INPLASY PROTOCOL

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None declared.

Comparison of therapeutic effects of different acupuncture therapy for rehabilitation after total knee arthroplasty: A protocol for systematic review and network meta-analysis

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Review question / Objective: **This meta-analysis of randomized controlled trials aims to further evaluate the efficacy of different acupuncture therapy-assisted treatments for postoperative rehabilitation of TKA and provide strong evidence for subsequent clinical work.**
Information sources: **We will perform a comprehensive search of PubMed, Cochrane Library, Embase, Web of Science, China National Knowledge Infrastructure (CNKI), VIP Database, Wanfang Database, and Chinese Biomedical Database (CBM). In addition, we will also search clinical trials registries (Clinicaltrials.gov, Chinese Clinical Trial Registry, and International Clinical Trials Registry Platform) for any missed RCTs.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 02 December 2021 and was last updated on 02 December 2021 (registration number INPLASY2021120008).

INTRODUCTION

Review question / Objective: **This meta-analysis of randomized controlled trials aims to further evaluate the efficacy of different acupuncture therapy-assisted treatments for postoperative rehabilitation of TKA and provide strong evidence for subsequent clinical work.**

Condition being studied: **Knee osteoarthritis (KOA) is a common degenerative joint disease characterized by progressive destruction of articular**

cartilage and surrounding tissues, resulting in joint pain, stiffness, and chronic disability Currently, treatment for KOA mainly includes early pain management and end-stage joint replacement. Total knee arthroplasty (TKA) is a common procedure for patients with end-stage KOA, which can improve the quality of life by relieving pain and restoring joint function, with significant long-term efficacy and high patient satisfaction. However, due to the fact that most surgical patients are older and the overall trauma is greater, early postoperative TKA is often accompanied by complications such as pain, limited joint movement, and analgesia-related adverse reactions. Acupuncture, as a part of traditional Chinese medicine treatment, has the characteristics of low side effects and high safety in the control of pain. Previous meta-analyses have shown that traditional acupuncture, along with electrical acupoint stimulation, can reduce pain on the first day after surgery. However, as there are many kinds of acupuncture and its therapeutic advantages are not the same, the choice of clinicians has been troubled. In this study, the effectiveness of several commonly used acupuncture therapies (such as filiform acupuncture, electroacupuncture, auricular acupuncture, laser acupuncture, and warm acupuncture) was ranked by the method of mesh META-analysis, so as to provide the scientific evidence-based medical basis for clinical selection.

METHODS

Search strategy: #1 (((((((acupuncture[MeSH Terms]) OR (Pharmacopuncture[Title/Abstract])) OR (needle[Title/Abstract])) OR (electroacupuncture[Title/Abstract])) OR (warm acupuncture[Title/Abstract])) OR (filiform needle acupuncture[Title/Abstract])) OR (laser acupuncture[Title/Abstract])) OR (Auricular Acupressure [Title/Abstract])
#2 ((((((((((((((((((((((((((((Arthroplasty, Replacement, Knee, [MeSH Terms]) OR (Arthroplasties, Replacement, Knee[Title/Abstract])) OR (Arthroplasty, Knee Replacement[Title/Abstract])) OR (Knee Replacement Arthroplasties[Title/Abstract])) OR (Knee Replacement Arthroplasty[Title/Abstract])) OR (Replacement Arthroplasties, Knee[Title/Abstract])) OR (Knee Arthroplasty, Total[Title/Abstract])) OR (Arthroplasty, Total Knee[Title/Abstract])) OR (Total Knee Arthroplasty[Title/Abstract])) OR (Replacement, Total Knee[Title/Abstract])) OR (Total Knee Replacement[Title/Abstract])) OR (Knee Replacement, Total[Title/Abstract])) OR (Knee Arthroplasty[Title/Abstract])) OR (Arthroplasty, Knee[Title/Abstract])) OR (Arthroplasties, Knee Replacement[Title/Abstract])) OR (Replacement Arthroplasty, Knee[Title/Abstract])) OR (Arthroplasty, Replacement, Partial Knee[Title/Abstract])) OR (Unicompartmental Knee Arthroplasty[Title/Abstract])) OR (Arthroplasty, Unicompartmental Knee[Title/Abstract])) OR (Knee Arthroplasty, Unicompartmental[Title/Abstract])) OR (Unicondylar Knee Arthroplasty[Title/Abstract])) OR (Arthroplasty, Unicondylar Knee[Title/Abstract])) OR (Knee Arthroplasty, Unicondylar[Title/Abstract])) OR (Partial Knee Arthroplasty[Title/Abstract])) OR (Arthroplasty, Partial Knee[Title/Abstract])) OR (Knee Arthroplasty, Partial[Title/Abstract])) OR (Unicondylar Knee Replacement[Title/Abstract])) OR (Knee Replacement, Unicondylar[Title/Abstract])) OR (Partial Knee Replacement[Title/Abstract])) OR (Knee Replacement, Partial[Title/Abstract])) OR (Unicompartmental Knee Replacement [Title/Abstract])) OR (Knee Replacement, Unicompartmental[Title/Abstract])
#3 (randomized controlled trial[Publication Type] OR randomized[Title/Abstract] OR placebo[Title/Abstract])
#4 #3 AND #2 AND #1.

