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Anti-hypertensive drugs for hyperuricemia: a systematic review and network meta-analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 October 2023 and was last updated on 18 October 2023.

INTRODUCTION

Review question / Objective To compare and rank antihypertensive agents based on their uric acid-lowering effects in hypertensive patients with hyperuricemia.

Rationale Hypertensive patients with hyperuricemia almost always improve with the use of antihypertensive agents; however, the optimal antihypertensive agent for hypertensive patients with hyperuricemia remains unclear.

Condition being studied A previous systematic review identified 31 randomized controlled trials (RCTs) to assess the effects of losartan in hypertensive patients with hyperuricemia and determined that losartan is superior to other antihypertensive agents for the reduction of serum uric acid and should be recommended for hypertensive patients with hyperuricemia in clinical practice. However, the therapeutic effects of

antihypertensive agents on hyperuricemia have not been systematically compared or ranked based on direct or indirect evidence.

METHODS

Search strategy Antihypertensive and (“uric acid” or hyperuricemia or urate) and “randomized controlled trials”.

Participant or population All of the included patients aged 18.0 years or greater and diagnosed with hypertension and hyperuricemia.

Intervention Allisartan, amlodipine, benazepril, candesartan, captopril, enalapril, felodipine, fosinopril, irbesartan, lisinopril, losartan, nifedipine, perindopril, telmisartan, valsartan, irbesartan plus amlodipine, irbesartan plus hydrochlorothiazide (HCTZ), irbesartan plus nifedipine, losartan plus amlodipine, losartan plus nifedipine, valsartan plus amlodipine, and valsartan plus nifedipine.

Comparator Allisartan, amlodipine, benazepril, candesartan, captopril, enalapril, felodipine, fosinopril, irbesartan, lisinopril, losartan, nifedipine, perindopril, telmisartan, valsartan, irbesartan plus amlodipine, irbesartan plus hydrochlorothiazide (HCTZ), irbesartan plus nifedipine, losartan plus amlodipine, losartan plus nifedipine, valsartan plus amlodipine, and valsartan plus nifedipine.

Study designs to be included Randomized controlled trials.

Eligibility criteria (1) all of the included patients aged 18.0 years or greater and diagnosed with hypertension and hyperuricemia (patients); (2) allisartan, amlodipine, benazepril, candesartan, captopril, enalapril, felodipine, fosinopril, irbesartan, lisinopril, losartan, nifedipine, perindopril, telmisartan, valsartan, irbesartan plus amlodipine, irbesartan plus hydrochlorothiazide (HCTZ), irbesartan plus nifedipine, losartan plus amlodipine, losartan plus nifedipine, valsartan plus amlodipine, and valsartan plus nifedipine (intervention and control); (3) the changes of uric acid with effective rate defined as $\geq 10\%$ lowering in uric acid level (outcomes); (4) an RCT design (study design).

Information sources PubMed, EmBase, the Cochrane library, Chinese National Knowledge Infrastructure, and Wanfang.

Main outcome(s) The changes of uric acid with effective rate defined as $\geq 10\%$ lowering in uric acid level.

Quality assessment / Risk of bias analysis Risk of bias described by the Cochrane Collaboration based on seven domains that included random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other bias.

Strategy of data synthesis To compare and rank various antihypertensive agents in hypertensive patients with hyperuricemia, a network meta-analysis was performed based on indirect and mixed comparisons, and a loop-specific approach was used to assess the differences between direct and indirect estimates for a specific comparison.

Subgroup analysis Not applicable.

Sensitivity analysis Not applicable.

Language restriction No restriction.

Country(ies) involved China.

Keywords antihypertensive drugs; hyperuricemia; systematic review; network meta-analysis.

Contributions of each author

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