CASE REPORT OLGU SUNUMU

DOI: 10.5336/jtracom.2025-111353

Acupuncture as a Treatment for Knee Osteoarthritis: Clinical Outcomes and Pain Relief

Diz Osteoartritinde Akupunktur Tedavisi: Klinik Sonuçlar ve Ağrının Giderilmesi

Lokman Aziz TAŞDEMİR[a], Aziz KARACA[b], Levent KARAKAŞ[c], Mehmet Tuğrul CABIOĞLU[d]

[a]Private Pyhsician, Mersin, Türkiye
[b]Recep Tayyip Erdoğan University Faculty of Medicine, Department of Physiology, Rize, Türkiye
[c]Health Sciences University Faculty of Medicine, İstanbul Gazi Osman Paşa Training and Research Hospital, Department of Radiology, Division of Neuroradiology, İstanbul, Türkiye
[d]Medipol University Faculty of Medicine, Department of Physiology, Ankara, Türkiye

ABSTRACT Osteoarthritis (OA), a common degenerative joint disease, severely impacts quality of life, especially in older adults. Acupuncture, a Traditional Chinese Medicine approach, is increasingly recognized for the treatment of knee OA. This case report examines acupuncture's effects in a 59-year-old female patient with a 10-year history of knee OA, who presenting with severe left knee pain and locking. Despite being advised to undergo surgery, she underwent 12 twice-weekly acupuncture sessions targeting points for Spleen Qi and Kidney Yin deficiencies. Pain levels were evaluated using the Portuguese Pain Assessment Scale, and mobility was measured with a goniometer. Additionally, pre- and post-treatment radiographs were compared. By the 4th session, significant improvement in pain and functional limitations were observed. Post-treatment radiographs revealed a mild increase in the medial joint space and partial regression of degenerative irregularities, which eliminated the need for surgery. Acupuncture significantly improved pain and functionality, suggesting its potential to delay surgical intervention. However, further randomized controlled trials are required to validate efficacy and optimize treatment protocols. This case highlights acupuncture's potential as a valuable adjunctive therapy for knee OA, particularly in patients considering surgical intervention.

Keywords: Acupuncture; cartilage protection; functional improvement; knee osteoarthritis; pain relief

ÖZET Osteoartrit (OA), özellikle yaşlı bireylerde yaşam kalitesini ciddi şekilde etkileyen yaygın bir dejeneratif eklem hastalığıdır. Geleneksel Çin Tıbbı yöntemi olan akupunktur, diz OA tedavisinde giderek artan bir kabul görmektedir. Bu olgu sunumu, 10 yıldır diz OA tanısı olan ve sol dizinde şiddetli ağrı ile kilitlenme şikâyetleri bulunan 59 yaşındaki bir kadın hastada akupunkturun etkilerini incelemektedir. Hastaya, cerrahi müdahale önerilmiş olmasına rağmen, Dalak Qi ve Böbrek Yin eksikliklerini hedefleyen, haftada 2 kez olmak üzere toplam 12 akupunktur seansı uygulanmıştır. Akupunktur tedavisi uygulanmıştır. Ağrı düzeyi, Portekiz Ağrı Değerlendirme Ölçeği kullanılarak, hareket açıklığı ise gonyometre ile değerlendirilmiştir. Ayrıca tedavi öncesi ve sonrası radyografiler karşılaştırılmıştır. Dördüncü seanstan itibaren ağrı ve fonksiyonel kısıtlamalarda belirgin iyileşme gözlenmiştir. Tedavi sonrası çekilen radyografilerde, mediyal eklem aralığında hafif bir artış ve dejeneratif düzensizliklerde kısmi gerileme saptanmış, bu da ihtiyacını ortadan kaldırmıştır. Akupunktur, ağrı ve fonksiyonlarda anlamlı iyileşme sağlayarak cerrahi müdahalenin ertelenmesi potansiyelini göstermiştir. Bununla birlikte, akupunkturun etkinliğini doğrulamak ve tedavi protokollerini optimize etmek için daha fazla randomize kontrolü kontrollü çalışmaya ihtiyaç vardır. Bu olgu, diz OA tedavisinde, özellikle cerrahi düşünen hastalarda, akupunkturun değerli bir tamamlayıcı tedavi yöntemi olabileceğini vurgulamaktadır.