Participant or population: Patients receiving TKA due to KOA will be included. There are not limited in unilateral or bilateral, age or gender.

Intervention: The treatment group was treated with acupuncture + conventional treatment, including traditional

acupuncture, electric acupuncture, ear acupuncture, laser acupuncture, etc.

Comparator: Conventional treatment or placebo plus conventional treatment.

Study designs to be included: Randomized controlled trials(RCTs) will be included.Languages will be restricted to English and Chinese.

Eligibility criteria: RCTs that assessed the efficacy of acupuncture therapy for rehabilitation after total knee arthroplasty will be included. Languages will be restricted to English and Chinese. Descriptive studies, reviews, letters, conference abstracts, retrospective clinical studies, case reports, case series, protocols, animal studies, reports with incomplete data, studies unrelated to acupuncture therapy for rehabilitation after total knee arthroplasty will be excluded.

Information sources: We will perform a comprehensive search of PubMed, Cochrane Library, Embase, Web of Science, China National Knowledge Infrastructure (CNKI), VIP Database, Wanfang Database, and Chinese Biomedical Database (CBM). In addition, we will also search clinical trials registries (Clinicaltrials.gov, Chinese Clinical Trial Registry, and International Clinical Trials Registry Platform) for any missed RCTs.

Main outcome(s): ① Pain visual analog scale (VAS) score, including postoperative resting state (VAP-R) score and passive activity state (VAS-P) score; ② Range of motion score; ③ Joint function score.

Quality assessment / Risk of bias analysis: Two reviewers will independently assess the quality of the selected studies according to the Cochrane Collaboration's tool for randomized controlled trials. Items will be evaluated in three categories: Low risk of bias, unclear bias, and high risk of bias. The following characteristics will be evaluated: Random sequence generation (selection Bias)Allocation concealment (selection bias)Blinding of participants and personnel (performance bias, Incomplete outcome data (attrition bias)Selective reporting(reporting bias)Other biases Results from these questions will be graphed and assessed using Review Manager 5.3.

Strategy of data synthesis: We will perform the pairwise meta-analysis with STATA 15.0. For dichotomous variables, outcomes will be expressed as odds ratio (OR) with 95% confidence intervals (CI), while for continuous variables, mean difference (MD) or standard mean difference (SMD) 6 with 95% CI will be calculated. Heterogeneity between the studies will be assessed with the I-square (I^2) statistic. A fixed-effect model will be selected when $I^2$50%. We will perform the NMA with Addis1.16.8, WinBUGS 1.4.3, and STATA 15.0. A random-effects model will be employed because of anticipated heterogeneity. The outcomes of dichotomous variables or continuous variables will be estimated by OR, MD, and SMD with their 95% CI respectively. The Brooks-Gelman-Rubin method will be used to assess the convergence of iterations. Convergence will be calculated using the Potential Scale Reduction Factor (PSRF), with PSRF closed to 1 indicating a better convergence. We will use the node-splitting method to explore the inconsistency between direct and indirect evidence. Besides, the surface under the cumulative ranking curve (SUCRA) will be applied to rank the size effect of treatments.

Subgroup analysis: We will conduct subgroup analysis of VAS score, range of motion and joint function score at different postoperative time points we will.

Sensitivity analysis: Among the included observation indicators, if the meta-analysis results showed heterogeneity among the included studies, Stata15.1 was used for further sensitivity analysis.

Country(ies) involved: China.

Keywords: total knee arthroplasty (TKA); acupuncture; randomized controlled trials(RCT); network meta-analysis.

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