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Effects of heparin on venom-induced consumption coagulopathy: protocol for a systematic review, meta-analysis, and trial sequential analysis

Lin, YK[1]; Huang, YN[2]; Wang, JH[3].

Corresponding author:
Yun-Kuan Lin

yklin1129@gmail.com

Author Affiliation:
Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Formal screening of search results against eligibility criteria.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202420070

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 February 2024 and was last updated on 17 February 2024.

INTRODUCTION

Review question / Objective How does heparin impact patients with snakebites and venom-induced consumption coagulopathy?

Condition being studied Snakebite with venom-induced consumption coagulopathy.

METHODS

Search strategy Keywords: ((snake coagulopathy) OR (viper coagulopathy) OR (venom coagulopathy) OR (venom induced consumption coagulopathy) OR (snake bite) OR (snakebite) OR (snake envenom*) OR (viper bite) OR (viperbite) OR (viper envenom*)) AND ((heparin) OR (anticoagulant))

Sources: PubMed, Embase, the Cochrane Central Register of Controlled Trials (CENTRAL).

Participant or population Patients with snakebite and venom-induced consumption coagulopathy.

Intervention Unfractionated heparin or low-molecular-weight heparin (LMWH).

Comparator No heparin treatment.

Study designs to be included RCTs.

Eligibility criteria The review will include studies that meet the following criteria: (1) are RCTs; (2) involve patients with snakebites and VICC; (3) employ unfractionated heparin or low-molecular-weight heparin (LMWH) as an intervention; and (4)

compare treatment efficacy with no heparin treatment.

Information sources Sources: PubMed, Embase, the Cochrane Central Register of Controlled Trials (CENTRAL).

Main outcome(s) All-cause mortality.

Additional outcome(s)
(1) resolution of coagulopathy (PT/INR)
(2) cessation of early bleeding
(3) development of clinically relevant bleeding
(4) requirement for renal replacement therapy
(5) hypotension.

Quality assessment / Risk of bias analysis The risk of bias in the RCTs will be appraised using the Cochrane risk-of-bias tool for randomized trials (version 2). Two researchers (YKL and YNH) will independently assess the risk of bias, resolving any disparities through deliberation until a consensus is achieved between them.

Strategy of data synthesis Review Manager Version 5.4 (The Cochrane Collaboration, 2020) will be utilized to conduct the meta-analysis. The statistical heterogeneity will be evaluated by calculating the I^2 statistic. Risk ratios and 95% confidence intervals will be utilized for dichotomous outcomes.
The trial sequential analysis will be conducted using the Trial Sequential Analysis software version 0.9.5.10 beta (Copenhagen Trial Unit, Center for Clinical Intervention Research, Rigshospitalet, Copenhagen, Denmark). The significance levels for Type I and Type II errors will be set at 5% and 20%, respectively. The random-effects model will be applied using the DerSimonian and Laird method.

Subgroup analyses
(1) different snake species
(2) different intervention treatments (unfractionated heparin versus LMWH).

Sensitivity analysis Sensitivity analyses will be performed using the one-study removal method to assess whether there is a statistically significant change in the summary effect size after excluding a specific trial from the study.

Language restriction No language restriction.

Country(ies) involved Taiwan.

Keywords Snakebite; venom-induced consumption coagulopathy; heparin.

Contributions of each author
Author 1 - Yun-Kuan Lin.
Email: yklin1129@gmail.com
Author 2 - Yu-Ning Huang.
Author 3 - Jen-Hung Wang.