INPLASY PROTOCOL

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Review Stage at time of this submission: Preliminary searches.

Conflicts of interest: None declared.

Which minimally invasive therapy is most effective for the treatment of postherpetic neuralgia? An update meta-analysis

Wen, B[1]; Xu, L[2]; Huang, YG[3].

Review question / Objective: Which minimally invasive therapy is the best choice to alleviate pain for patients suffering from postherpetic neuralgia?

Eligibility criteria: The eligibility criteria are interpreted under the PICOS (P, participants; I, interventions; C, comparison; O, outcomes; S, study design) framework. (1) P: ParticipantsInclusion criteria: Patients suffering from postherpetic neuralgia (the pain lasting more than 3 months after the onset of herpes zoster rash eruption or more than 1 month after the vesicles have healed).Exclusion criteria: 1. Patients who had other neuropathic pain; 2. Patients with acute or subacute zoster-related pain.(2) I: Interventions Inclusion criteria: Interventional treatments applied to PHN patients, as follows: 1) nerve block (including epidural block, intrathecal block, dorsal root ganglion block, intercostal nerve block, paravertebral block, erector spinae plane block);2) subcutaneous injection (including subcutaneous injection of normal saline, local anesthetics, corticosteroids, MeB12 as well as local infiltration);3) stellate ganglion block;4) subcutaneous botulinum toxin type A injection;5) pulsed radiofrequency with or without.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 October 2022 and was last updated on 28 October 2022 (registration number INPLASY2022100114).

INTRODUCTION

Review question / Objective: Which minimally invasive therapy is the best choice to alleviate pain for patients suffering from postherpetic neuralgia?

Condition being studied: Which minimally invasive therapy is the best choice to

alleviate pain for patients suffering from postherpetic neuralgia?

METHODS

Search strategy: Databases including PubMed, Embase, and the Cochrane Library will be systematically searched for relative studies about invasive therapies for PHN treatments. Because our previous version of network meta-analysis had already searched studies from the initial of each database to January 2020. In this study, the search will be limited to literature that was published in English from January 2020 to November 2022. The following combined MeSH terms and their synonyms will be used for the search: "Neuralgia, Postherpetic" and "Postherpetic Neuralgia".

Participant or population: Inclusion criteria: Patients suffering from postherpetic neuralgia (the pain lasting more than 3 months after the onset of herpes zoster rash eruption or more than 1 month after the vesicles have healed).Exclusion criteria: 1. Patients who had other neuropathic pain; 2. Patients with acute or subacute zoster-related pain.

Intervention: Inclusion criteria: Interventional treatments applied to PHN patients, as follows:1) nerve block (including epidural block, intrathecal block, dorsal root ganglion block, intercostal nerve block, paravertebral block, erector spinae plane block);2) subcutaneous injection (including subcutaneous injection of normal saline, local anesthetics, corticosteroids, MeB12 as well as local infiltration);3) stellate ganglion block;4) subcutaneous botulinum toxin type A injection;5) pulsed radiofrequency with or without administration of drug therapy;6) the short term spinal cord stimulation;7) any combination of the above interventions;8) any other reported in the included studies.Exclusion criteria: Studies focusing on destructive methods such as radiofrequency thermocoagulation and chemical neurolysis.

Comparator: nclusion criteria: Another interventional therapy or sham procedure or blank control or basic drug therapy will be used as the control groups.Exclusion criteria: Studies without a clear description of the control group.

Study designs to be included: Randomized controlled clinical trial

Eligibility criteria: The eligibility criteria are interpreted under the PICOS (P, participants; I, interventions; C, comparison; O, outcomes; S, study design) framework. (1) P: ParticipantsInclusion criteria: Patients suffering from postherpetic neuralgia (the pain lasting more than 3 months after the onset of herpes zoster rash eruption or more than 1 month after the vesicles have healed).Exclusion criteria: 1. Patients who had other neuropathic pain; 2. Patients with acute or subacute zoster-related pain.(2) I: InterventionsInclusion criteria: Interventional treatments applied to PHN patients, as follows: 1) nerve block (including epidural block, intrathecal block, dorsal root ganglion block, intercostal nerve block, paravertebral block, erector spinae plane block);2) subcutaneous injection (including subcutaneous injection of normal saline, local anesthetics, corticosteroids, MeB12 as well as local infiltration);3) stellate ganglion block;4) subcutaneous botulinum toxin type A injection;5) pulsed radiofrequency with or without.

Information sources: Databases including PubMed, Embase, and the Cochrane Library will be systematically searched for relative studies about invasive therapies for PHN treatments.

Main outcome(s): The main outcome is the pain reduction after treatments, evaluated by any validated scale of generic or specific self-evaluation (eg, numeric rating scales (NRS) and visual analog scale (VAS). At least one quantitative pain evaluation can be extracted from included studies.

Additional outcome(s): Adverse events from the invasive therapies, such as

edema, bleeding, impaired motor function, or any other reported in the included studies.

Data management: All search results will be exported to EndNote X9 to remove duplicates. Then they will be imported into Covidence (https://www.covidence.org/) for screening and data extraction by two researchers independently. The discrepancy will be resolved by consensus or consulting with another author. Titles and abstracts will be reviewed first to confirm whether studies are related to the theme. Then, full articles will be screened to exclude repeat published articles, and judge which study should be included according to the inclusion and exclusion criteria. The reasons for excluded studies will be recorded. The process of study selection will be displayed in a flow chart. Two researchers will extract the data from included studies to a standardized table, which includes: 1) study information (study identification, study design); 2) demographic data (total number of participants, age, sex, necessary information about PHN, baseline characteristics); 3) treatment protocols (methods, route, drug category, and dosage); 4) outcomes and follow-up times; 4) any complications. The discrepancy will be resolved by consensus or consulting with another author.

Quality assessment / Risk of bias analysis: The quality of the included studies is assessed according to the Revised Cochrane Risk of Bias Tool (RoB 2.0), including the following 5 aspects: bias derived from the randomization process, bias due to deviations from planned interventions, bias due to lack of results data, bias in the measurement of the result and bias in the selection of the reported results. For each aspect, the possible risk of bias judgments will be a low risk of bias, some concerns, and a high risk of bias. Two authors will independently perform the quality assessment. In case of discrepancy, a third author will make the final decision.

Strategy of data synthesis: Pain intensity is the primary outcome analyzed in this study,

and it may be evaluated using different pain scales such as the VAS and NRS. Thus, the standardized mean difference (SMD) is used to compare the relative differences between different groups. For the direct comparison, the results will be described as the SMD and 95% confidence intervals (CIs), and for the indirect comparison and mixed-treatment effect, SMD and 95% credible intervals (CrIs) will be used. The conventional meta-analysis in pairwise will be performed first to compare the relative efficacy between the two treatments. Then, we will perform NMA among all treatments using the Bayesian framework based on the Markov chain–Monte Carlo method, and draw a network evidence plot to display relationships between therapies. We will also perform a rank probability plot to show the efficacy order of all included therapies. The Stata 14.0 (Stata Corp LLC, College Station, TX, USA), and ADDIS (Department of Epidemiology, University Medical Center, Groningen, The Netherlands) will be used to perform this study.

Subgroup analysis: None planned.

Sensitivity analysis: We will perform a sensitivity analysis for each outcome by excluding studies that are at high risk of bias.

Language restriction: In this study, the search will be limited to literature that was published in English.

Country(ies) involved: China.

Keywords: Interventional treatment; postherpetic neuralgia; radiofrequency; paravertebral block; dorsal root ganglion; botulinum toxin; stellate ganglion block; spinal cord stimulation.

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