INPLASY PROTOCOL

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None declared.

Methylprednisolone or dexamethasone? How should we choose to respond to COVID-19? A meta-analysis of randomized controlled trials

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Review question / Objective: **Methylprednisolone or dexamethasone? How should we choose to respond to COVID-19?**
Eligibility criteria: **Inclusion criteria : COVID-19 was diagnosed by chest X-ray or CT images, clinical symptoms, reverse transcription-polymerase chain reaction, and nasopharyngeal swab test. The positive patients were patients with COVID-19 over 18 years old. The treatment group used methylprednisolone ; the control group used dexamethasone, and all included studies were randomized controlled trials.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 March 2023 and was last updated on 20 March 2023 (registration number INPLASY202330073).

INTRODUCTION

Review question / Objective: **Methylprednisolone or dexamethasone? How should we choose to respond to COVID-19?**

Condition being studied: **Methylprednisolone (MP) and dexamethasone (DEXA) are commonly used hormone drugs for the treatment of COVID-19, but which one has better efficacy and safety is inconsistent. In view of the uncertainty of the results of previous studies and meta-analysis on this topic, we conducted a systematic review and meta-analysis of randomized controlled trials to improve the level of evidence and compare the efficacy and safety of MP and DEXA in patients with COVID-19.**

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METHODS

Participant or population: COVID-19 was diagnosed by chest X-ray or CT images, clinical symptoms, reverse transcription-polymerase chain reaction, and nasopharyngeal swab test. The positive patients were patients with COVID-19 over 18 years old.

Intervention: The treatment group used methylprednisolone.

Comparator: The control group used dexamethasone.

Study designs to be included: All included studies were randomized controlled trials.

Eligibility criteria: Inclusion criteria : COVID-19 was diagnosed by chest X-ray or CT images, clinical symptoms, reverse transcription-polymerase chain reaction, and nasopharyngeal swab test. The positive patients were patients with COVID-19 over 18 years old. The treatment group used methylprednisolone ; the control group used dexamethasone, and all included studies were randomized controlled trials.

Information sources: We searched PubMed, Web of Science,Embase, and Cochrane Library to extract randomized clinical trials.

Main outcome(s): Our primary outcome was all-cause mortality.

Additional outcome(s): Secondary outcomes were admission to the intensive care unit,length of hospital stay, mechanical ventilation and adverse events.

Quality assessment / Risk of bias analysis: Two writers independently assessed the quality of each study using the Revised Cochrane risk-of-bias tool for randomized trials (RoB 2). Consensus was used to resolve any disagreements. It consisted of random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other biases.

Strategy of data synthesis: The preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines were followed for conducting the current study.A thorough search of PubMed, Web of Science, Embase, and Cochrane Library from December 31, 2019, to March 13, 2023, turned up all relevant RCTs. The following search terms were used: “COVID-19” or “coronavirus” or“SARS-CoV-2” or “SARS-2” or “2019-nCoV” or “2019 novel coronavirus” and “Methylprednisolone” or “Medrol” or “Urbason” and “Dexamethasone” or “Desameton” or “Decaspray” or “Hexadrol”. The language of searching literature is limited to English only. In order to produce more thorough findings, the references were also manually searched. Two authors independently completed the work. All disputes were settled by a third investigator.

Subgroup analysis: None.

Sensitivity analysis: While we estimated the mean difference (MD) and the 95% CI for continuous data, we used the pooled relative risk (RR) with its 95% confidence interval (CI) for the analysis of dichotomous data. Statistical significance was defined as a P-value of <0.05. The statistic I2 was used to calculate the statistical heterogeneity between studies. When P 50% were used to identify considerable heterogeneity, the random-effects model was applied; otherwise, the fixed-effects model was applied.

Language restriction: English.

Country(ies) involved: China.

Keywords: COVID-19, dexamethasone, methylprednisolone, meta-analysis, randomized controlled trial.

Contributions of each author:
Author 1 - Li Zheng Ning - Li ZN contributed to the design and concept, performed the literature searches, wrote

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the manuscript and critiqued the successive versions, and approved the final manuscript.
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