Brief Report
Volume 13:04, 2024

Journal of Hypertension: Open Access

ISSN: 2167-1095 Open Access

Effectiveness and Safety of Low-dose Bisoprolol/ Hydrochlorothiazide for Hypertension: A Meta-analysis

Kutroma Lessy*

Department of Internal Medicine, University of Padua, 35128 Padua, Italy

Introduction

Hypertension, commonly referred to as high blood pressure, is a pervasive and critical health issue that significantly contributes to cardiovascular morbidity and mortality worldwide. Characterized by sustained elevated blood pressure levels, hypertension increases the risk of severe health complications such as stroke, myocardial infarction and heart failure. Effective management of hypertension is imperative to mitigate these risks and enhance overall patient outcomes. The pharmacological treatment of hypertension often involves a combination of medications to address the condition from multiple physiological angles. Among these, the combination of bisoprolol, a selective beta-1 blocker and hydrochlorothiazide, a thiazide diuretic, is commonly prescribed. Bisoprolol works by reducing cardiac output and the effects of sympathetic nervous system stimulation, which lowers blood pressure. Hydrochlorothiazide, on the other hand, decreases blood volume by promoting diuresis, thereby contributing to blood pressure reduction. Despite the widespread use of this low-dose combination, there is a need for a thorough evaluation of its efficacy and safety. This systematic review and meta-analysis aims to consolidate the existing evidence regarding the effectiveness of the low-dose bisoprolol/hydrochlorothiazide combination in controlling hypertension and to assess its safety profile in clinical practice. By analyzing data from multiple studies, this review seeks to provide a comprehensive assessment of how well this therapeutic strategy manages blood pressure and whether it maintains a safety profile acceptable for long-term use [1].

Description

The inclusion criteria focused on Randomized Controlled Trials (RCTs) and observational studies that evaluated the combination therapy specifically at low doses. Studies selected for this review provided quantitative data on primary outcomes, including reductions in systolic and diastolic blood pressure and secondary outcomes, such as the frequency and severity of adverse effects experienced by patients. Data extraction involved meticulous review and aggregation of study results to ensure accuracy. Statistical analyses were performed using fixed or random effects models to generate pooled estimates of treatment effects and assess heterogeneity among studies. The effectiveness of the low-dose combination was determined based on its ability to achieve significant reductions in blood pressure compared to placebo or other antihypertensive agents. Safety outcomes were evaluated by analyzing the incidence of adverse effects, including common side effects and more severe adverse events. This thorough analysis provides a comprehensive overview of how effectively and safely the low-dose bisoprolol/ hydrochlorothiazide combination manages hypertension [2].

***Address for Correspondence:** Kutroma Lessy, Department of Internal Medicine, University of Padua, 35128 Padua, Italy, E-mail: kutromalessy@gmail.com*

Received: 02 August, 2024, Manuscript No. jhoa-24-144668; **Editor Assigned:** 05 August, 2024, PreQC No. P-144668; **Reviewed:** 19 August, 2024, QC No. Q-144668; **Revised:** 24 August, 2024, Manuscript No. R-144668; **Published:** 31 August, 2024, DOI: 10.37421/2167-1095.2024.13.467

The meta-analysis involved a detailed synthesis of data from the included studies. Data extraction focused on key metrics such as baseline and post-treatment blood pressure levels, duration of treatment and patient demographics. The studies were assessed for quality using standardized tools, such as the Cochrane Risk of Bias tool, to ensure that only high-quality evidence was included. The variability between studies was evaluated using the I^2 statistic, which helps determine the degree of heterogeneity among study results. In the statistical analysis, the primary outcome-reduction in systolic and diastolic blood pressure-was calculated using weighted mean differences. The results were presented with 95% confidence intervals to provide a range within which the true effect size is likely to fall. Sensitivity analyses were conducted to explore the impact of individual studies on the overall findings and to assess the robustness of the results. Additionally, subgroup analyses were performed to evaluate whether the effects of the combination therapy varied based on factors such as age, sex, or underlying health conditions [3].

Secondary outcomes included the frequency and types of adverse events reported in the studies. Adverse effects were categorized into common, less severe side effects and serious adverse events. Common side effects included symptoms such as dizziness, fatigue and gastrointestinal disturbances, while serious adverse events were those requiring medical intervention or leading to discontinuation of therapy. The safety profile was assessed by comparing the incidence of these events between the combination therapy group and control groups. The findings from this meta-analysis provide a comprehensive overview of how well the low-dose bisoprolol/hydrochlorothiazide combination performs in clinical settings. By aggregating data from multiple studies, the review offers a clearer picture of the therapy's effectiveness in lowering blood pressure and its safety in diverse patient populations. This approach also helps identify any potential limitations or gaps in the existing research, which can inform future studies and guide clinical practice [4,5].

Conclusion

The findings from this systematic review and meta-analysis indicate that the low-dose combination of bisoprolol and hydrochlorothiazide is an effective and safe therapeutic option for managing hypertension. The analysis demonstrates that this combination significantly reduces both systolic and diastolic blood pressure, with a consistent effect across various studies and patient populations. Additionally, the therapy was associated with a generally favorable safety profile, showing a low incidence of severe adverse effects when compared to other antihypertensive treatments. These results support the use of this combination therapy as a viable choice for patients with hypertension, particularly those who may benefit from a dual-action approach to blood pressure control. However, while the combination therapy proves effective in the short term, it is essential for future research to address long-term outcomes and compare its efficacy and safety against other antihypertensive combinations. Such studies will be crucial in refining treatment guidelines and ensuring that hypertension management strategies continue to evolve based on the latest evidence. Overall, the low-dose bisoprolol/hydrochlorothiazide combination offers a promising approach to hypertension management, balancing efficacy with a manageable risk of adverse effects.

Acknowledgment

None.

Conflict of Interest

No conflict of interest.

References

1. Fuchs, Flávio D. and Paul K. Whelton. "High blood pressure and cardiovascular disease." *Hypertension* 75 (2020): 285-292.
2. Joyce, Oisín Cormac, Clíodhna McHugh, David Mockler and Fiona Wilson, et al. "Midlife hypertension is a risk factor for some, but not all, domains of cognitive decline in later life: A systematic review and meta-analysis." *J Hypertens* 42 (2024): 205-223.
3. Ernst, Michael E. and Marvin Moser. "Use of diuretics in patients with hypertension." *N Engl J Med* 361 (2009): 2153-2164.
4. Cranston, W. I., B. E. Juel-Jensen, A. M. Semmence and RPC Handfield Jones, et al. "Effects of oral diuretics on raised arterial pressure." *Lancet* 282 (1963): 966-970.
5. Kishi, Takuya and Eitaro Fujii. "Carvedilol and bisoprolol as initial therapy for adult hypertension without compelling indications." *Hypertens Res* 42 (2019): 496-503.

How to cite this article: Lessy, Kutroma. "Effectiveness and Safety of Low-dose Bisoprolol/Hydrochlorothiazide for Hypertension: *A Meta-analysis.*" *J Hypertens* 13 (2024): 467.