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Research Progress on the Treatment of Knee Osteoarthritis with Traditional Chinese and Western Medicine

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Abstract: ***Knee osteoarthritis (KOA) is a common degenerative disease of the knee joint in clinical practice. According to the actual condition of patients, drug conservative treatment and surgical treatment, both traditional Chinese medicine treatment and western medicine treatment have good therapeutic effects, and the pain, function and quality of life of patients can be significantly improved. In the current situation of various treatment methods for KOA patients, this paper briefly summarizes the current situation of traditional Chinese medicine and western medicine treatment for KOA.***

Keywords: Knee osteoarthritis, Western medicine treatment, Chinese medicine treatment.

1. Introduction

Knee osteoarthritis [1](KOA) is a disease characterized by degenerative changes of articular cartilage and joint synovitis, which is usually manifested as joint pain, swelling, deformity, limited activity and other main symptoms, and gradually aggravates over time, even loss of mobility. It affects the quality of life of patients. According to statistics, the prevalence of KOA in Chinese adult population is as high as 18%, and the prevalence of KOA in people over 40 years old is as high as 20.5%. The prevalence of KOA in women is higher than that in men, and the prevalence in western regions is higher than that in other regions, and the prevalence gradually increases with age [2-3]. With the continuous development of medical level, there are various treatment options for KOA. Based on the current clinical diversity and individualized treatment methods, this article briefly summarizes the traditional Chinese medicine and western medicine treatment methods for KOA.

2. Traditional Chinese Medicine Treatment of KOA

2.1 KOA's TCM Cognition

Traditional Chinese medicine believes that knee osteoarthritis belongs to the categories of "knee impediment", "tendon impediment" and "bone impediment". "Element asked · BiLun" [4] records: "the wind cold dampness three miscellaneous to gas, and for a bi also." It shows that wind, cold and dampness are easy to be mixed to treat diseases, and the symptoms are different because of the intensity of evil qi. If cold and damp, joint pain will occur, aggravate in cold, and reduce in heat; External damp heat, joint swelling, heat pain, limited activity. In addition, the phlegm and blood invasion, qi and blood flow is not smooth, will also aggravate arthralgia symptoms. In Plain Questions, it is also recorded that Arthralgia quadrature syndrome is caused by prolonged standing injury to bone and prolonged practice injury to tendon. The strain, trauma and heavy blow of muscle and bone can also lead to the damage of qi and blood meridians in the joint area, resulting in arthralgia syndrome.

2.2 TCM Treatment of KOA

2.2.1 Internal treatment of traditional Chinese Medicine

Syndrome differentiation and treatment of traditional Chinese medicine (TCM) is the core treatment principle. Modern TCM scholars divide KOA into different syndrome types such as cold-damp obstruction, damp-heat obstruction, qi stagnation and blood stasis, liver and kidney deficiency, and qi and blood weakness [5]. Clinical medical staff can treat patients according to the above syndrome differentiation according to different symptoms. Huang Long [6] used Qianghuo, Duhuo, cinnamon, Gentiana gentiana, Angelica sinensis, Chuangxiong, mulberry branches, frankincense, Euchia ulmoides, Mulberry Jisheng, Kaifeng, Zhidao and other drugs to make Juanbi decoction, which was used to treat KOA with cold-damp obstruction. The total effective rate was as high as 91.84%. After treatment, the VAS score of joint pain and WOMAC score were significantly decreased, and the levels of inflammatory factors IL-1β, TNF-α and MMP-13 were significantly decreased. Zhang Zhuang [7] et al applied Baihu Jiaguizhi decoction, which was made up of Rhizoma anemarrhiza, dried licorice, gypsum, japonica rice, Guizhi cinnamomum, Chuanniuxi, Huangbai, Weilingxian, to treat KOA with damp-heat disorder. After treatment, the total effective rate of the treatment group was up to 96%, and the WOMAC score and VAS score at rest in the treatment group were significantly reduced. The serum levels of IL-1β, TNF-α and MMP-13 were significantly decreased. Xu Peijie [8] et al., on the basis of celecoxib capsule combined with glucine hydrochloride, added Jiawei Shengyu decoction (Codonginseng, Astragali astragali, processed dihuang, Radix alba, Angelica sinensis, Chuanxiong Rhizoma, Eu仲, Niuxi) to treat KOA of qi stagnation and blood stasis type. After treatment, the VAS score and WOMAC of the observation group were lower than those of the control group. Li Zhiheng [9] et al. 's intra-articular injection of sodium hyaluronate combined with Jianbu decoction (Duzhong, Chuanniuxi, Guipan, Polygonum multifolia, Jixueteng, Angelica sinensis,

