

INPLASY PROTOCOL

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None declared.

Efficacy and Safety of Dexmedetomidine combined with local anesthetic in Interfascial plane block: A Systematic review and Meta-analysis of Randomized Controlled Trials

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Review question / Objective: (1) RCTs; (2) receive DEX as an adjuvant to fascial plane block in comparison with fascial plane block alone for Postoperative analgesia; Fascial plane block included Erector spinal plane block, Quadratus lumborum block, Transverse abdominal plane block, Thoracolumbar interfascial block, Fascia iliaca block and Serratus anterior plane block. Comparison: Application of equal amount of normal saline as adjuvant of local anesthetics in fascial plane block. Outcome: the primary outcomes of this meta-analysis include: visual analogue scores (VAS, ranging from 0 to 10; 0 corresponding to no pain and 10 representing worst imaginable pain) at 6, 12, 24 and 48 hours postoperatively on resting state. The secondary outcomes of this article include (1) the total rescue analgesic consumption in the 24-hour postoperative period; (2) time of first rescue analgesia within 24 hours after surgery. The adverse events include: Postoperative nausea (PON), Postoperative vomiting (POV), bradycardia, hypotension, respiratory depression. Study design: A Systematic review and Meta-analysis of Randomized Controlled Trials.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 November 2021 and was last updated on 18 November 2021 (registration number INPLASY2021110071).

INTRODUCTION

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analgesia; Fascial plane block included Erector spinal plane block, Quadratus lumborum block, Transverse abdominal plane block, Thoracolumbar interfascial block, Fascia iliaca block and Serratus anterior plane block. Comparison: Application of equal amount of normal

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Rationale: The role of dexmedetomidine as an adjuvant to augment local anaesthetic has been well established and has been studied extensively in intrathecal anaesthesia, but the Efficacy and safety of dexmedetomidine in fascial plane blocks is poorly studied and needs to be further explored.

Condition being studied: During the last decade, the use of Interfascial plane blocks has steadily grown to replace the traditional techniques, such as epidurals or other neuroaxial blocks for postoperative pain relief mainly. The advancement of the technology for ultrasound has made interfascial blocks easy to learn and perform even amongst novice clinicians in regional anesthesia. Dexmedetomidine (DEX) is a highly selective alpha₂-adrenergic agonist with strong sedative, analgesic and anxiolytic effects. The combination of DEX with other sedative and analgesic drugs has a good synergistic effect, not only in reducing the dose of anesthetic drugs, but also in reducing to a large extent the incidence of adverse effects associated with them. Previous studies have focused on the observation of the analgesic and sedative effects of DEX-assisted Intraspinous anesthesia on patients, while little research has been done on the effects of DEX in fascial plane block blocks. Therefore, this study integrates the

effects of dexmedetomidine in different fascial plane block techniques, aiming to investigate the safety and efficacy of DEX in fascial plane blocks and provide a reference for optimizing the involvement of DEX compound local anesthetics in interfascial plane blocks.

METHODS

Search strategy: Based on the PRISMA (preferred Reporting Items for Systematic Reviews and Meta-analyses) Guidelines 15 and the recommendations from the Cochrane Collaboration, a systematic search was performed on pubmed, Embase, the Cochrane library and Chinese databases (CNKI, Wan-fang, vip).

Participant or population: 1) RCTs; (2) receive DEX as an adjuvant to fascial plane block in comparison with fascial plane block alone for Postoperative analgesia; Fascial plane block included Erector spinal plane block, Quadratus lumborum block, Transverse abdominal plane block, Thoracolumbar interfascial block, Fascia iliaca block and Serratus anterior plane block.

Intervention: Receive DEX as an adjuvant to fascial plane block in comparison with fascial plane block alone for Postoperative analgesia; Fascial plane block included Erector spinal plane block, Quadratus lumborum block, Transverse abdominal plane block, Thoracolumbar interfascial block, Fascia iliaca block and Serratus anterior plane block.

Comparator: Application of equal amount of normal saline as adjuvant of local anesthetics in fascial plane block.

Study designs to be included: Randomized Controlled Trials.

Eligibility criteria: Studies were included if they met the following criteria (1) RCTs; (2) receive DEX as an adjuvant to fascial plane block in comparison with fascial plane block alone; (3) the study included DEX group and placebo group, at least;

(4)availability of full-text publication and there were no language restrictions.Studies were excluded if they(1)were abstracts, conference articles and protocols;(2)did not have complete date;(3)DEX was given intravenously in study.

Information sources: Pubmed, Embase, the Cochrane library and Chinese databases (CNKI, Wan-fang, vip).

Main outcome(s): Visual analogue scores.

Additional outcome(s): Total rescue analgesic consumption in the 24-hour postoperative period;time of first rescue analgesia within 24 hours after surgery; The adverse events include: Postoperative nausea (PON), Postoperative vomiting (POV), bradycardia, hypotension, respiratory depression.

Data management: Endnote.

Quality assessment / Risk of bias analysis: The methodological quality of the included RCTs was reviewed by two reviewers (Xu fangsheng and Cui yuanyuan) independently. The Cochrane Collaboration's risk of bias assessment tool was used. They evaluated the quality of each article from seven domains. If there were some disagreements, they discussed the disagreements to reach consensus or the issue was decided by two other reviewers (Li chunyu and Guo jiaing). Finally, the low-bias, high-bias, and unclear judgments were obtained.

Strategy of data synthesis: Strategy of data synthesis: Review Manager 5.3 was used for statistical analysis. In the presence of heterogeneity, a random effects model was chosen to combine the data; in the absence of heterogeneity, a fixed effects model was chosen to combine the data.Total rescue analgesic consumption and time of the first rescue analgesia were expressed by weight mean difference (WMD) and its 95% confidence interval (CI). Dichotomous outcomes were expressed by risk ratio (RR) and its 95%CI.The continuity correction was applied for zero event studies.P value<0.05 was considered

statistically significant. VAS scores at different time after surgery are reported with 99%CI(α corrected= 0.01)because a Bonferroni correction was applied.

Subgroup analysis: Subgroup analysis: We performed subgroup analyses by the remaining pre-specified subgroup:, type of fascial plane block (Erector spinal plane block ,Quadratus lumborum block, Transverse abdominal plane block, Thoracolumbar interfascial block, Fascia iliaca block and Serratus anterior plane block.), type of local anesthetics (Ropivacaine versus Bupivacaine) DEX dose and Concentrations ,anesthesia mode (general anesthesia versus regional anesthesia) et.al.

Sensitivity analysis: Sensitivity analysis was conducted by excluding the study that the quality was rated as "high risk".

Language: Chinese.

Country(ies) involved: China.

Keywords: dexmedetomidine,fascial plane block, Postoperative analgesia.

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