Anahtar Kelimeler: Akupunktur; kıkırdak koruma; fonksiyonel iyileşme; diz osteoartriti; ağrı giderilmesi

Correspondence: Aziz KARACA
Recep Tayyip Erdoğan University Faculty of Medicine, Department of Physiology, Rize, Türkiye
E-mail: drazizkaraca@gmail.com

Peer review under responsibility of Journal of Traditional Medical Complementary Therapies.

Received: 17 Apr 2025 ***Received in revised form:*** 20 Jun 2025 ***Accepted:*** 11 Sep 2025 ***Available online:*** 22 Sep 2025

Osteoarthritis (OA) is a common joint disease involving degeneration of articular cartilage and secondary changes in joint structures. It is a major global health issue, especially among the elderly. It causes pain, stiffness, and limited mobility, significantly reducing quality of life. Alongside conventional treatments, complementary methods such as acupuncture are gaining interest.

A Traditional Chinese Medicine (TCM) practice, acupuncture involves inserting fine needles (32-36 gauge) into specific body points, which may be stimulated mechanically, electrically, or thermally, and are typically retained for 20-30 minutes per session. A course consists of multiple sessions over several weeks.[1] The exact mechanisms of acupuncture remain to be fully elucidated, but it is believed to exert analgesic and anti-inflammatory effects through various pathways within the peripheral and central nervous systems. These include neuromodulation, endogenous opioid release (e.g., beta-endorphins), reduction of local inflammatory cytokines, and regulation of blood flow. Precilinical studies have indicated that acupuncture may decelerate cartilage degeneration by suppressing pro-inflammatory cytokines such as tumor necrosis factor alpha (TNF-α) and interleukin-1 beta (IL-1β).[2] While the evidence for acupuncture's efficacy in knee OA treatment has shown variability, recent meta-analyses and randomized controlled trials (RCTs) present promising results. For instance, a clinical practice guideline indicates that acupuncture can be beneficial in reducing pain, stiffness, and functional limitations in knee OA.[3] Other RCTs have demonstrated that acupuncture provides short-term pain relief comparable to or superior to sham acupuncture or standard care.[4] Furthermore, its potential to reduce surgical intervention rates has been explored in retrospective cohort studies.[5]

This case report aims to evaluate the effects of acupuncture treatment in a patient diagnosed with knee OA and discuss the clinical and radiological improvements observed in response to the intervention. This case provides evidence that acupuncture may serve as a potential therapeutic option for patients unresponsive to conventional treatments or those seeking to avoid surgery.

CASE REPORT

This study presents a 59-year-old female patient who sought treatment for severe pain and locking in her left knee. The patient had been monitored for OA for 10 years, with urgent surgical intervention previously recommended.

From a TCM perspective, she was diagnosed with Spleen Qi deficiency and Kidney Yin deficiency syndromes. In TCM, Spleen Qi deficiency is often associated with metabolic dysfunction, muscle atrophy, and fatigue, while Kidney Yin deficiency relates to chronic degenerative processes. A diagnosis was made based on the patient's overall symptoms, including tongue (pale, swollen tongue) and pulse (weak, deep pulse) findings. Accordingly, a treatment plan of 12 acupuncture sessions, administered twice weekly, was established accordingly.

The acupuncture treatment was conducted with each session lasting 30 minutes. General acupuncture points targeting the diagnosed syndromes included Sp2 (Dadu), Sp3 (Taibai), Sp6 (Sanyinjiao), Kid3 (Taixi), Kid6 (Zhaohai), Bl20 (Pishu), Bl21 (Weishu), Bl23 (Shenshu), Du3 (Yaoyangguan), and Du4 (Mingmen), while local points adjacent to the knee joint, such as St34 (Liangqiu), St35 (Dubi), St36 (Zusanli), Sp9 (Yinlingquan), Sp10 (Xuehai), Gb34 (Yanglingquan), Liv8 (Ququan), Kid10 (Yingu), Bl40 (Weizhong), and Ex-Lf4 (Nei Xiyan), were also selected. The selection of acupuncture points was guided by TCM principles to fortify Spleen Qi, nourish Kidney Yin, regulate the circulation of Qi and blood, and alleviate local pain. For example, points like Sp6 and St36 support Qi and blood production, while Gb34 and Bl40 help resolve Qi stagnation in the knee region.[6]

Treatment efficacy was assessed by grading pain intensity before and after each session using the Portuguese Pain Assessment Scale (ranging from 0: no pain, to 10: maximum pain). Mobility was evaluated using a goniometer, measured before each session and 10 minutes afterward. Additionally, pre- and post-treatment direct radiographs were compared. Pre-treatment (May 10, 2024) and post-treatment (July 3, 2024) bilateral weight-bearing anteroposterior (A-P) knee radiographs were obtained, and radiological changes were compared. The radiographs were evaluated by a blinded radiologist using the Kellgren-Lawrence

