INPLASY PROTOCOL

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None declared.

Meta-analysis of the efficacy of aliskiren in the treatment of hypertension and its effect on angiotensin II levels

Ge, SK[1]; Zhang, XY[2].

Review question / Objective: **P: Hypertension; I: Aliskiren therapy; C: Angiotensin-converting enzyme (ACE) inhibitors; O: Systolic blood pressure, diastolic blood pressure, angiotensin II levels; S: Randomized controlled trial.**
Condition being studied: **Primary hypertension, also known as hypertensive disorders, is the most important risk factor for cardiovascular and cerebrovascular diseases. The pathogenesis of hypertension includes neural mechanisms, renal mechanisms, hormonal mechanisms, vascular mechanisms, and insulin resistance. Among them, the hormonal mechanism refers to the excessive activation of renin-angiotensin-aldosterone system (RAAS) leading to a large increase of angiotensin II (ATII). AT(II) thus causes the contraction of small arterial smooth muscle, stimulates the secretion of aldosterone from the adrenal cortical bulbous zone, and increases the secretion of norepinephrine through positive feedback from the presynaptic membrane of sympathetic nerve endings, thus increasing blood pressure. Angiotensin II plays an important role in the pathophysiology of many diseases, such as hypertension, heart failure, chronic kidney disease, and cardiovascular disease. Therefore, blocking the RAAS pathway can be an effective intervention in the development of these diseases. Aliskiren is the first non-peptide renin inhibitor and the only renin inhibitor currently in clinical use. Aliskiren is indicated in all types of hypertension and it directly reduces plasma renin activity. Aliskiren is highly selective for natural angiotensinogen, and directly inhibits renin to reduce renin activity and angiotensin I and II levels.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 April 2022 and was last updated on 16 April 2022 (registration number INPLASY202240093).

INTRODUCTION

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METHODS

Search strategy: ("Hypertension"[MeSH Terms] OR ("Hypertension"[MeSH Terms] OR "Hypertension"[All Fields] OR ("blood"[All Fields] AND "pressure"[All Fields] AND "high"[All Fields]) OR "blood pressure high"[All Fields] OR ("Hypertension"[MeSH Terms] OR "Hypertension"[All Fields] OR ("blood"[All Fields] AND "pressures"[All Fields] AND "high"[All Fields]) OR "blood pressures high"[All Fields]) OR ("Hypertension"[MeSH Terms] OR "Hypertension"[All Fields] OR ("high"[All Fields] AND "blood"[All Fields] AND "pressure"[All Fields]) OR "high blood pressure"[All Fields]) OR ("Hypertension"[MeSH Terms] OR "Hypertension"[All Fields] OR ("high"[All Fields] AND "blood"[All Fields] AND "pressures"[All Fields]) OR "high blood pressures"[All Fields]))) AND ("aliskiren"[Supplementary Concept] OR ("aliskiren"[Supplementary Concept] OR "aliskiren"[All Fields] OR "rasilez"[All Fields] OR ("aliskiren"[Supplementary Concept] OR "aliskiren"[All Fields] OR "tekturna"[All Fields] OR "hydrochlorothiazid"[All Fields] OR "hydrochlorothiazide"[MeSH Terms] OR "hydrochlorothiazide"[All Fields]) OR ("aliskiren"[Supplementary Concept] OR "aliskiren"[All Fields]) OR ("aliskiren"[Supplementary Concept] OR "aliskiren"[All Fields] OR "cgp060536b"[All Fields]) OR ("aliskiren"[Supplementary Concept] OR "aliskiren"[All Fields]) OR ("aliskiren"[Supplementary Concept] OR "aliskiren"[All Fields] OR "spp100"[All Fields]))) AND ("randomized controlled trial"[Publication Type] OR "randomized"[Title/Abstract] OR "placebo"[Title/Abstract]).

Participant or population: Hypertensive patients.

Intervention: Aliskiren treatment of hypertension.

Comparator: Angiotensin-converting enzyme (ACE) inhibitors for hypertension.

Study designs to be included: RCT.

Eligibility criteria: Inclusion criteria: A Patients with hypertension; B Randomized controlled trial; C Alegilen and ACEI monotherapy should be compared, which can provide specific values of diastolic blood pressure (SDP), systolic blood pressure (SBP) and angiotensin II; D complete data; E The dosage is unlimited. Exclusion criteria: A There is no data that can be extracted and analyzed in the study; B duplicate literature; [C] experiments on animals [D] treatment of other diseases with alighiran.

Information sources: A computerized search was conducted for the results of

randomized controlled trials using aliskiren for hypertension and non-aliskiren for hypertension published in SinoMed, CNKI, WANFANG DATA,VIP, China Clinical Trials, PubMed, Embase, Web of science, Cochrone library, Clinical Trials between January 2010 and January 2022.

Main outcome(s): A total of 3 randomized controlled trials involving 234 patients were included in this study. The results of the study showed that: systolic blood pressure (SBP):WMD -2.82; 95% CI (-6.188 to 0.548), diastolic blood pressure (DBP):WMD -1.237; 95% CI (-4.253 to 1.779) there was no statistical difference between the two, blood angiotensin level was 56.96 with 95% confidence interval after the use of agiletron alone (49.03 to 64.89) and blood angiotensin II levels were 63.62, 95% confidence interval (32.25 to 94.98) after ACEI class antihypertensive agents alone.

Quality assessment / Risk of bias analysis: The Cochrane tools.

Strategy of data synthesis: There is heterogeneity in the selection of fixed effects combined data. If heterogeneity exists, first investigate the source of heterogeneity and then select a reasonable way to merge. For example, if the source of heterogeneity is statistical heterogeneity, random effect is selected to merge.

Subgroup analysis: Subgroup analysis based on interventions, subgroup 1: aliskiren, subgroup 2: angiotensin-converting enzyme inhibitors.

Sensitivity analysis: Whether the results of merging the data of other literature after deleting the data of any of them deviate significantly from the original data.

Country(ies) involved: China.

Keywords: aliskiren, hypertension, renin inhibitor, angiotensin-converting enzyme inhibitor, angiotensin II.

Contributions of each author:
Author 1 - Ge ShuKe.
Author 2 - Zhang XinYing.