgical treatment is a more invasive approach with surgical risks and is not suitable for all patients. However, each treatment method has its limitations, making the complete cure

of KOA still a challenging task. TCM has a unique understanding of KOA, viewing it as a result of the combined effects of factors such as cold and dampness obstruction, impaired qi and blood circulation, and deficiency in liver and kidney functions. TCM believes that KOA is associated with constitution, environment, diet, exercise and other factors, and the occurrence and development of the disease is a progressive process. TCM believes that dampness easily invades the body, especially in damp environments or living in cold regions^[6]. Dampness can enter the body through the skin, accumulate in the joints, hinder the circulation of qi and blood, and lead to symptoms such as joint pain, swelling and stiffness. TCM emphasizes the importance of smooth qi and blood circulation for maintaining overall health. In patients with KOA, impaired qi and blood flow may lead to insufficient oxygen and nutrients supply to the joint tissues, thereby aggravating the condition. TCM believes that the liver governs the tendons and the kidneys govern the bones. Insufficient liver and kidney functions can lead to poor nutrition and pathological changes in the knee joint tissues, accelerating the progression of KOA. By promoting qi and blood circulation, the treatment aims to improve the nutrition supply to the knee joint tissues, alleviate inflammation, relieve pain and reduce swelling^[7]. Removing internal dampness and coldness can improve the damp and cold state of the joints, promoting the recovery of the affected area. Regulating the functions of the liver and kidneys can enhance the self-repair ability of knee joint tissues and delay the degenerative changes. TCM treatment of KOA emphasizes individualization, developing targeted treatment plans based on patients' constitution and condition. Common treatment methods include herbal decoctions, acupuncture, massage therapy, cupping, as well as lifestyle adjustments and health measures^[8]. It is important to note that TCM treatment of KOA is a relatively gentle approach and may not provide immediate relief like western medicine does. However, it can fundamentally regulate the body, help improve the constitution, alleviate symptoms and gradually take effect as patients adhere to the treatment process. For patients with KOA, the treatment philosophy of TCM provides an important complement and choice^[9]. Western medicine has an in-depth understanding of KOA, considering it as a chronic and progressive joint disease^[10], characterized by gradual

degeneration of the articular cartilage and inflammatory reactions in the surrounding tissues. The etiology of KOA has been described earlier and will not be repeated. Treatment methods typically include^[11]; pharmacological treatment with Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), joint lubricants, corticosteroids, etc., to relieve pain and control inflammation. Physical therapy such as heat therapy, cold therapy, rehabilitation exercises, to help reduce pain and improve joint function; and arthroscopic surgery, osteotomy, joint replacement surgery, etc., to improve joint function and alleviate symptoms. In general, western medicine's understanding of KOA is based on extensive clinical and scientific research, providing important basis for the diagnosis and treatment of KOA. The treatment of KOA in Western medicine mainly focuses on pain relief, inflammation control, and improvement of joint function, while also emphasizing preventive measures and lifestyle adjustments to slow down disease progression. Integrative treatment combining both TCM and Western medicine can fully leverage the advantages of both approaches, achieving complementary effects in treatment^[12]. TCM emphasizes overall regulation and treatment of the root causes, which can fundamentally adjust patient's constitution, promote qi and blood circulation, while western medicine's drug therapy and surgery provide rapid pain relief and improved joint function. By combining the treatment methods of TCM and western medicine, the treatment efficacy can be enhanced, and the recovery process can be accelerated. KOA is a disease with multiple factors at play, and the etiology and condition may vary among individual patients. Integrative treatment emphasizes personalized treatment, allowing doctors to develop targeted treatment plans based on patient's constitution, condition, symptoms and other factors, improving the specificity and effectiveness of treatment. Traditional western medical treatments often require long-term medication, which may cause adverse reactions such as gastrointestinal discomfort, liver and kidney damage. TCM acupuncture therapy is a non-invasive treatment method without medication, relatively low in side effects. Through the integration of TCM and western medicine, the occurrence of some adverse reactions can be reduced or avoided, improving medication safety and tolerance for patients. Overall, integrative treatment of KOA with TCM and western medicine has significant advantages and rationality. By fully

