INPLASY

Using a regional block in conjunction with general anesthesia does not alter the oncologic outcome: protocol of a meta-analysis

Corresponding author:
Mikhail Yadgarov

mikhail.yadgarov@gmail.com

Author Affiliation:
Department of Clinical Trials, Federal Scientific and Clinical Center of Reanimatology and Rehabilitation, Moscow, Russia.

Kadantseva, K[1]; Yadgarov, M[2]; Subbotin, V[3]; Berikashvili, L[4]; Akchulpanov, R[5]; Smirnova, A[6]; Kuznetsov, I[7]; Ryzhkov, P[8]; Zolotareva, E[9]; Kuzovlev, A[10]; Likhvantsev, V[11].

ADMINISTRATIVE INFORMATION

INTRODUCTION

Review question / Objective The aim of our study is to evaluate the effectiveness of general anesthesia compared to regional anesthesia, excluding studies that used a combination of inhalational and intravenous anesthetics, in order to more accurately assess the impact of regional anesthesia on recurrence-free and overall survival.
(i) population: adult patients undergoing surgery for cancer under general (inhalational or total intravenous anesthesia) or combined general anesthesia
(ii) intervention/comparator: combined general anesthesia (total intravenous anesthesia + regional anesthesia); combined general anesthesia (inhalation anesthesia + regional anesthesia)
(iii) outcomes: overall survival, disease-free survival
(iv) study design: randomized controlled trials (RCT).

Rationale The heightened focus on metastatic processes as a leading cause of oncological mortality has spurred interest in the role of surgical stress and anesthesia in cancer progression. Recent research has shifted towards the significance of perioperative immunomodulation, highlighting the vulnerability of the perioperative phase for long-term oncological outcomes. Within this context, regional anesthesia has gained popularity for its potential in opioid-sparing effects and enhanced recovery, yet its precise impact on metastatic potential and overall cancer survival remains unclear.

Condition being studied Colorectal cancer, non-small cell lung cancer; breast cancer; prostate cancer; oncological patients of abdominal surgery.

METHODS

Search strategy A systematic search of scientific articles published between 2008 and 2023 was conducted by two independent researchers in the

PubMed, Google Scholar, and Cochrane Central Register of Controlled Trials (CENTRAL) databases.

Participant or population Adult patients undergoing surgery for cancer under general (inhalational or total intravenous anesthesia) or combined general anesthesia (regional anesthesia + total intravenous anesthesia or regional anesthesia + inhalational anesthesia).

Intervention Comparison of groups of total intravenous anesthesia with combined general anesthesia (total intravenous anesthesia + regional anesthesia); inhalation anesthesia with combined general anesthesia (inhalation anesthesia + regional anesthesia).

Comparator Combined general anesthesia (total intravenous anesthesia + regional anesthesia); combined general anesthesia (inhalation anesthesia + regional anesthesia).

Study designs to be included We will include RCTs.

Eligibility criteria Inclusion criteria: adult patients undergoing surgery for cancer under general (inhalational or total intravenous anesthesia) or combined general anesthesiaStudies were excluded if they met one of the following criteria: 1) review articles, case reports or case series; 2) non-randomized studies; 3) no relevant outcomes; 4) cross-comparisons with different types of general anesthesia (eg, total intravenous versus inhalational anesthesia + regional anesthesia; inhalation versus total intravenous anesthesia + regional anesthesia); 5) duplicated publications.

Information sources PubMed, Google Scholar, and Cochrane Central Register of Controlled Trials (CENTRAL) databases.

Main outcome(s) The main study outcomes included:
1) overall survival
2) disease-free survival.

Quality assessment / Risk of bias analysis The internal validity and risk of systematic bias in the included studies will be assessed by two independent researchers in accordance with the latest version of the Cochrane Risk-of-bias tool 2.0 (RoB 2). Discrepancies in assessments were resolved by consensus. Publication bias, which arises from a preference for publishing studies with statistically significant results, was evaluated using Egger's test and through the analysis of funnel plots. The GRADE (Grading of Recommendations Assessment, Development and Evaluation) systematic approach will be employed to assess the quality of evidence for all studied outcomes.

Strategy of data synthesis The meta-analysis will be conducted using STATA 17 software (StataCorp LLC, Texas, USA). For synthesizing results and obtaining a pooled OR, the recommended random-effects model will be used (method: REML, Restricted Maximum Likelihood).

Subgroup analysis We will compare the following groups of patients:
1) total intravenous anesthesia versus combined general anesthesia (total intravenous anesthesia + regional anesthesia)
2) inhalation anesthesia versus combined general anesthesia (inhalation anesthesia + regional anesthesia).

Sensitivity analysis First, separate comparisons will be made for two categories of studies: total intravenous anesthesia versus combined general anesthesia (total intravenous anesthesia + regional anesthesia), and inhalation anesthesia versus combined general anesthesia (inhalation anesthesia + regional anesthesia)
Second, a sequential exclusion method will be used to assess the robustness of the results: each study will be removed from the overall analysis and then reanalyzed.
In addition, survival rates at 1 year, 2, 3, and 5 years will be analyzed separately.

Language restriction No language limitation.

Country(ies) involved Russian Federation.

Keywords metastases, surgical stress, perioperative immunomodulation, general anesthesia, regional anesthesia, oncological outcomes.

Contributions of each author
Author 1 - Kristina Kadantseva - assessed risk of bias, certainty of evidence rating, wrote the paper.
Email: kristina161093@gmail.com
Author 2 - Mikhail Yadgarov - collected the data, contributed data and analysis tools, performed the analysis, assessed risk of bias, certainty of evidence rating, wrote the paper.
Email: mikhail.yadgarov@mail.ru
Author 3 - Valerii Subbotin - revised the manuscript, wrote the paper.
Email: subbotin67@mail.ru
Author 4 - Levan Berikashvili - contributed data and analysis tools, performed the analysis,

assessed risk of bias, certainty of evidence rating, wrote the paper.

Email: levan.berikashvili@mail.ru

Author 5 - Roman Akchulpanov - contributed data and analysis tools, performed the analysis, assessed risk of bias, certainty of evidence rating, wrote the paper.

Email: rom4ik.ak@yandex.ru

Author 6 - Anastasiya Smirnova - collected the data, assessed risk of bias, certainty of evidence rating, wrote the paper.

Email: a.smirnova.msmu@gmail.com

Author 7 - Ivan Kuznetsov - collected the data, assessed risk of bias, certainty of evidence rating, wrote the paper.

Email: ikuznecov@fnkcrr.ru

Author 8 - Pavel Ryzhkov - collected the data, assessed risk of bias, certainty of evidence rating, wrote the paper.

Email: a.pavelhlw@gmail.com

Author 9 - Ekaterina Zolotareva - collected the data, assessed risk of bias, certainty of evidence rating, wrote the paper.

Email: zolotaryova.katerina@yandex.ru

Author 10 - Artem Kuzovlev - collected the data, assessed risk of bias, certainty of evidence rating, wrote the paper.

Email: artem_kuzovlev@fnkcrr.ru

Author 11 - Valery Likhvantsev - conceived and designed the analysis, revised the manuscript, wrote the paper.

Email: lik0704@gmail.com