INPLASY

Comparison of the Treatments for Latrodectism based on Randomized Controlled Trials: A protocol for Bayesian Network Meta Analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Preliminary searches.

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 2024 and was last updated on 20 November 2024.

INTRODUCTION

Review question / Objective Review question / Objective: The objective of this study is to conduct a Bayesian Network Meta Analysis (NMA) to evaluate the different treatments including antivenins available to treat the patients who encountered Latrodectism relative to placebo. This investigation aims to synthesize existing evidence comprehensively and to facilitate clinical decision-making for the preferred approach to treat patients. The ranking order of the treatments using the direct and indirect analysis is an outcome of the objective. The endpoint is based on treatment failure in terms of inability to meet pain relief.

Rationale There has been no Network Meta Analysis, to the best of our knowledge, to know the relative order of the treatment effects due to limited number of studies. However, this evidence synthesis will form the basis for updates over time. Currently the approved antivenoms are produced on equine medium. A first human antidote is now in pipeline and once the results are available for such new drugs are available, the information using Network Meta Analysis would be valuable. For now, we will add treatments for whom results are available in public domain.

Condition being studied Latrodectism; Spider-Bites.

METHODS

Search strategy PubMed search strategy: #1 ("spider bites"[MeSH Terms] OR latrodectism[Text Word]) and #10 (filter applied: trial)
CENTRAL Search Query: #1 ("spider bites"[MeSH Terms] OR latrodectism[Text Word])
ClinicalTrial.gov: #1 ("spider bites" OR “latrodectism").

Participant or population Latrodectism patients, without restrictions on age or sex. If the studies with age group <18 as inclusion criteria form at least 40% of the total number of included studies,

a subgroup analysis based on this age sub-group-based studies will be conducted.

Intervention Antivenins with oral, subcutaneous, intravenous or intramuscular route.

Comparator Placebo.

Study designs to be included Randomized Controlled Trials.

Eligibility criteria Our research question is structured using the PICOS format (Population, Intervention, Comparison, Outcome, Study Design) to determine study eligibility. We will incorporate published randomized controlled trials that assessed treatment failure against Latrodectism. Exclusions will be done for single-blind, non-randomized controlled trials, quasi-experimental studies, observational studies, animal studies, case reports, reviews, editorials, abstracts, and any trials not published in English.

Information sources A literature survey will be conducted across several databases, including PubMed, and The Cochrane Central Register of Controlled Trials (CENTRAL), and ClinicalTrial.gov for pertinent RCTs from their start dates up to December 20, 2024.

Main outcome(s) Treatment failure (not meeting pain relief within 2 hours of administration) or use of rescue medication/re-hospitalization within 24 hours of administration.

Data management Study Selection: Two authors will independently conduct the first-pass screening (FPS) by reviewing the titles and abstracts. The full texts of eligible titles will be downloaded and reviewed independently by the two authors in the second-pass screening (SPS) to determine if the eligibility and endpoint needed for the objectives are met. In case of differences between the two reviewers a common discussion with a third reviewer will be done to come to a conclusion for each relevant case. The systematic review will be performed on Rayyan.ai.

Quality assessment / Risk of bias analysis Risk of Bias assessment will be done via RoB or RoB 2 tool. GRADE approach to rating the certainty of evidence in systematic reviews and other evidence syntheses will be undertaken. GRADEpro GDT tool will be used for assessments.

Strategy of data synthesis All statistical analyses will be performed using R programming language, version R 3.6.0+ or above, to conduct a Bayesian network meta-analysis (NMA). The geMTC package of R will be used for Bayesian Network Meta Analysis and the Frequentist Network Meta Analysis will be done via netmeta package of R.

Subgroup analysis Subgroup analysis will be conducted based using a subset of studies with inclusion criteria of age <18 if they constitute at least 40% of the of the total number of included studies.

Sensitivity analysis A frequentist Network Meta Analysis will be conducted to obtain the results and check the consistency of the results obtained from Bayesian Network Meta Analysis.

Language restriction English.

Country(ies) involved India.

Keywords Latrodectism.

Contributions of each author

Author 1 - Amritendu Bhattacharya - Conceptualized the topic and planned for data collection and analysis. Data curation and extraction. First reviewer. Statistical Analysis. Manuscript draft.
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Author 2 - Revathi Ravilisetty - Statistical Analysis, Referee in case of mismatch in study selection or quality assessment, will act as third reviewer.
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