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Research Progress of Acupuncture and Moxibustion on Knee Osteoarthritis

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Abstract: *Knee osteoarthritis (KOA) is a chronic inflammatory disease characterized by cartilage degeneration, osteophyte formation and joint inflammation, which is mainly good in middle-aged and elderly people. The main manifestations are knee pain or dull pain, swelling, joint clicking, and even knee stiffness, limited mobility, muscle spasm around and muscle atrophy, which seriously affect the quality of life. Acupuncture and moxibustion, as a characteristic treatment for KOA in Traditional Chinese medicine (TCM), has accumulated rich clinical experience in the treatment of KOA, and there are numerous therapies, including conventional acupuncture, fire needle, warm needle, silver needle, electroacupuncture, small needle knife, internal heat needle, moxibustion and combined therapy. All of them have the characteristics of easy operation, low cost, significant effect, safety and reliability.*

Keywords: *Knee osteoarthritis, TCM, Acupuncture, Treatment*

1. Introduction

KOA belongs to the category of "Gu Bi" in traditional Chinese medicine. Huang Di Nei Jing has expressed a more systematic discussion on the classification, classification, prognosis and prognosis of arthralgia, especially the content of acupuncture and moxibustion treatment has great guiding significance for acupuncture and moxibustion clinical practice. TCM believes that the external cause of KOA is mainly the invasion of wind-cold-dampness pathogens, and the internal cause is mainly the deficiency and decline of vital qi, both of which are factors constituting arthralgia [1]. Modern medicine believes that KOA is a chronic inflammatory disease characterized by cartilage degeneration, osteophyte formation and joint inflammation [2]. Most patients with KOA have mild initial symptoms, which gradually worsen with time, mainly manifested as knee pain or dull pain, swelling, joint clicking, and even knee stiffness, limited mobility, muscle spasm around and muscle atrophy, which seriously affect the quality of life [3]. At present, the treatment of KOA mainly includes non-steroidal anti-inflammatory drug therapy, combined with health education, exercise training, physical therapy and surgical intervention in the late stage of the disease. However, non-steroidal anti-inflammatory drugs have great gastrointestinal and cardiovascular side effects, and surgical treatment is expensive [4]. Acupuncture and moxibustion, as a commonly used conservative treatment in traditional Chinese medicine, has accumulated a wealth of clinical experience in the treatment of KOA, and there are numerous therapies, which have become one of the indispensable treatment methods for KOA because of their easy operation, low cost, significant effect, safety and reliability [2].

Acupuncture and moxibustion treatment of KOA has a long history, and many ancient medical books have proposed relevant concepts and methods for acupuncture and moxibustion treatment of KOA, i.g. "*SPIRITUAL PIVOT*": "Pain of the knee can be treated by needling Dubi with Yuanlizhen(round-sharp needle).…needling the knee is undoubtedly the most appropriate." It is proposed that the acupuncture method used varies according to the disease location. Chen Zhigang et al. used warm acupuncture and moxibustion to treat KOA, and gave syndrome differentiation and acupoint selection according to different arthralgia syndromes of patients. The total effective rate of 3-month follow-up after treatment was as high as 83.3%, which was significantly higher than 60.0% of oral drug treatment in the control group. There are various forms of acupuncture treatment for KOA, including acupuncture, moxibustion and combined therapy [5]. This article will review the clinical effects of different acupuncture methods in the prevention and treatment of KOA in recent years.

