INPLASY PROTOCOL

To cite: Zhang et al. Comparison of the antihypertensive efficacy of morning and bedtime dosing on reducing morning blood pressure surge: A protocol for systemic review and meta analysis. Inplasy protocol 2020110126. doi: 10.37766/inplasy2020.11.0126

Received: 28 November 2020

Published: 28 November 2020

Corresponding author:
Chuanhua Yang

yang_chuanhua@hotmail.com

Author Affiliation:
Affiliated Hospital of Shandong University of Traditional Chinese Medicine

Support: **'Taishan Scholar' Construction.**

Review Stage at time of this submission: **The review has not yet started.**

Conflicts of interest:
The authors declare that they have no conflicts of interest.

Comparison of the antihypertensive efficacy of morning and bedtime dosing on reducing morning blood pressure surge: A protocol for systemic review and meta analysis

Zhang, P[1]; Jin, M[2]; Song, X[3]; Jiang, Y[4]; Yang, C[5].

Review question / Objective: **Comparison of the antihypertensive efficacy of morning and bedtime dosing on reducing morning blood pressure surge.**
Condition being studied: **It is well-known that morning blood pressure surge increases the risk of myocardial events in the first several hours, post-awakening. This meta-analysis was performed to compare the antihypertensive efficacy of morning and bedtime dosing on decreasing morning blood pressure surge.**
Information sources: **The Literature search was performed in Pubmed, Embase, Cochrane and ISI Web of Science.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 November 2020 and was last updated on 04 December 2020 (registration number INPLASY2020110126).

INTRODUCTION

Review question / Objective: **Comparison of the antihypertensive efficacy of morning and bedtime dosing on reducing morning blood pressure surge**

Condition being studied: **It is well-known that morning blood pressure surge increases the risk of myocardial events in the first several hours, post-awakening. This meta-analysis was performed to compare the antihypertensive efficacy of**

morning and bedtime dosing on decreasing morning blood pressure surge.

METHODS

Participant or population: Adult patients who satisfied diagnosis of hypertension using office measurements of blood pressure (SBP ≥ 140 mmHg or DBP ≥ 90 mmHg), including essential hypertension and secondary hypertension.

Intervention: Intervention was defined as one or more anti-hypertensive drugs administered at bedtime (from 5:00 p.m. to 12:00 midnight).

Comparator: The control group was matched to the experimental group by drug and dose but with a morning regimen or in awaking time (from 6:00 a.m. to 12:00 noon).

Study designs to be included: Experimental trials with at least 6 weeks' treatment duration of antihypertensive drugs (angiotensin-converting enzyme inhibitors, calcium channel blockers, beta-blockers, diuretics, angiotensin receptor blockers, and alpha-blockers).

Eligibility criteria: 1) Adult patients who satisfied diagnosis of hypertension using office measurements of blood pressure (SBP ≥ 140 mmHg or DBP ≥ 90 mmHg)13, including essential hypertension and secondary hypertension; 2) Experimental trials with at least 6 weeks' treatment duration of antihypertensive drugs (angiotensin-converting enzyme inhibitors, calcium channel blockers, beta-blockers, diuretics, angiotensin receptor blockers, and alpha-blockers); 3) Intervention was defined as one or more anti-hypertensive drugs administered at bedtime (from 5:00 p.m. to 12:00 midnight), the control group was matched to the experimental group by drug and dose but with a morning regimen or in awaking time (from 6:00 a.m. to 12:00 noon); 4) The pre- and post-treatment SBP and DBP of each patient were measured by ABPM, which is now the gold standard measurement and the most cost-effective strategy for diagnosing hypertension, evaluating true BP level.

Information sources: The Literature search was performed in Pubmed, Embase, Cochrane and ISI Web of Science.

Main outcome(s): The morning blood pressure surge:SBP and DBP.

Quality assessment / Risk of bias analysis: Six criteria were applied as follows: 1) selection bias (random-sequence generation and allocation concealment); 2) performance bias (blinding of participants and personnel); 3) detection bias (blinding of outcome assessment); 4) attrition bias (incomplete outcome data); 5) reporting bias (selective reporting); 6) other bias. There were three potential bias judgments: 1) low risk; 2) high risk; 3) unclear risk. A study was rated as having an unclear risk when insufficient details were reported regarding the methods and outcome, the risk of bias was unknown, a metric was not relevant to the study, particularly for assessing blinding and incomplete outcome data, or when the outcome assessed by the metric had not been measured in the study.

Strategy of data synthesis: The following search terms: Antihypertensive-drugs, Antihypertensive, Antihypertensive effect, Antihypertensive treatment, morning, awakening, blood pressure, Blood Pressure Monitoring, Ambulatory, bedtime, without imposed language restrictions.

Subgroup analysis: When there is heterogeneity between research results, we will conduct a comprehensive and systematic analysis of the reasons for heterogeneity and carry out hierarchical treatment according to different sources of hetero- geneity. If it is due to the variation between studies, the intervention measures are consistent, and the research objects come from different populations. The following aspects will be used: age, course of the disease, gender.

Sensibility analysis: Statistical heterogeneity among studies was

assessed using I2 and Q test statistic. Mild, moderate, and severe heterogeneity were defined by I2 values of 25%, 50%, and 75%, respectively. Sensitivity analysis was used to determine whether the included literature had a significant impact on the stability of the study.

Country(ies) involved: China.

Keywords: Hypertension; Antihypertensive drugs; Bedtime; Morning blood pressure surge; Meta-analysis.

Contributions of each author:
Author 1 - Peng Zhang.
Author 2 - Meiying Jin.
Author 3 - Xuyu Song.
Author 4 - Yuehua Jiang.
Author 5 - Chuanhua Yang.