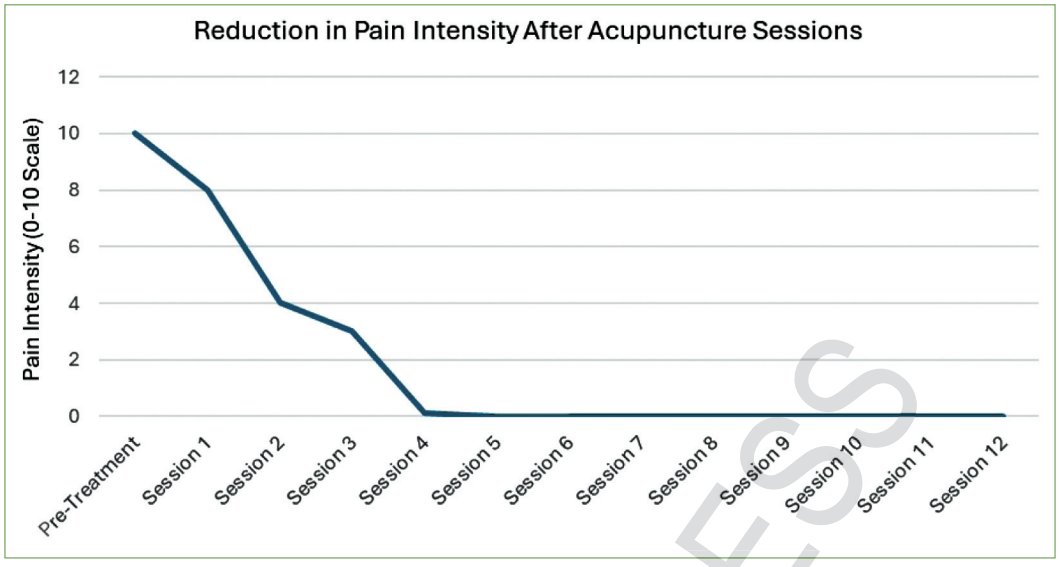

FIGURE 1: Changes in pain intensity before and after acupuncture treatment

classification system. The patient's pre-treatment Kellgren-Lawrence stage was identified as Grade 3. As a formal Institutional Review Board was not available at the institution where the study was conducted, the study adhered to the principles of the Declaration of Helsinki. Informed consent was obtained from the patient prior to acupuncture treatment. The patient was informed about the study's purpose, the treatment procedure, and the possible use of her data for research. Personal information was anonymised to maintain confidentiality.

The patient did not receive any additional medical or physical rehabilitation interventions during the acupuncture sessions. Furthermore, specific information regarding changes in the patient's general activity levels or diet was collected. Throughout the treatment course, a gradual reduction in pain intensity and movement restriction was observed following each session, with significant improvement in pain and functional limitation achieved by the fourth session (Figure 1 and Figure 2).