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2. Acupuncture

2.1. Simple acupuncture

Traditional Chinese medicine (TCM) believes that KOA mostly develops due to qi stagnation and blood stasis or deficiency of qi and blood, return to wind, cold and dampness pathogens, blocking meridians, and poor qi and blood running. Filiform needle puncture can effectively remove wind and remove dampness, promote blood circulation, meridians and relieve pain [6]. In recent years, clinical studies and meta-analysis at home and abroad have shown that acupuncture is effective in the treatment of KOA, can reduce the Visual Analogue Scale Vas in patients with KOA, significantly relieve knee pain in patients with KOA, and contribute to the functional recovery of patients with KOA, especially in improving daily activities such as morning stiffness, going up and down stairs and joint swelling, and can reduce adverse reactions [7]. Liu Fang et al used acupuncture at Huantiao, internal and external knee eyes, Xuehai, Liangqiu, Ququan, Zusanli, Sanyinjiao and Taichong points, while the control group used internal and external knee eyes, Xuehai, Liangqiu, Ququan, Zusanli, Sanyinjiao and Taichong points, and the results showed that the effective rate was 100% in the treatment group and 70% in the control group, indicating that the effect of Huantiao point in the treatment of KOA was more significant [8]. Ye Jing et al. randomly divided KOA patients into acupuncture treatment and waiting treatment. group. The clinical study results showed that after 4 weeks of treatment, the total WOMAC scale score, pain and joint function scores of acupuncture treatment group were significantly lower than those before treatment. And the total WOMAC scale score and pain, stiffness, and joint function scores of the acupuncture treatment group were significantly lower than those of the waiting list treatment group. Studies have shown that acupuncture treatment can effectively relieve the pain symptoms of the knee joint as well as improve the function of the knee joint in patients with KOA [7]. Chen Yang et al used acupuncture at Yanglingquan, Yinlingquan and Ashi points to treat KOA. The study showed that after two weeks of treatment, the VAS score and WOMAC score of KOA patients were significantly reduced, and the SF-12 score was significantly increased. In addition, the results also showed that acupuncture treatment could reduce the serum IL-6 concentration in patients with KOA, from which it was concluded that acupuncture treatment of KOA may be related to regulating the levels of inflammation-related factors [9].

2.2. Fire needle

Fire needle is a traditional therapy integrating acupuncture and warming. Fire needle therapy requires burning red needles, when the local temperature can reach more than 800 °C. Modern understanding of the mechanism of fire needle therapy is as follows: Studies have found that fire needle therapy can increase the calcium and zinc content of diseased tissues, thereby activating the activity of a variety of enzymes, improving the metabolism of tissues, improving local blood circulation, enhancing the activity of local tissues, eliminating or improving local tissue congestion, edema, adhesions, calcification, scars and other pathological changes, and promoting the repair of chronic soft tissue injury. In addition, some people believe that fire needle can improve the local nail fold microcirculation so that the blood flow rate is accelerated and the situation is improved [10]. Studies have shown that fireneedle therapy can significantly reduce the levels of TNF-α and IL-1β inflammatory cytokines in the synovial fluid of patients with KOA, and may achieve the effect of adjusting the balance of articular cartilage synthesis and decomposition by regulating the contents of IL-1β and IL-1Rα inflammatory cytokines and IL-1Rα ratio in the IL-1 signal transduction pathway[11]. Li Tao et al found through studies that after the establishment of the KOA model, chondrocytes were disorganized, the cartilage surface was rough, and the behavioral manifestations were pain, joint swelling, and limited mobility under electron microscope. The treatment of KOA with fire needle knee puncture can improve the behavior of rats, relieve local tenderness, reduce swelling, improve joint range of motion and gait, improve cartilage arrangement to a great extent, improve cartilage surface smoothness, relieve pain, so as to achieve the purpose of treatment. However, the contents of MMP-3, TGF-β1, and TNF-α were significantly decreased and LOXL2 was significantly increased after fire needle treatment compared with those at modeling, which, combined with the clinical significance of each index, may be related to the protection of cartilage histiocytes and the re-restoration of collagen cell fiber activity by fire needle by inhibiting the periarthritis knee response in KOA rats [11]. Li Tao et al found through studies that after the establishment of the KOA model, chondrocytes were disorganized, the cartilage surface was rough, and the behavioral manifestations were pain, joint swelling, and limited mobility under electron microscope. The treatment of KOA with fireneedle knee puncture can improve the behavior of rats, relieve local tenderness, reduce swelling, improve joint range of motion and gait, improve cartilage arrangement to a great extent, improve cartilage surface smoothness, relieve pain, so as to achieve the purpose of treatment. However, the contents of

