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Efficacy of appropriate technologies of traditional Chinese medicine combined with rehabilitation training in the treatment of post-traumatic joint stiffness: a meta-analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 November 2023 and was last updated on 20 November 2023.

INTRODUCTION

Review question / Objective To evaluate the effect of appropriate technologies of traditional Chinese medicine combined with rehabilitation training on post-traumatic joint stiffness.

Condition being studied The related literatures on the efficacy of TCM appropriate technologies combined with rehabilitation training on posttraumatic joint stiffness were searched in China National Knowledge Infrastructure, Wanfang database, VIP database, PubMed, Cochrane Library, Embase and other databases. The quality of the literatures selected according to inclusion and exclusion criteria was evaluated strictly, and meta-analysis was performed using ReviewManager5.4.1 and Stata17 software. The differences of rehabilitation efficiency, pain score, joint range of motion and KSS score between the experimental group and the control group were compared.

METHODS

Search strategy “acupuncture points”“traditional Chinese medicine”“traumatic stiffness”“joints stiffness”.

Participant or population Diagnosed as post-traumatic joint stiffness.

Intervention The experimental group used traditional Chinese medicine fumigation/fumigation, external application of traditional Chinese medicine, acupuncture, acupressure and other appropriate techniques combined with rehabilitation training, while the control group only used rehabilitation training treatment.

Comparator The differences of rehabilitation efficiency, pain score, joint range of motion and KSS score between the experimental group and the control group were compared.

Study designs to be included Meta analysis was performed using Review Manager5.4.1 software. Measurement data were represented, and counting data were represented by cases and percentage. The heterogeneity of each group was inferred by testing and P quantitative analysis. If $P \geq 0.1$ and $P < 50\%$, it indicated homogeneity among the groups, and fixed effect model was used for combined analysis. If $P \geq 50\%$, the heterogeneity between groups was large, and the random effects model was used for combined analysis. The OR value is calculated for binary variables, and the WMD value is calculated for continuous variables. 95% CI is calculated for all combined data, and the results are represented by forest maps. All tests were bilateral, and $P < 0.05$ indicated no significant publication bias in the outcome indicators.

Eligibility criteria Inclusion criteria: (1) Research content: Clinical research on the efficacy of TCM appropriate techniques combined with rehabilitation training in the treatment of joint stiffness and adhesion after trauma and (or) surgery; (2) Study type: randomized controlled trial (RCT) or case-control trial (CCT) published in core journals at home and abroad; (3) Subjects: patients diagnosed with post-traumatic joint stiffness; (4) Intervention measures: The experimental group was treated with traditional Chinese medicine fumigation/fumigation, external application of traditional Chinese medicine, acupuncture, acupressure and other appropriate techniques combined with rehabilitation training, while the control group was treated with rehabilitation training alone. Exclusion criteria: (1) Systematic reviews, case studies, animal experiments, conference papers and other relevant literature; (2) Degenerative osteoarthropathy, mental illness, chronic wound infection and other related research; (3) The literature was too early (published before March 2013), or no statistical calculation was performed, and the data were incomplete and the full text of the study could not be obtained.

Information sources Search CNKI, Wanfang Database, VIP, PubMed, Cochrane Library, Embase and other databases.

Main outcome(s) A total of 12 studies with 926 patients were included, including 471 patients in the experimental group and 455 patients in the control group. The two groups showed significant differences in the incidence of effective (OR=6.10,95%CI) 3.57 ~ 10.43, $P < 0.01$), pain score (WMD = 1.24, 95% CI 1.54 ~ 0.94, $P < 0.01$), the scope of joint activities (WMD = 23.87, 95%

CI11.83 ~ 35.90, $P < 0.01$), KSS score (WMD = 15.17, 95% CI4.54~25.79, $P < 0.01$).

Quality assessment / Risk of bias analysis Data were extracted from the included literatures, and the literatures were individually screened and evaluated back-to-back by two researchers. All the literature retrieved from the database was imported into EndnoteX9 software, and the title, abstract and full text of each paper were carefully read after the duplicate literature was screened, and the literature was screened according to the exclusion criteria. Finally, the literature was cross-checked. If there was any dispute, it was resolved through negotiation or consultation with third-party professionals. Cochrane Collaborative Network bias risk assessment was conducted for RCT literature. The evaluation items included: (1) random allocation method; (2) whether the distribution scheme is effectively hidden; (3) Whether it is blind; (4) the integrity of the result data; (5) Selective reporting of research results; (6) Other sources of bias. The evaluation results were divided into three levels: low risk (A), moderate risk (B) and high risk (C). Evaluation risk classification :5 or more risks are low degree risks; 3 to 4 are moderate risk; Below 3 are considered highly risky. Newcastle-ottawa Scale (NOS) was used to evaluate the quality of CCT documents. The score is based on the selection of study population, comparability, and measurement of research exposure factors. The full score is 9, with ≥ 5 indicating high quality research and < 5 indicating low quality research.

Strategy of data synthesis Meta analysis was performed using Review Manager5.4.1 software. Measurement data were represented, and counting data were represented by cases and percentage. The heterogeneity of each group was inferred by testing and P quantitative analysis. If $P \geq 0.1$ and $P < 50\%$, it indicated homogeneity among the groups, and fixed effect model was used for combined analysis. If $P \geq 50\%$, the heterogeneity between groups was large, and the random effects model was used for combined analysis. The OR value is calculated for binary variables, and the WMD value is calculated for continuous variables. 95% CI is calculated for all combined data, and the results are represented by forest maps. All tests were bilateral, with $P < 0.05$, there was no significant publication bias in the outcome indicators of the study.

Subgroup analysis No.

Sensitivity analysis In this study, the sensitivity of each outcome index was analyzed by "one-by-one

elimination method". The results showed that the effective rate of treatment and the combined effect of pain outcome index after treatment had no significant change, and the sensitivity was low, indicating that the analysis results were stable. The sensitivity of the range of motion and the KSS score of the outcome indicators was high, suggesting that the analysis results were not stable, which may be related to the different range of joint motion Angle of the patients included in the study.

Country(ies) involved China.

Keywords Trauma; Stiffness of the joints; Rehabilitation training; Medicine, Chinese tradition; meta-analysis.

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