INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Effectiveness of Different Injection Therapies for Post-stroke Hemiplegic Shoulder Pain: a Protocol for Systematic Review and Network Meta-analysis

Chang, KV[1].

Review question / Objective: **To investigate the comparative effectiveness of various injection therapies for hemiplegic shoulder pain (HSP) at different time points.**
Condition being studied: **HSP in patients with stroke.**
Information sources: **A systemic literature search is conducted in PubMed, EMBASE, and Scopus for clinical studies investigating injection therapies for treatments of HSP. The reference lists or bibliographies of the available review articles and meta-analyses are scrutinized for additional candidates. Case reports, case series, conference abstracts, animal studies or those performed in laboratory settings are excluded from the present meta-analysis.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 August 2021 and was last updated on 03 August 2021 (registration number INPLASY202180010).

INTRODUCTION

Review question / Objective: **To investigate the comparative effectiveness of various injection therapies for hemiplegic shoulder pain (HSP) at different time points.**

Condition being studied: **HSP in patients with stroke.**

METHODS

Search strategy: **A systemic literature search is conducted in PubMed, EMBASE, and Scopus for clinical studies**

investigating injection therapies for treatments of HSP. The reference lists or bibliographies of the available review articles and meta-analyses are scrutinized for additional candidates. Case reports, case series, conference abstracts, animal studies or those performed in laboratory settings are excluded from the present meta-analysis. The combinations of the following keywords are used for literature search, including "stroke", "cerebrovascular disease", "cerebral infarction", "intra-cerebral hemorrhage", "hemiplegia", "hemiparesis", "injection", "nerve block", "corticosteroid", "botulinum toxin", "hyaluronic acid", "shoulder", "upper limb", "pain" and "painful".

Participant or population: Participants with stroke.

Intervention: Different injection therapies.

Comparator: Placebo injection/treatment.

Study designs to be included: Randomized controlled trials, quasi-experimental trials and cohort observational studies.

Eligibility criteria: (1) clinical studies employing any type of injection therapy against HSP in patients with stroke, (2) no limitations on the stroke type and chronicity or on the concomitant therapy after the injections and (3) with at least two arms of injection therapies if a placebo group is not included.

Information sources: A systemic literature search is conducted in PubMed, EMBASE, and Scopus for clinical studies investigating injection therapies for treatments of HSP. The reference lists or bibliographies of the available review articles and meta-analyses are scrutinized for additional candidates. Case reports, case series, conference abstracts, animal studies or those performed in laboratory settings are excluded from the present meta-analysis.

Main outcome(s): The weight mean difference (WMD) on the visual analog scale (VAS) of pain reduction in the fourth-week and between the fourth and twenty-fourth weeks following the intervention.

Quality assessment / Risk of bias analysis: The Cochrane Risk of Bias Tool for randomized controlled trials is utilized for methodological quality appraisal. The inconsistency between the direct and indirect evidence is evaluated by using the loop inconsistency model.

Strategy of data synthesis: Regarding the pairwise meta-analysis, the random effect model is used for data pooling. The Cochrane Q tests and I2 statistic is employed to determine the heterogeneity of direct comparisons and significant heterogeneity is assumed in case of an I2 value >50%. A mixed treatment comparison with a generalized linear mixed model is used for the network meta-analysis. The probability ranking metrics estimated by using the surface under the cumulative ranking (SUCRA) is used to reflect clinically important relative differences on the outcomes. The publication bias is examined by using Egger's regression test and the inspection of the distribution pattern of the effect size on the funnel plot. All the analyses are performed using the statistical software package Stata (StataCorp. 2015. Stata Statistical Software: Release 14. StataCorp LP, College Station, TX, USA), and a p-value of < 0.05 will be considered statistical significance.

Subgroup analysis: Not applicable.

Sensitivity analysis: The sensitivity analysis is performed by excluding the non-randomized controlled trial.

Language: No limitation of languages.

Country(ies) involved: Taiwan.

Keywords: Corticosteroid; Hemiplegic shoulder; Hyaluronic acid; Injection; Rehabilitation.

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