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MMP-3, TGF-β1, and TNF-α were significantly decreased and LOXL2 was significantly increased after fire needle treatment compared with those at modeling, which, combined with the clinical significance of each index, may be related to the protection of cartilage histiocytes and the re-restoration of collagen cell fiber activity by fire needle by inhibiting the periarthritis knee response in KOA rats [12]. Dingli et al divided KOA patients into fire needle group and diclofenac sodium group. Through the study, it was found that the expression changes of IL-1 and IL-6 in the serum of patients before and after treatment were detected, and it was found that the expression of IL-1 and IL-6 in the serum of fire needle group was significantly lower than that of diclofenac sodium group, indicating that fire needle treatment of KOA was correlated with the expression of IL-1 and IL-6, and on the other hand, the significance of its clinical efficacy was also demonstrated from an objective point of view[13]. It has been shown that the level of TNF-α in the serum of KOA patients is significantly increased compared with normal subjects. Li Zhijuan et al found in the experiment that the TNF-α content was significantly lower in the fire needle intervention group, and the cartilage surface was more intact with a more regular rough endoplasmic reticulum, suggesting that fire needle can delay the progression of KOA [14]. Li Shaorong et al. used fire needle to treat 30 patients with KOA and evaluated the knee joint function according to the evaluation criteria established by the National Institutes of Health, Japan. The main evaluation contents included: pain, range of motion, active extension limitation, walking ability, daily movements, joint edema, etc., which were assessed in an integral manner, with a total score of 100 points. The results showed that the total score of the fire needle treatment group was 70 points, which exceeded the 13.3 points of the control group [15]. Chen Junwei et al. found after fire needle treatment that the follow-up results at the 4th and 8th week showed that the long-term efficacy in terms of pain, stiffness, difficulty in daily activities, WOMAC score, clinical efficacy and clinical improvement response rate were significantly improved in the fire needle group. This suggests that fire-needle therapy may help improve the benefit for patients with KOA, both in terms of onset time, improvement of many discomfort symptoms in patients with KOA, and duration of efficacy [16]. Hu Jianghui et al used fire needle to treat 30 patients with KOA. The VAS table found that the fire needle could relieve knee joint pain 100%. According to the change of KSS scale score after treatment, fireneedle has positive significance in improving the clinical symptoms and activity function of KOA. It can be seen that the walking function of patients has been significantly improved by nearly 1 step of walking score improvement. In addition, according to the change of Lysholm scale score after treatment, the score improved by nearly 20 points after fire needle treatment, and stair climbing, swelling, and squatting were significantly improved [17].

2.3. Warm needle

Warm acupuncture therapy is one of the classical external treatment methods of traditional Chinese medicine, which integrates acupuncture points, warming heat, and drug stimulation. In addition to the effects of promoting qi and dredging collaterals, it also has the effects of warming meridians, promoting blood circulation, eliminating dampness and expelling cold, and removing knots and relieving pain. Warm acupuncture therapy first stimulates the acupoint by acupuncture, so that the meridians run and the meridians are dredged, and then warm stimulation is given to this acupoint with the help of the heat of moxibustion, combined with the effects of meridians and acupoints and the efficacy of warm and wormwood leaves after combustion, to better achieve the effect of warming the blood vessels and promoting qi, activating blood circulation and relieving pain, For example, "*SPIRITUAL PIVOT* ·Cijie Zhenxie":"The blood in the vessels becomes stagnated and stops flowing. If it is not regulated by fire, needling therapy cannot be used." [18] Warm acupuncture therapy has certain characteristics and advantages in the treatment of KOA, which is not only simple and economical; it acts directly on the affected area during treatment, with a faster effect, and patients feel warm and comfortable in the knee after treatment [19]. Peng Cairan et al. divided 66 patients with KOA into warm needling group (n = 34) and medium frequency control group (n = 32). The results showed that the effective rate was 90% in the treatment group and 73.33% in the control group. Warm needling can significantly reduce the clinical symptoms of patients with congestion block KOA, and effectively reduce the synovial fluid MMP-3, IL-1, TNF-α content [20]. Xia Xinfu et al. used warm needling to treat 30 patients with KOA. The results showed that warm needling could effectively improve the clinical symptoms of patients with KOA and effectively reduce the WOMAC score of patients. At the same time, the contents of IL-1β and TNF-α in the treatment group were significantly lower than those in the control group [21]. Hong Xiu'e et al. divided 62 patients with KOA into treatment group treated with warm needling and control group treated with injection of Shipete. The results showed that the clinical efficacy of warm needling was better than that of intra-articular injection of Shipete. And warm needling was superior to intra-articular injection of Shipeite in reducing IL-6 and TNF-α contents [22]. Zhang Yanling et al found that the clinical effect of warming needle moxibustion on KOA was significant, and after warming needle moxibustion for KOA,