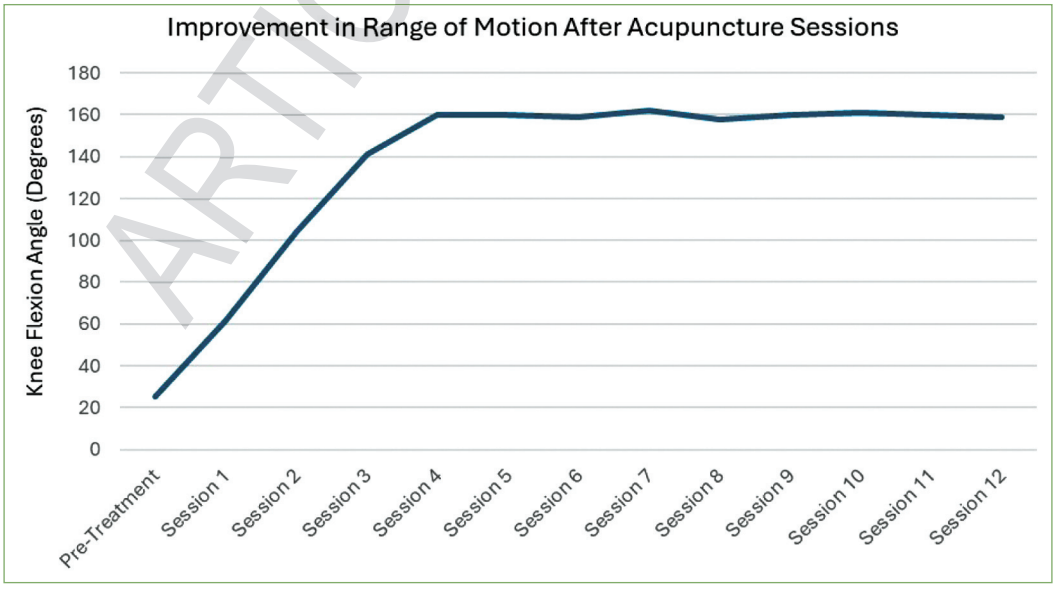

FIGURE 2: Changes in mobility before and after acupuncture treatment

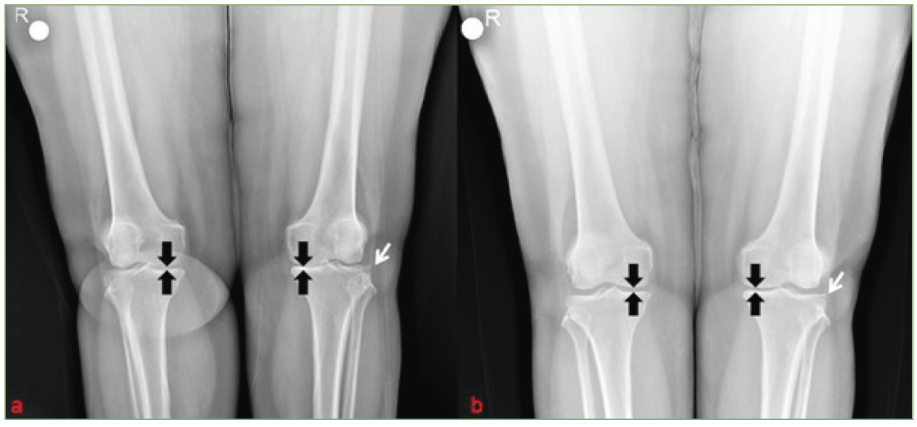

FIGURE 3: Serial bilateral weight-bearing anteroposterior (A-P) knee radiographs obtained from the same patient demonstrate temporal changes in joint morphology. The first image **(a)** dated May 10, 2024, and the follow-up image; **(b)** dated July 3, 2024, show bilateral medial compartment joint space narrowing (thick black arrows), with a relative improvement noted in image **(b)**. A minimal osteophyte at the medial tibial plateau margin of the left knee, evident in image **(a)**, appears regressed in the subsequent radiograph (thin white arrows). Laterality is indicated by "R" and an adjacent circular marker. The minor variation in projection angle between the 2 studies is considered diagnostically negligible.

Radiological analysis revealed that prior to acupuncture, there was notable narrowing of the medial joint space, particularly pronounced in the left knee, along with mild degenerative spurring at the joint margins (Figures 3a). Post-treatment imaging demonstrated a slight regression in the bilateral medial joint space narrowing -previously more evident in the left knee- as well as in the degenerative irregularities of the left knee (Figures 3b). Specifically, an average increase of 0.5 mm in medial joint space and a reduction in minimal osteophytes were observed. These radiological findings correlated with the patient's subjective improvement and led to a reconsideration of the surgical plan. The patient maintained a pain-free and functionally improved status during approximately 12-month follow-up period.

DISCUSSION

In our study, this case report describes how the 12-session acupuncture treatment administered to a 59-year-old patient with chronic knee OA and a recommendation for surgery, significantly reduced pain and functional limitation. Furthermore, it suggests that acupuncture can lead to favorable radiological changes. A marked decrease in pain intensity was observed from the fourth session onward, consistent with reports from other studies. Atalay et al. reported that acupuncture, applied twice weekly over 6 weeks, effectively alleviated pain, improved functional status, and enhanced quality of life, yielding outcomes comparable to physiotherapy.[7] A comprehensive review by Liu et al. indicated, based on high-quality evidence, that acupuncture can be beneficial in reducing pain, stiffness, and functional limitations in knee OA. Additional research corroborates that acupuncture significantly reduces pain compared to sham acupuncture, nonsteroidal anti-inflammatory drugs, and standard care.[4] These findings strengthen the evidence for acupuncture's effectiveness in providing short-term symptomatic relief.

