INPLASY PROTOCOL

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None declared.

A comparison of regional anesthesia techniques for postoperative analgesia in patients undergoing liver surgery: A systematic review and network meta-analysis

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Review question / Objective: **To investigate the analgesic efficacy and feasibility of different regional analgesia modes in patients undergoing liver surgery.**
Condition being studied: **This study aimed to perform a network-meta analysis to comprehensively compare the analgesic methods for postoperative liver procedures and try to find an optimal method that can serve as a reference in clinical practice.**
Information sources: **We systematically searched PubMed, the Cochrane Library, Web of Science citation index, and Embase from inception to March 2022 for randomized controlled trials (RCTs) meeting the listed inclusion criteria.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 14 May 2022 and was last updated on 14 May 2022 (registration number INPLASY202250090).

INTRODUCTION

Review question / Objective: **To investigate the analgesic efficacy and feasibility of different regional analgesia modes in patients undergoing liver surgery.**

Rationale: **There is no established analgesia mode in liver surgery, and postoperative pain management remains a challenge in these kinds of surgeries. A network-meta analysis can make indirect quantitative comparisons in the absence of direct comparative intervention studies to provide evidence on the comparative**

efficacy of different interventions and determine which is the most promising and the safe regional anesthesia method.

Condition being studied: This study aimed to perform a network-meta analysis to comprehensively compare the analgesic methods for postoperative liver procedures and try to find an optimal method that can serve as a reference in clinical practice.

METHODS

Search strategy: The search strategy was as follows: "Epidural anesthesia", "Erector spine plane block", "Nerve Block", "Paravertebral block", "Transversus abdominis plane block", "Liver surgery". We also searched the grey literature by supplementary hand searching, for the erector spine plane block is a newly regional anesthesia technique firstly introduced in 2016.We searched PubMed, Embase, the Cochrane library and the Web of science to detect all relevant RCTs on investigating the analgesic effects of different regional anesthesia techniques published until March 2022.

Participant or population: Adult patients scheduled with elective liver surgery with ASA grade I-III.

Intervention: Adlut atients who received the included the use of at least one of the following 7 regional anesthesia techniques: epidural analgesia (EA), continuous local anaesthetic infiltration (CLAI), intrathecal morphine (ITM), erector spinae plane block(ESPB), continuous ESPB (CESPB), quadratus lumborum block (QLB), continuous thoracic paravertebral block (CTPVB)7 regional anesthesia techniques, EA.

Comparator: Other analgesic methods.

Study designs to be included: Randomized controlled study.

Eligibility criteria: All published full-article RCTs comparing the analgesic efficacy of different types of regional anaesthesia methods in adult patients undergoing liver surgery were eligible for inclusion.

Information sources: We systematically searched PubMed, the Cochrane Library, Web of Science citation index, and Embase from inception to March 2022 for randomized controlled trials (RCTs) meeting the listed inclusion criteria.

Main outcome(s): The primary outcome was pain scores at rest and movement at 24 and 48 h postoperatively either using a visual analog scale (VAS) or numeric rating scale (NRS).

Additional outcome(s): The secondary outcomes were opioid consumption, postoperative vomiting, and nausea, adverse events, length of hospitalization, and patient satisfaction.

Data management: Two investigators (XX and WW) independently extracted the data. Information was extracted about participant characteristics (age, the proportion of gender, etc.), study design, anesthesia methods, and analgesic efficacy outcomes. The data were extracted from the text, tables, and graphs of each study.

Quality assessment / Risk of bias analysis: The tool based on the Cochrane risk of bias was adopted to evaluate the quality of individual RCTs. The quality was evaluated using the following potential sources of bias: sequence generation, allocation concealment, blinding of participants or outcome assessor, incomplete data, and selective reporting. The methodology for each study was graded as 'high', and 'low.

Strategy of data synthesis: A random-effect model was performed if I2>50%, suggesting the existence of high heterogeneity, whereas if I2≤50%, a fixed-effect model was performed.

Subgroup analysis: Performed for the primary outcomes.

Sensitivity analysis: Sensitivity analyses were performed via the leave-one-out approach to find possible the sources of

heterogeneity and subgroup analyses according to different levels of risk of bias were also performed.

Language: English.

Country(ies) involved: China.

Keywords: Network- meta analysis; regional anesthesia; erector spinae plane block; postoperative analgesia.

Contributions of each author:

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