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the expression of IGF-1, TGF-β and FGF-2 in the serum of KOA patients was promoted, which may be one of the mechanisms by which it exerts its effect in the treatment of KOA, while after warming needle moxibustion for KOA, the expression levels of inflammatory factors IL-17 and IL-18 in the serum of patients were significantly reduced[23].

2.4. Silver needle

Silver needle has good thermal conductivity because the material used is "silver" (80% silver, 20% red copper, zinc, nickel). Silver needle is thicker, but the needle tip is dull. In addition to its acupuncture effect, it can also play a role in blunt separation of the diseased tissue, and the thermal conductivity effect is better than that of filiform needle. During moxibustion, the temperature of the needle tip can reach about 40℃ ~ 50℃, which can well achieve the purpose of releasing muscle spasm, increasing local and eliminating inflammatory reaction[24].

Jia et al used silver needle heat conduction therapy for clinical treatment and nursing care of 98 officers and soldiers with chronic KOA caused by military training injury. The results of the study showed that the VAS score of all officers and soldiers after treatment was significantly lower than that before treatment The overall response rate was 82.65% [25]. Liu Jianliang et al treated 40 KOA patients with silver needle and found that the levels of IL-18, IL-6, IL-8, and PGE2 were significantly lower. These results suggest that its mechanism of action may be to reduce the level of inflammatory cytokines in the joint, inhibit the inflammatory response in KOA, slow down cartilage matrix degradation, and thus promote the repair of chondrocytes [26]. Mu Bin et al selected 30 patients with KOA to compare the pain before and after treatment with silver needle therapy. The pain was significantly relieved after treatment, and the effective rate of pain improvement was 93.33%. There was no significant change in knee pain after treatment compared with follow-up after one year [27].