The most striking finding of our study one of the most notable observations in our case is the significant clinical improvement observed in a patient initially recommended for urgent surgery following acupuncture treatment. This suggests that acupuncture may serve as a treatment option capable of reducing the need for surgery. Huang et al.'s study similarly reported that a patient, initially unable to walk and reliant on a wheelchair, could walk with crutches after the 2nd session and independently after the 3rd.[8] Likewise, Gang et al. emphasized that acupuncture is associated with lower surgical rates in knee OA.[5] Clinical studies attribute the improvements in knee OA patients to acupuncture's substantial benefits in reducing pain and enhancing mobility, often with fewer side effects than conventional treatments. These effects have been explored in the literature, with strong evidence supporting acupuncture's effi-

cacy in short-term pain relief-studies report over 50% improvement in pain within 13 weeks.[9] These findings align with the clinical improvements observed in our study, suggesting that acupuncture not only offers symptomatic relief but may also reduce reliance on surgery. This evidence supports acupuncture's broader role in OA management and the need for further investigation into its applications.

Radiological findings from our study revealed mild regression in the medial joint space of the knee following acupuncture treatment. While cartilage regeneration is rare in OA, this aligns with literature suggesting acupuncture may repair OA cartilage by reducing anti-inflammatory cytokine production.[10] Huang et al. also demonstrated both clinical and radiological benefits, with 12 weeks of treatment reducing pain and increasing joint range of motion, while magnetic resonance imaging showed significant reduction in bone marrow edema-like lesions.[8] Acupuncture may protect cartilage by regulating extracellular matrix components and reducing chondrocyte apoptosis, possibly via opioid and endocannabinoid system activation.[11] Animal studies show acupuncture may accelerate cartilage repair through transforming growth factor beta1 and growth factor 1 modulation.[12] Other research indicates it can reduce inflammation and slow degeneration through the melatonin/cyclic adenosine monophosphate/protein kinase A/C Cyclic AMP-Response Element Binding Protein pathway.[13] Additionally, acupuncture may inhibit excessive release of pro-inflammatory cytokines like IL-1β and TNF-α.[14] Meta-analyses suggest it affects cytokine levels through p38 mitogen-activated protein kinases and mitochondrial pathways, reducing cartilage damage.[15] A human study also found improved T2 values, an indicator of cartilage quality.[10] While promising, further validation through human clinical studies is needed. These mechanisms can be considered as potential underlying processes for the radiological changes observed in our case, but such structural improvements require more rigorous validation through human clinical trials.

The findings of our study demonstrate that acupuncture substantially enhances pain relief and functional recovery in knee OA, with the potential to delay the need for surgical intervention. Existing literature supports acupuncture as a promising alternative treatment for OA; however, its efficacy requires further confirmation through additional high-quality, randomized controlled trials. Despite its potential, some studies suggest that acupuncture's effects on pain may be temporary, necessitating ongoing treatment to maintain benefits.[9] This highlights the critical need for further research to establish its long-term efficacy and optimal treatment protocols. This case report highlights acupuncture's strong potential to alleviate pain and improve function in knee OA. The patient's reconsideration of surgical intervention underscores the significance of acupuncture in the treatment algorithm. However, being a single-case report, the generalizability of these findings is limited. Furthermore, methodological limitations include the use of a less universally accepted scale like the Portuguese Pain Assessment Scale and the lack of detailed information on lifestyle factors as concurrent interventions. More high-quality, randomized controlled studies are essential to confirm the efficacy of acupuncture, assess its long-term effects, and determine optimal treatment protocols.

Acknowledgements

The authors would like to sincerely thank the patient who participated in this study for her cooperation, trust, and patience throughout the treatment process. Her commitment greatly contributed to the completion of this case report.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Lokman Aziz Taşdemir, Aziz Karaca;* ***Design:*** *Aziz Karaca, Lokman Aziz Taşdemir;* ***Control/Supervision:*** *Levent*

Karakaş, Mehmet Tuğrul Cabıoğlu; ***Data Collection and/or Processing:*** *Lokman Aziz Taşdemir;* ***Analysis and/or Interpretation:*** *Lokman Aziz Taşdemir, Aziz Karaca, Levent Karakaş, Mehmet Tuğrul Cabıoğlu;* ***Literature Review:*** *Lokman Aziz Taşdemir, Aziz Karaca;* ***Writing the Article:*** *Aziz Karaca, Mehmet Tuğrul Cabıoğlu, Lokman Aziz Taşdemir;* ***Critical Review:*** *Levent Karakaş, Mehmet Tuğrul Cabıoğlu;* ***References and Fundings:*** *Lokman Aziz Taşdemir;* ***Materials:*** *Lokman Aziz Taşdemir.*

