INPLASY PROTOCOL

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Effectiveness and safety of different doses of febuxostat compared with allopurinol in the treatment of hyperuricemia: A meta-analysis of randomized controlled trials

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Review question / Objective: **To investigate the effectiveness and safety of different doses of febuxostat compared with allopurinol in the treatment of hyperuricemia.**
Condition being studied: **The most common clinical manifestations of hyperuricemia are gout, which seriously affects the mental and physical health of patients and impacts their quality of life. Hyperuricemia can induce many major diseases like coronary heart disease, myocardial infarction, diabetes, hyperlipidemia, metabolic syndrome, and chronic kidney disease. Most patients need long-term or even lifelong treatment with urate-lowering drugs; however, long-term use of those drugs has certain side effects. Therefore, it is of great significance both for clinical practices and public health to actively seek safe and effective strategies to prevent and treat high levels of uric acid.**

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INTRODUCTION

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hyperlipidemia, metabolic syndrome, and chronic kidney disease. Most patients need long-term or even lifelong treatment with urate-lowering drugs; however, long-term use of those drugs has certain side effects. Therefore, it is of great significance both for clinical practices and public health to actively seek safe and effective strategies to prevent and treat high levels of uric acid.

METHODS

Participant or population: Patients with hyperlipidemia (serum uric acid ≥ 405 μmol/L (6.8 mg/dL), age ≥18 years old).

Intervention: Febuxostat.

Comparator: Allopurinol.

Study designs to be included: Randomized controlled studies

Eligibility criteria: Patients with hyperlipidemia (serum uric acid ≥ 405 μmol/L (6.8 mg/dL), age ≥18 years old).

Information sources: The Cochrane Library, Embase, and PubMed databases.

Main outcome(s): Uric acid control rate, the incidence of gout, incidence of serious adverse reactions, and incidence of adverse cardiovascular reactions.

Quality assessment / Risk of bias analysis: Two researchers assessed the risk of bias across all studies, independently, and cross-validated the results, then resolved disagreements through negotiation. The quality of the included RCTs was determined with the risk of bias assessment tool recommended by Cochrane Handbook of Systematic Reviewers 5.3 using the following seven aspects: (1) Method of randomization; (2) Concealment of allocation scheme; (3) Double blinding parameters of experimenters and participants; (4) Blinding assessment of the results; (5) Completeness of the resulting data; (6) Selective reporting of results; (7) other sources of bias; and every index was divided into “low risk of bias”, “unclear”, and “high risk of bias” .

Strategy of data synthesis: The present meta-analysis was conducted using the RevMan 5.3 software offered by Cochrane Collaboration. The Relative risk ratio (RR) was used as the effect size for dichotomous variables, and their pooled effect size and its 95% Confidence Interval (CI) were also calculated. Heterogeneity noted across all study results was evaluated using the $\chi 2$ test, and the size of heterogeneity was quantitatively determined in combination with I2. If there was no statistical heterogeneity across the study results ($P>0.10$, $I2\leq 50\%$), a fixed-effect model was used for the meta-analysis. However, when there was statistical heterogeneity across the study results ($I2>50\%$), a random-effect model was used for the meta-analysis.

Subgroup analysis: Only the RCTs with considerable clinical heterogeneity were subjected to subgroup analysis.

Sensitivity analysis: Only the RCTs with considerable clinical heterogeneity were subjected to sensitivity analysis.

Country(ies) involved: China.

Keywords: febuxostat; allopurinol; hyperuricemia; meta-analysis.

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