INPLASY PROTOCOL

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None declared.

Efficacy of intradiscal injection of platelet-rich plasma in the treatment of discogenic low back pain: a single-arm meta-analysis

Peng, B[1]; Wu, WY[2]; Du, LL[3]; Zhang, TX[4]; Xu, BS[5]; Zhang, JQ[6].

Review question / Objective: **We aimed to analyze all published studies using intradiscal injection of platelet-rich plasma for the treatment of discogenic low back pain and summarize the evidence-based medical evidence for the effectiveness of this biologic treatment for discogenic low back pain.**
Eligibility criteria: **1. Recurrent lower back pain with a course of more than 3 months; 2. No lumbar spondylolisthesis, spondylolisthesis and lumbar instability were found in X-ray examination; 3. CT scan showed no lumbar disc herniation, lumbar spinal stenosis and other abnormalities; 4. MRI examination showed that the lesioned intervertebral disc nucleus pulposus showed low signal changes in T2-weighted images; 5. Lumbar intervertebral disc angiography showed rupture of the annulus fibrosus. Induced reproduction of the same lower back pain as in the past. At the same time, the above five points were met, and the diagnosis was discogenic low back pain.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 April 2022 and was last updated on 19 April 2022 (registration number INPLASY2022400108).

INTRODUCTION

Review question / Objective: **We aimed to analyze all published studies using intradiscal injection of platelet-rich plasma for the treatment of discogenic low back pain and summarize the evidence-based medical evidence for the effectiveness of this biologic treatment for discogenic low back pain.**

Condition being studied: **This research is supported by the National Natural Science Foundation of China. The team consists of**

3 medical professors and 6 medical doctors, with strong scientific research ability, and I can complete this work full-time. Paper search, data extraction, and analysis have now been completed.

METHODS

Participant or population: patient with discogenic low back pain.

Intervention: Intradiscal injection of platelet-richplasma.

Comparator: This study was a single-arm meta-analysis, the incidence rate was not controlled, and the pain score was compared before and after treatment.

Study designs to be included: Randomized controlled trial and Prospective single-arm study.

Eligibility criteria: 1. Recurrent lower back pain with a course of more than 3 months; 2. No lumbar spondylolisthesis, spondylolisthesis and lumbar instability were found in X-ray examination; 3. CT scan showed no lumbar disc herniation, lumbar spinal stenosis and other abnormalities; 4. MRI examination showed that the lesioned intervertebral disc nucleus pulposus showed low signal changes in T2-weighted images; 5. Lumbar intervertebral disc angiography showed rupture of the annulus fibrosus. Induced reproduction of the same lower back pain as in the past. At the same time, the above five points were met, and the diagnosis was discogenic low back pain.

Information sources: English databases included PubMed, Embase, Cochrane Library and ClinicalTrials database, while Chinese databases included CBM, CNKI, VIP and WangFang.

Main outcome(s): The incidence of pain scores decreasing more than 30% and 50% from baseline after 1, 2, and 6 months of treatment, and the change in pain score values at 1, 2, and 6 months after treatment compared to baseline. Incidence of more than 30% decrease in ODI score from baseline after 2 months and more than 50% incidence of decrease in ODI score from baseline after 6 months. Compare the incidence of pain scores decreasing by more than 30% or 50% from baseline and the change in pain scores between 1 month and 2 months, 1 month and 6 months, and 2 months and 6 months after treatment. Safety analysis of platelet-rich plasma in the treatment of discogenic low back pain.

Quality assessment / Risk of bias analysis: The quality of randomized controlled trials in this study was assessed using the Cochrane Risk of Bias Assessment Tool and the Jadad Scoring Scale (modified version). Non-randomized controlled trials were evaluated using the Newcastle-Ottawa Scale (NOS)scale.

Strategy of data synthesis: All statistical analyses were performed with Review Manager v.5.4 (The Cochrane Collaboration, Software Update, Oxford, United Kingdom).The incidence rate (odds ratio, OR) was calculated by analyzing dichotomous variables, and the interval estimation was expressed using 95% confidence interval (CI) with the conversion formula: incidence = OR/(1+OR), LL (lower limit) = LLOR/(1+LLOR), and UL (upper limit) = ULOR/(1+ULOR). The standardized mean difference (SMD) was calculated for continuous variables, and interval estimates were expressed using 95% CI, with $P < 0.05$ indicating significant differences. Meta-analysis was performed using a fixed-effects model when $I2 \leq 50\%$ and a random-effects model when $I2 > 50\%$. The test level of Meta-analysis was $\alpha = 0.05$.All statistical analyses were performed with Review Manager v.5.4 (The Cochrane Collaboration, Software Update, Oxford, United Kingdom).

Subgroup analysis: Follow-up time subgroup analysis: three time points of 1, 2 and 6 months were studied. Efficacy subgroup analysis: greater than 30% or 50% improvement in pain scores compared to baseline.

Sensitivity analysis: Sensitivity analysis was performed in the revman software to reflect

the sensitivity of the articles by the change in effect size after the removal of one of the articles.

Language: **Literature retrieval in this study included English and Chinese.**

Country(ies) involved: **China.**

Keywords: **discogenic low back pain; Platelet-rich plasma; Pain score; Intervertebral disc injection.**

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