REFERENCES

1. Hunter DJ, Harris RE. Acupuncture and knee osteoarthritis: does dose matter? Arthritis Rheumatol. 2021;73(3):371-3. PMID: 33169542.
2. Jang J-H, Han J, Na C, Park H-J. Effects of acupuncture on cartilage degradation and joint pain in osteoarthritis. Perspectives on Integrative Medicine. 2024;3(3):134-41. doi: 10.56986/pim.2024.10.002.
3. Luo X, Liu J, Li Q, Zhao J, Hao Q, Zhao L, et al. Acupuncture for treatment of knee osteoarthritis: a clinical practice guideline. J Evid Based Med. 2023;16(2):237-45. PMID: 36999342.
4. Liu CY, Duan YS, Zhou H, Wang Y, Tu JF, Bao XY, et al. Clinical effect and contributing factors of acupuncture for knee osteoarthritis: a systematic review and pairwise and exploratory network meta-analysis. BMJ Evid Based Med. 2024;29(6):374-84. PMID: 39486882; PMCID: PMC11672105.
5. Gang BG, Shin JS, Lee J, Lee YJ, Cho HW, Kim MR, et al. Association between acupuncture and knee surgery for osteoarthritis: a korean, nationwide, matched, retrospective cohort study. Front Med (Lausanne). 2020;7:524628. PMID: 33043034; PMCID: PMC7525124.
6. How do you treat osteoarthritis in your practice? Med Acupunct. 2017;29(3):166-72. PMID: 28736594; PMCID: PMC5512319.
7. Atalay SG, Durmus A, Gezginaslan Ö. The effect of acupuncture and physiotherapy on patients with knee osteoarthritis: a randomized controlled study. Pain Physician. 2021;24(3):E269-E278. PMID: 33988943.
8. Huang H, Liang Y, Han D, Chen X, Xiao L, Wu H. Case report: electroacupuncture for acute pain flare-up of knee osteoarthritis. Front Neurol. 2022;13:1026441. PMID: 36388192; PMCID: PMC9640747.
9. Lin X, Huang K, Zhu G, Huang Z, Qin A, Fan S. The effects of acupuncture on chronic knee pain due to osteoarthritis: a meta-analysis. J Bone Joint Surg Am. 2016;98(18):1578-85. PMID: 27655986.
10. Zhang Y, Bao F, Wang Y, Wu Z. Influence of acupuncture in treatment of knee osteoarthritis and cartilage repairing. Am J Transl Res. 2016;8(9):3995-4002. PMID: 27725880; PMCID: PMC5040698.
11. Jang J-H, Han J, Na C, Park H-J. Effects of acupuncture on cartilage degradation and joint pain in osteoarthritis. Perspectives on Integrative Medicine. 2024;3(3):134-41. doi: 10.56986/pim.2024.10.002.
12. Gao L, Chen M, Yue P, Zhang R, Xin SC. [Effect of warm-needle moxibustion on expression of transfer growth factor-β1 and insulin- like growth factor i in knee cartilage of rabbits with knee osteoarthritis]. Zhen Ci Yan Jiu. 2015;40(3):229-32. Chinese. PMID: 26237976.
13. Zhang C, Yu M, Zhang L, Zhou X, Han J, Fu B, etal. Exploring the analgesic effect of acupuncture on knee osteoarthritis based on MLT/cAMP/PKA/CREB signaling pathway. J Inflamm Res. 2025;18:237-49. PMID: 39802514; PMCID: PMC11724624.
14. Wang M, Xu X, Zhao B, Liu L, Zhao L, Zhang F, et al. Fire needling therapy of different frequencies versus external diclofenac diethylamine emulgel for knee osteoarthritis: study protocol for a pilot randomized controlled trial. J Pain Res. 2023;16:1381-90. PMID: 37128272; PMCID: PMC10147561.
15. Ye JN, Su CG, Jiang YQ, Zhou Y, Sun WX, Zheng XX, et al. Effects of acupuncture on cartilage p38MAPK and mitochondrial pathways in animal model of knee osteoarthritis: a systematic evaluation and meta-analysis. Front Neurosci. 2023;16:1098311. PMID: 36711149; PMCID: PMC9875597.