cooked Rehmannia, Weilingxian, Huangbai, ginseng, Qianghuo, Duhuo, Baipeony, Atractylodes, Zhenaconiti, Gouji 15) was used to treat KOA with liver and kidney deficiency. After treatment, The VAS, Lysholm and WOMAC scores of the observation group were significantly different from those of the control group. The skin temperature of the treatment group was significantly decreased before the treatment. In summary, the current clinical TCM for KOA can be divided into different syndrome types and treated according to the syndrome type, and can also be combined with other schemes to improve the treatment effect of patients, which has a positive effect on ensuring the treatment effect and relieving the clinical symptoms.

2.2.2 External treatment of traditional Chinese Medicine

In addition to dialectical treatment, there are also many external treatment methods of traditional Chinese medicine for KOA patients, including external application of traditional Chinese medicine, acupuncture, warm acupuncture, ear point pressure beans, etc. Acupuncture is one of the most commonly used TCM treatments for KOA, which has a positive therapeutic effect on joint pain and inflammatory reaction in patients with KOA. For example, Cui Mingyu et al. [10] selected bilateral Xiyan, Xuehai, Yinlingquan, Yanglingquan and ashi points as the main acupoints, and selected Fengshi, Heding, Xuanzhong, Zusanli, Liangqiu and Xiyangguan as the combination acupoints to treat patients with knee osteoarthritis in the early and middle stage. The results showed that the total effective rate of the treatment was 95%, and the VAS score and WOMAC score were reduced after treatment. In addition to conventional acupuncture, some specific acupoints can also be used to treat KOA. For example, Wang Biao [11] et al. adopted "six acupuncture points at the knee" (selected the inner and outer Xiyan, medial and lateral femoral tibial space, medial and lateral patellofemoral space). Compared with traditional acupuncture, the VAS score and WOMAC score of the treatment group were significantly reduced after treatment. The range of motion of the affected knee in the treatment group was significantly higher than that in the control group. The combination of acupuncture and moxibustion can also effectively treat KOA. For example, Luo Jianping [12] et al selected Liangqiu (Liangqiu), Yanglingquan (GB34), Zusanli (ST36), Waixiyan (Waixiyan), Neixiyan (Neixiyan) and Yinlingquan (Yinlingquan) to treat with warm acupuncture. After treatment, the total cure rate of the warm acupuncture group (83.33%) was significantly higher than that of the control group (56.67%). It should be noted that although acupuncture can significantly improve the pain, function and living standard of patients with KOA, there is still no clear conclusion on the mechanism of acupuncture in the treatment of KOA patients, and the overall mechanism needs to be further studied.

In addition to acupuncture and moxibustion, acupotomy is a new discipline developed from the continuous sublimation of traditional Chinese medicine. After more than 40 years of continuous summary and development, it has gradually formed its own complete theoretical system. Studies have shown that acupotomology also has a positive effect on improving joint structure and dysfunction in patients with KOA, which can effectively relieve clinical symptoms such as pain and rigidity, and positively improve knee joint function and related biomechanical indexes. Gao Hainan et al. [13] used acupotomology to treat the KOA rabbit model, and the results showed that acupotomology could effectively improve the skeletal muscle physical properties of the flexion and extension muscle group of KOA rabbits and delay the degeneration of knee cartilage of KOA rabbits. Ren Xianming [14] et al. selected the tender points around the patella, fat pad, pes anselis sac and medial knee for acuknife release. After treatment, the total effective rate was as high as 96.67%, and the VAS score and Lequesne index score of the patients were significantly reduced. Compared with acupuncture and small needle-knife, external application of traditional Chinese medicine is more of an auxiliary scheme, which can effectively guarantee and improve the treatment effect of KOA patients. Qiu Fengfei [15] et al. confirmed that traditional Chinese medicine fumigation and washing combined with western medicine can effectively improve the clinical treatment effect and have obvious advantages in relieving pain compared with simple western medicine in the treatment of KOA. The combined use of traditional Chinese medicine after arthroscopic surgery can improve the short-term surgical efficacy of patients with KOA, and significantly improve the postoperative pain and knee joint function. [16] In general, external treatment of traditional Chinese medicine has a variety of treatment plans for KOA, and the combination of various treatment plans can ensure and improve the treatment effect of KOA patients.