2.5. Electroacupuncture

Electroacupuncture stimulates muscle contraction, improves local blood circulation, and can promote the absorption of joint exudates; at the same time, it reduces the sensitivity of pain centers and increases the pain threshold and relieves pain by regulating the excitation and inhibition of the cerebral cortex and the function of the autonomic nervous system [28]. Electroacupuncture is an important therapeutic method in traditional Chinese medicine, which has the effects of dredging meridians, strengthening qi and eliminating pathogenic factors, and harmonizing yin and yang. Electroacupuncture treatment can reduce the expression of IL-1, IL-6, IL-1β, TNF-α, MMP-1 and MMP-3 in the cartilage of OA patients, reduce the ratio of MMP-1/TIMP-1, and reduce the pathological damage of cartilage in OA patients [29]. Zhang Ziqian et al. randomly divided KOA patients into the test group (electroacupuncture) and the control group (celecoxib), with 32 cases in each group. Through the observation of 64 patients, the results showed that the short-term analgesic effect of electroacupuncture was equivalent to that of oral selenoxib in the treatment of pain symptoms, without significant adverse reactions, while the recurrence rate within 6 months of follow-up was less than the latter, with good long-term efficacy, reflecting that electroacupuncture is more conducive to the treatment of patients with early gonarthritis [30]. Li Zhen et al randomly divided 76 patients with KOA into treatment group (n = 38) treated with electroacupuncture and control group (n = 38) treated with oral selegiline. The differences in knee pain, knee function, joint range of motion and other indicators between the two groups were observed. After treatment, the pain scores of the two groups were significantly decreased compared with those before treatment, and the knee joint function and range of motion scores were significantly increased, suggesting that both electroacupuncture and seloxifene have a therapeutic effect on gonarthritis. After a course of treatment, there were significant differences in joint function and joint range of motion scores between the two groups, which were significantly higher in the treatment group than in the control group [31]. Chetao et al randomly divided 63 patients with KOA into treatment group treated with electroacupuncture at patellofemoral joint and control group treated with oral diclofenac sodium sustained-release. The study found that the cure rate was 56.3% and the total effective rate was 96.9% in the electroacupuncture treatment group, and 9.7% and 48.4% in the diclofenac sodium sustained-release control group. This shows that electroacupuncture at the patellofemoral joint is superior to oral diclofenac sodium sustained-release in the treatment of KOA in terms of cure rate and total effective rate[32]. Jiao Qunru et al treated 39 patients with KOA with electroacupuncture and found that electroacupuncture treatment of KOA could significantly improve ES, PPI scores and joint range of motion in patients with KOA, while increasing the serum inhibitory inflammatory cytokine IL-10 and reducing the level of inflammatory factor TNF-α in patients with KOA to a certain extent [28]. Ye Guoping's study found that

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electroacupuncture at Knee-eye point can effectively reduce the degree of damage of KOA to cartilage tissue morphology in rats, and electroacupuncture at Knee-eye point can inhibit articular chondrocyte apoptosis, reduce cartilage destruction, and maintain the relative integrity of cartilage structure by regulating the RhoA/Rock signaling pathway, down-regulating the expression levels of key genes and proteins such as RhoA, Rock, ERK1/2, and bax in chondrocyte tissue, up-regulating the gene and protein expression levels of Bcl-2, and inhibiting articular chondrocyte apoptosis[33]. Zhang Ting et al found that electroacupuncture can effectively slow down the clinical symptoms of patients with KOA, especially in terms of analgesia, and can also significantly improve the quality of life of patients. In addition, electroacupuncture treatment can effectively reduce the level of IL-1β in the serum of KOA patients, and electroacupuncture treatment can effectively increase the level of CXCL10 in the serum of KOA patients, indicating that one of the mechanisms of electroacupuncture treatment of KOA may be achieved by regulating the level of CXCL10 in the serum to produce opioids for analgesia [34]. Ruan Anmin et al found through the study that electroacupuncture can reduce the expression of TNF-α and MMP- 13 in the joint by inhibiting the NF-κB signaling pathway in the synovium of knee osteoarthritis and reduce the inflammatory response in the synovial tissue, so as to achieve the purpose of treating knee osteoarthritis[35]. Anmin Ruan et al demonstrated that EA treatment may reduce knee arthritis by inhibiting TLRs-mediated natural synovial immune response, reducing the expression of TLRs/NF-kb signaling through related molecules, and inhibiting the release of downstream inflammatory factors and matrix metalloproteinases. In addition, early electroacupuncture intervention may be more effective than other stages in the treatment of knee arthritis lesions [36].

