

INPLASY PROTOCOL

To cite: Qiao et al. Safety and efficacy of glucocorticoids in the treatment of COVID-19: A meta-analysis of randomized control trials. Inplasy protocol 202310074. doi: 10.37766/inplasy2023.1.0074

Safety and efficacy of glucocorticoids in the treatment of COVID-19: A meta-analysis of randomized control trials

Qiao, WX¹; Meng, LH²; Zhang, Y³; Li, D⁴; Chen, JJ⁵; Wang, JY⁶; Xie, D⁷; Xue, XM⁸.

Received: 23 January 2023

Published: 23 January 2023

Corresponding author:
Xiaoming Xue

291412883@qq.com

Author Affiliation:
Shanxi Traditional Chinese
Medicine Hospital.

Support: This work was supported by the Shanxi Province Science and Technology Research (202102130501004).

Review Stage at time of this submission: Data analysis.

Conflicts of interest:
None declared.

Review question / Objective: The objective of this study is to systematically evaluate the efficacy and safety of glucocorticoids in the treatment of COVID-19 compared with placebo or standard therapy.

Condition being studied: Novel coronavirus pneumonia (COVID-19) is a disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). At present, a variety of vaccines have been developed for prevention, but there is no specific drug for this virus, and clinical treatment is still symptomatic. Glucocorticoids are commonly used in clinical medicine, but their safety and effectiveness have been controversial. In recent years, the experimental results of different scholars are also different.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 January 2023 and was last updated on 23 January 2023 (registration number INPLASY202310074).

INTRODUCTION

Review question / Objective: The objective of this study is to systematically evaluate the efficacy and safety of glucocorticoids in the treatment of COVID-19 compared with placebo or standard therapy.

Condition being studied: Novel coronavirus pneumonia (COVID-19) is a disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). At present, a variety of vaccines have been developed for prevention, but there is no specific drug for this virus, and clinical treatment is still

symptomatic. Glucocorticoids are commonly used in clinical medicine, but their safety and effectiveness have been controversial. In recent years, the experimental results of different scholars are also different.

METHODS

Search strategy: We performed a systematic literature search in electronic databases, including PubMed, Embase, the American clinical trial database, and the Chinese database CNKI for eligible studies published until June 30, 2022. The search strategy was based on the following keywords and MeSH terms: “glucocorticoid, prednisolone, dexamethasone, budesonide, hydrocortisone, methylprednisolone, prednisone, COVID-19, SARS-CoV-2, and randomized controlled trials”. The reference lists of the relevant articles were also reviewed to identify potential studies.

Participant or population: The included patients were clinically suspected or laboratory diagnosed as having COVID-19.

Intervention: Glucocorticoids of any type in any form, dose, or duration.

Comparator: Standard treatment or placebo.

Study designs to be included: RCTs.

Eligibility criteria: Other exclusion criteria: Low-quality studies (including less-than-rigorous design and small enrollment) ; studies that repeatedly reported the same cohort of patients.

Information sources: The database included PubMed, Embase, the American clinical trial database, and the Chinese database CNKI. The reference lists of the relevant articles were also reviewed to identify potential studies.

Main outcome(s): The main outcome was all-cause mortality, and subgroup analyses were conducted according to the type of

glucocorticoid drug administered and the severity of the patient’s condition.

Quality assessment / Risk of bias analysis: The Cochrane Risk of Bias Assessment Method and the Modified Jadad Rating Scale were used to assess the risk of bias for the included studies. Disagreements were settled through negotiation or according to the opinions of a third party.

Strategy of data synthesis: Using the software ReviewManage 5.4.1, statistical analysis of the gathered data was performed. The odds ratio (OR) was used as the effect size for the count data and the confidence interval (CI) was set at 95%. The heterogeneity of the included studies was examined using χ^2 test, and if $I^2 < 50\%$ and Paired (P) > 0.1 , the heterogeneity of the included studies was considered not statistically significant, and the fixed-effects model could be used to combine the effect sizes. If $I^2 \geq 50\%$ and/or P < 0.1 , this suggested actual heterogeneity among the included studies. A random-effects model was chosen to combine the effect sizes.

Subgroup analysis: Subgroup analyses were conducted according to the type of glucocorticoid drug administered and the severity of the patient’s condition.

Sensitivity analysis: In software review management 5.4.1, the sensitive situation is reflected by the change of the effect quantity after deleting one of the studies.

Language restriction: There was no language restriction.

Country(ies) involved: China.

Keywords: glucocorticoid; dexamethasone; COVID-19; adverse reaction; severe type; meta-analysis.

Contributions of each author:

Author 1 - Wenxiao Qiao - She conceived the study, analyzed the data, and wrote the manuscript with LM.

Email: 1521181815@qq.com

Author 2 - Lihong Meng - She conceived the study, analyzed the data, and wrote the manuscript with WQ.

Email: 690358546@qq.com

Author 3 - Ye Zhang - She was responsible for the literature screening with DL.

Email: zhangye_2965@163.com

Author 4 - Dian Li - She was responsible for the literature screening with YZ.

Email: 314487881@qq.com

Author 5 - Jingjing Chen - JC extracted the data with JW and DX.

Email: 504970250@qq.com

Author 6 - Jinyun Wang - JW extracted the data with JC and DX.

Email: 1069291002@qq.com

Author 7 - Di Xie - DX extracted the data with JC and JW.

Email: xiedi202212@163.com

Author 8 - Xiaoming Xue - He reviewed the data, guided, and revised the writing of the manuscript.

Email: 291412883@qq.com