INPLASY PROTOCOL

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None declared.

Effect of intravenous dexmedetomidine on gastrointestinal function recovery after abdominal surgery in adults

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Review question / Objective: **The role of dexmedetomidine intravenous infusion in gastrointestinal function has been a controversial issue, and reviews and meta-analyses of existing clinical randomized controlled studies were conducted to evaluate the effect of Dex on postoperative recovery of gastrointestinal function in patients undergoing abdominal surgery. p: Patients undergoing abdominal surgery. I: Dexmedetomidine. C: Placebo. O: Gastrointestinal function recovery indicators. S:RCT.**

Eligibility criteria: **Inclusion Criteria: (1) The experimental subjects were ASA grade I.~III. patients undergoing abdominal surgery under general anesthesia, regardless of age and gender; There are no restrictions on the type of abdominal surgery.(2) The type of trial study was RCT. (3) The intervention was dexmedetomidine intravenous infusion in the experimental group and placebo or normal saline infusion in the control group. Exclusion Criteria:(1) animal experiments or non-clinical RCTs;(2) there are no expected outcome indicators in the literature;(3) Literature of master's and doctoral theses; (4) Non-Chinese English literature;(5) The literature data is incomplete and cannot be obtained in detail.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 May 2023 and was last updated on 15 May 2023 (registration number INPLASY202350058).

INTRODUCTION

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Condition being studied: With the rapid development of medical technology, the number of surgical procedures performed worldwide has exceeded 200 million every year, and under the huge surgical volume, medical practitioners are paying more and more attention to the prevention and treatment of postoperative complications. Postoperative gastrointestinal dysfunction is a high complication after abdominal surgery, which will cause patients to delay eating after surgery, increase the probability of postoperative infection, and be detrimental to postoperative recovery and increase the number of hospital stays. Nowadays, promoting the recovery of gastrointestinal function as soon as possible has become the core work of postoperative rehabilitation of abdominal surgery. The increase in the use of ERAS in the field of abdominal surgery has led to the proposed perioperative interventions to accelerate the recovery of gastrointestinal function after surgery. Perioperative intravenous dexmedetomidine is one of the most promising options being studied.
Dexmedetomidine acts on α2 adrenergic receptors, can inhibit sympathetic excitation, sedation, analgesia, can be used in the perioperative period can effectively maintain hemodynamic stability, clinically often used for ICU sedation, general anesthesia adjuvant medication, etc.; In recent years, studies have shown that dexmedetomidine also has significant advantages in reducing stress response, anti-inflammatory effect and multi-organ function protection, and has great application potential.
Nowadays, a large number of studies have pointed out that the use of dexmedetomidine in the perioperative period can reduce the incidence and severity of nausea and vomiting after anesthesia surgery, reduce the use of analgesic drugs, improve the quality of sleep after surgery, and help improve the quality of recovery of anesthesia and surgical patients. However, dexmedetomidine is still controversial in promoting the recovery of gastrointestinal function, protecting intestinal barrier function, and alleviating intestinal ischemia-reperfusion injury.
The aim of this review was to determine the effect of intravenous dexmedetomidine infusion on gastrointestinal recovery after abdominal surgery by way of meta-analysis.

METHODS

Search strategy: (Dexmedetomidine OR Dexmedetomidine Hydrochloride) AND(Gastrointestinal function OR Gastrointestinal recovery Gastroenteric function OR Bowel recovery OR Bowel function)AND(Randomized controlled trial OR randomized OR placebo OR random OR RCT OR randomised).

Participant or population: Patients undergoing abdominal surgery.

Intervention: Dextmedetomidine.

Comparator: Dextmedetomidine.

Study designs to be included: RCT.

Eligibility criteria: Inclusion Criteria: (1) The experimental subjects were ASA grade I.~III. patients undergoing abdominal surgery under general anesthesia, regardless of age and gender; There are no restrictions on the type of abdominal surgery.(2) The type of trial study was RCT. (3) The intervention was dexmedetomidine intravenous infusion in the experimental group and placebo or normal saline infusion in the control group. Exclusion Criteria:(1) animal experiments or non-clinical RCTs;(2) there are no expected outcome indicators in the literature;(3) Literature of master's and doctoral theses; (4) Non-Chinese English literature;(5) The literature data is incomplete and cannot be obtained in detail.

Information sources: Systematic literature search was conducted on Scopus, Web of science, the Cochrane Library, Pubmed, Ovid and VIP, Wanfang and China National Knowledge Network （CNKI） database.

Main outcome(s): The primary outcome was time to recovery of gastrointestinal function:1. Time to first exhaust after surgery; 2.Time to first bowel movement after surgery; 3.Time to first eating; 4.Time to recovery of bowel sounds.

Additional outcome(s): Secondary outcomes:1. Length of hospital stay after surgery; 2.Intraoperative remifentanil dosage; 3.Intraoperative sufentanil dosage.

Quality assessment / Risk of bias analysis: Cochrane Tool.

Strategy of data synthesis: The statistical analysis of the enrolled RCT studies was performed using the software RevMan5.4, and the criterion for a significant level of difference was $p<0.05$. For the postoperative exhaust time, the continuous values such as the dosage of remifentanil were used as the effect index, and the 95% confidence interval was calculated.
The size of heterogeneity was assessed by I^2 quantification. If I^2 is 50% or less and $p\geq$ is 0.1 or more, the improvement of heterogeneity between studies is within an acceptable range and meta-analysis can be performed using a fixed-effect model; if I^2 is above 50% and p-value is below 0.1, it indicates large heterogeneity between studies and can only be meta-analysed by random-effects model. If heterogeneity between studies is significant, sensitivity analyses are used to identify sources of heterogeneity to minimize heterogeneity.

Subgroup analysis: Subgroup studies were conducted depending on the type of surgery of the patient, the dose of dexmedetomidine and otherfactors.

Sensitivity analysis: After deleting any of them, the combined results of the remaining documents are not much different from those without deletion, which means that the sensitivity analysis has passed.

Country(ies) involved: China.

Keywords: Dexmedetomidine, Abdominal surgery, Gastrointestinal function recovery.

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