2.6. Needle knife

Needle knife therapy has the dual effects of "needle" and "knife", which can dredge the tender sites formed around the knee joint due to coalescence and contracture, so as to achieve the purpose of treatment. Needle knife treatment of KOA is concentrated around the knee joint, most of which are muscle or ligament attachments, such as medial and lateral collateral ligaments, lower end of quadriceps femoris muscle, medial and lateral patellar retinaculum, goose foot tendon, etc.; or sites with special anatomical and physiological significance, such as infrapatellar fat pad, suprapatellar bursa, etc. Most patients with KOA have local pain and contracture deformation at the operation point. Therefore, needle-knife treatment of these surgical points can play a role in releasing soft tissue adhesions, eliminating abnormal stresses, reducing intraosseous pressure, and relieving inflammatory reactions [37,38]. Lin Fuchang et al concluded from the study that the use of needle knife therapy can significantly reduce the pain symptoms of patients, improve knee joint function, and improve the quality of daily life of patients. Patient VAS scores decreased and Lysholm scores increased [37]. Zuo Xiaotong et al demonstrated that needle knife can reduce the contents of IL-6 and TNF-α in the serum of KOA patients, which indicated that needle knife therapy can alleviate knee joint inflammation by regulating the contents of inflammatory factors in the serum [39]. Yang Yupeng et al showed that needle knife effectively improved the behavioral performance of rabbit KOA model, and the movement disorder of rabbit was recovered to a great extent, and the pain was alleviated. In addition, after needle-knife intervention, the original adhesion was destroyed, so that the ligament tissue remained independent and intact. Pathological examination showed that the original chaotic collagen fibers in the ligament became neatly arranged, the low expression status of TGF-β1 and Smad2/3 was reversed, and the protein expression tended to be normal [40]. Li Jiaru et al demonstrated that needle-knife treatment can reduce the degeneration of articular cartilage and prevent further expansion of the area of arthritis development. Needle knife treatment can reduce the damage caused by the adhesion of ligaments to the surrounding soft tissues, significantly improve the ligament tissues, and restore the normal motor function of the knee joint. In addition, needle-knife intervention can effectively regulate the mRNA and protein expression levels of TGF-β, Col-III, and MMP-9 in ligament tissues of knee osteoarthritis and protect the integrity of ligament tissues and articular cartilage [41]. Cao Yunming et al found that the intervention effect of needle knife can activate BMP-12/Smad signaling pathway, stimulate the generation and differentiation of tenocytes in ligament tissues, promote the endogenous healing of ligaments, and correct the mechanical environment of the knee joint. And the intervention effect of needle knife can promote the generation of COL-1[42]. Lehman et al showed through studies that needle-knife intervention can inhibit mTOR and promote the expression of ULK1 and Beclin-1 by up-regulating autophagy factors Atg5, Atg12, and Atg4a, which in turn stimulate chondrocyte autophagic vacuole formation and increase the level of chondrocyte autophagy to facilitate chondrocyte survival, alleviate cartilage injury and degeneration, and promote the repair of degenerated articular cartilage [43]. MUNAN LIN et al treated 76 KOA patients with needle-knife therapy and found that the concentration of tumor necrosis factor-α in joint significantly decreased in stage II, III and IV compared with that before treatment. This demonstrates that needle-knife therapy inhibits the expression of

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inflammatory cytokines [44].

2.7. Other acupuncture

Yao Jinyuan et al used fire dragon needle to treat KOA, and the results showed that the total effective rate was 96.97%, demonstrating that fire dragon needle treatment can well eliminate knee joint effusion, relieve pain, and reduce joint swelling [45]. Zhu Zhiqiang et al concluded through research that endothermal acupuncture therapy may achieve subchondral bone microstructural repair by up-regulating type I collagen expression and down-regulating matrix metalloproteinase-3 and osteopontin expression [46]. Fan Jie et al demonstrated that awn needle can inhibit the expression of inflammatory factors in rats by promoting the anti-free radical injury effect in rats, increase the analgesic threshold in rats, and alleviate joint injury [47].

3. Moxibustion

Moxibustion is a treatment method that uses moxa as the main material, directly or indirectly fumigates and warm irons acupoints or lesion sites on the body surface after ignition, realizes through meridians with its warm stimulation, warming meridians and dispersing cold, promoting qi and activating blood circulation, strengthening qi and eliminating pathogens, and preventing disease and health care[48].