utilizing the strengths of both approaches, treatment efficacy can be improved, adverse reactions can be reduced, disease progression can be delayed, and it also provides new insights and approaches for further research into the treatment mechanisms of this disease. This comprehensive treatment model has been widely applied in clinical practice, providing KOA patients with more comprehensive and personalized treatment options^[13]. Acupuncture, as a traditional Chinese medical therapy, has a long history. The use of acupuncture in the treatment of joint diseases can be traced back to ancient Chinese medical classics such as the Huangdi Neijing and the Ling Shu, which contain records of acupuncture treatment for joint pain. Over the past thousands of years, acupuncture has undergone various stages of development in China and has gradually formed a unique theoretical system and clinical practice. It has been widely used in China and other East Asian countries for thousands of years. Acupuncture treatment for KOA is one of its common applications. With the advancement of modern medicine and the development of scientific technology, acupuncture treatment has gained broad recognition and application worldwide. Acupuncture treatment for KOA has also become a popular non-pharmacological treatment method in clinical practice. Many studies have shown that acupuncture may have positive effects on KOA through various pathways. Acupuncture may alleviate the pain experienced by KOA patients by modulating peripheral nerves and reducing pain transmission. It can also regulate the immune system and inflammation, relieving the symptoms of KOA. Additionally, acupuncture can promote local blood circulation and metabolism, helping to repair damaged cartilage and tissues and improve joint function^[14]. While many clinical studies and case reports support the effectiveness of acupuncture in treating KOA, there are still some controversial research findings. Currently, there is a lack of consistent evidence to demonstrate the long-term effects of acupuncture in treating KOA. Currently, relevant studies on acupuncture combined with diclofenac sodium treatment for KOA have not reached a definitive conclusion. A study by Vas *et al.*^[15] showed that the reduction in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) index was significantly higher in the acupuncture combined with diclofenac sodium treatment group compared to the acupuncture plus

diclofenac sodium control group. Pain visual rating scores, and the physical and psychological function domains in the Parent Quaker Life Committee (PQLC) questionnaire showed more significant improvements. Research by Luo *et al.*^[16] indicated that acupuncture combined with basic treatment for early-stage KOA can better alleviate pain and improve knee joint mobility, presenting potential clinical advantages over basic treatment alone. A study by Wen *et al.*^[17] also demonstrated that acupuncture combined with diclofenac sodium and colchicine treatment for gouty KOA can effectively improve patients' hemorheological parameters and knee joint function, as well as lower the levels of serum inflammatory factors. Research by Geng *et al.*^[18] revealed that combined treatment of diclofenac sodium and warm acupuncture can further regulate inflammatory factor levels and bone metabolism capacity, effectively relieving pain and promoting knee joint function recovery in patients with KOA. Zhu *et al.*^[19] conducted a study on elderly patients with degenerative KOA and found that combined treatment of diclofenac sodium and acupuncture can reduce the levels of serum inflammatory factors, significantly alleviate pain symptoms, improve knee joint function, and enhance patients' quality of life. Lei *et al.*^[20] treated cold-dampness stagnation type KOA with acupuncture and sustained-release diclofenac sodium tablets, demonstrating that it can relieve pain, promote knee joint function recovery, and have a low incidence of adverse reactions. The comprehensive evaluation of acupuncture combined with diclofenac sodium for the treatment of KOA involves multiple aspects, including clinical efficacy, pain relief, functional improvement, quality of life enhancement and safety. Clinical efficacy refers to the degree of relief of symptoms such as knee joint pain, swelling and stiffness. Commonly used assessment scales for clinical efficacy include Visual Analog Scale (VAS), WOMAC, etc. Improvement in quality of life considers the enhancement of patients' quality of life after treatment, including daily activity capacity, emotional status, social functions, etc. Safety assessment evaluates the safety of acupuncture combined with diclofenac sodium treatment, including the occurrence of adverse reactions, complications, etc. Acupuncture and diclofenac sodium may have certain effects on KOA when used separately, but their combined use can synergistically enhance efficacy. Acupuncture may alleviate pain and improve function by modulating the nervous and

immune systems, promoting local blood circulation and tissue repair. Diclofenac sodium can reduce inflammation and relieve pain. Acupuncture is a non-pharmacological treatment and does not produce drug interactions with medications such as diclofenac sodium and reducing the risk of adverse reactions. The effectiveness of acupuncture treatment may vary depending on individual differences, the severity of the condition, and the skill level of the acupuncturist. Therefore, acupuncture combined with diclofenac sodium treatment is not effective for every patient. Acupuncture treatment is generally safe when performed by qualified acupuncturists, but improper or careless manipulation can lead to adverse reactions such as needle injuries, bleeding or infection. Currently, the long-term effects of acupuncture combined with diclofenac sodium treatment are still unclear due to the limited availability of long-term follow-up data in many studies. Acupuncture combined with diclofenac sodium for the treatment of KOA remains an active research field. As scientific research continues to advance, more large-scale, multicenter, rigorously designed clinical studies may provide more reliable evidence for the effectiveness and safety of this approach.

Conflict of interests:

The authors declared no conflict of interests.

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