3. KOA Western Medicine Treatment

3.1 Western Medical Cognition of KOA

Guidelines for the Diagnosis and Treatment of Osteoarthritis (2018 Edition) [17] pointed out that OA is a degenerative disease caused by a variety of reasons, and the mechanism is not clear, but it is closely related to genetic factors, physical factors and external environmental factors. Relevant studies have shown [18] that weight, gender, family history of OA, age, history of knee joint, occupation, living environment, and eating habits are closely related to the incidence of KOA in China. In general, the occurrence of KOA is closely related to the development of the knee joint, age degradation, use condition, and internal and external environment.

3.2 Medical Treatment of KOA

3.2.1 Oral medication

Western medicine has not yet made a clear answer to the mechanism and cause of KOA disease, and the clinical treatment of KOA also lacks specific drugs. In the overall treatment, the main goal is to relieve pain, improve function, improve quality of life, delay disease progression, and avoid joint deformity while following the principle of individualization. Among them, the main demand for the treatment of KOA patients is pain relief, which is mainly divided into two categories: oral drug therapy and intra-articular injection drug therapy. Oral drugs include non-steroidal anti-inflammatory drugs and opioids, and non-steroidal anti-inflammatory drugs are the main ones. Non-steroidal anti-inflammatory drugs inhibit the expression of inflammatory response and reduce the intensity of pain by inhibiting prostaglandin synthetase. Opioids exert central

analgesic effects by blocking the transmission of nerve impulses.

At present, the commonly used non-steroidal anti-inflammatory drugs include celecoxib, diclofenac sodium, etoricoxib, imrecoxib, etc. The above drugs have positive effects on inflammatory response and pain relief in KOA patients. Statistics show [19] that non-steroidal anti-inflammatory drugs (nsaids) are effective in the treatment of middle-aged and elderly patients with OA in China, among which oral etoricoxib has the highest effective rate (92.49%), and diclofenac sodium has the best safety in the treatment of OA patients (adverse reaction rate is 59.10%). In general, nsaids have a good analgesic effect on KOA, but their safety is insufficient. The commonly used opioids in clinic include oxycodone, tramadol, pethidine, etc., which have a significant effect on pain relief. However, opioids are addictive and resistant, so the use of these drugs in the treatment of KOA patients in the early and middle stages should be treated with caution.

3.2.2 Intra-articular injection of drugs

In the case of poor effect of oral drug treatment, intra-articular drug injection has become the first choice for KOA patients. Intra-articular drug injection [20] therapy is the direct injection of drugs into the lesion site, which can reduce the consumption of the body during oral transport in the body, and maximize the effect with the minimum dose. At present, the recognized treatment options are mainly glucocorticoids and sodium hyaluronate, as well as injections that are currently under hot clinical research, such as ozone, chitosan, new non-steroidal anti-inflammatory drugs and other chemical drugs and biological agents such as platelet-rich plasma. Wang Qiong [21] et al. injected ozonated water into the joint cavity of KOA patients, and the total score of ISOA, symptoms and signs, and maximum walking distance of the patients were significantly improved after treatment. Shao Na [22] et al. compared KOA patients with oral celecoxib and found that intra-articular injection of medical chitosan was more effective in the treatment of KOA. Platelet-rich plasma [23] is a concentration of high concentration platelets obtained after autologous blood concentration, which is rich in high concentration of growth factors and has a promoting effect on the proliferation of chondrocytes. Studies have shown that PRP is more effective in relieving pain and improving function in the short term compared with HA and placebo injection in the treatment of KOA [24].

3.2.3 Surgical treatment

Surgical treatment is a treatment plan for patients with late and advanced KOA, which is to correct the joint structure and improve the joint function of patients with KOA by surgical method under the clear failure of conservative treatment and the strong will of patients. It mainly includes arthroscopic surgery, joint osteotomy, joint replacement, etc. Arthroscopic surgery is mainly to wash and clean the joint cavity, and joint osteotomy is mainly to correct varus deformity and valgus deformity. At present, joint replacement is the ultimate treatment plan for KOA patients, including partial joint replacement and total knee replacement, and total knee replacement is regarded as the ultimate treatment plan for KOA patients [25].

4. Summary

In summary, both traditional Chinese medicine treatment and western medicine treatment have good effects in the application of KOA patients. Therefore, in the actual clinical treatment, we should fully consider the patient's treatment will, combined with the actual situation of patients, and try to choose the combination plan, so as to fully ensure and improve the treatment effect of KOA patients.

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