Wang Tian Tian et al found that moxibustion intervention had a protective effect on articular cartilage in SD rat KOA model. And moxibustion was able to downregulate the p38 MAPK signaling pathway to inhibit NLRP3 inflammatory corpuscle mediated chondrocyte anxiety, effectively reduce the degradation of cartilage extracellular matrix, and play a role in protecting cartilage [49]. Chen Yu et al confirmed through studies that moxibustion has a significant ameliorative effect on serum inflammatory response and oxidative stress levels in patients with KOA [50]. Ren Xiumei et al stated through research that moxibustion may delay the progression of KOA by inhibiting the abnormal activation of caveolin-1/p38 MAPK signaling pathway and reducing the release of inflammatory factors [51].

4. Combination Therapy

Yang Yangcheng et al used warm acupuncture and moxibustion combined with electroacupuncture to treat patients with middle and early KOA, demonstrating that warm acupuncture and moxibustion combined with electroacupuncture can effectively relieve the pain of patients with KOA, with obvious clinical efficacy, with a clinical effective rate of 90%. And the long-term results are satisfactory [52]. Zhang Hengcai et al demonstrated that warming needle moxibustion combined with electroacupuncture has a significant effect on KOA of liver-kidney deficiency type, which can reduce the pain of patients and improve knee joint function [53].

5. Conclusion and prospect

KOA belongs to the category of "knee arthralgia disease" in TCM, and its clinical symptoms are mainly pain, especially in middle-aged and elderly people, which mostly leads to limited joint movement and even stiffness. With the rapid development of society and the aging of the population, the incidence of KOA is increasing year by year. Traditional Chinese medicine (TCM) believes that the treatment of knee cold arthralgia is mainly based on deficiency of vital energy, deficiency of liver and kidney, and wind-dampness caused by evil knees, with joint pain as the main symptom, which is mostly based on relieving pain and restoring joint function. Acupuncture and moxibustion therapy is based on the principle of applying acupuncture at acupoints, strengthening qi and eliminating pathogenic factors, tonifying qi and blood, treating liver and kidney at the same time, and paying equal attention to muscles and bones[2]. Acupuncture and moxibustion treatment of KOA methods are numerous, the effect is significant, and easy to operate, low cost, safe and reliable, no side effects. With the increase of the incidence of KOA, its impact on the quality of life of patients will also be increasing day by day. Acupuncture and moxibustion, as a part of traditional medicine, has been widely used in clinical practice because of its attention to syndrome differentiation, overall regulation and its own above advantages, and there are more and more studies related to it. Through a large number of literature reviews, this paper analyzes the possible action pathways of acupuncture and moxibustion in the treatment of KOA according to the etiological mechanism of KOA, which is conducive to the clinical promotion of acupuncture and moxibustion in the treatment of osteoarthritis [4]. However, there are also some problems

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with acupuncture and moxibustion treatment of KOA: (1) Most of the studies focus on the summary of efficacy, and there is still a lack of randomized controlled studies with large sample size and multicenter. (2) most acupuncture therapies have advantages for short-term symptom reduction and functional improvement in patients with early and middle KOA, long-term outcomes still lack a large number of follow-up studies, and are not effective for patients with advanced and severe KOA. (3) There is a lack of unified and standardized diagnostic criteria, observation indicators and efficacy evaluation criteria, and the mechanism of acupuncture and moxibustion treatment of KOA is still limited to improving microcirculation, reducing intraosseous hypertension, regulating the expression of inflammatory mediators, regulating the expression of related genes and signaling pathways. In order to improve the clinical efficacy of KOA, it can also be used in combination with oral and external use of traditional Chinese medicine, manipulation, western medicine therapy, etc. At the same time, continue to explore the mechanism of acupuncture and moxibustion treatment of KOA and increase basic research, in order to provide scientific basis and theoretical support for it, and promote the standardization, unification, scientificity, internationalization of acupuncture and moxibustion treatment [5].

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