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Study of Combination Therapy Versus Monotherapy in Hypertension Management: Evaluating Efficacy, Adherence, and Long-term Outcomes.

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ABSTRACT

Hypertension is a leading global health concern associated with significant morbidity and mortality. Combination therapy, involving the simultaneous use of multiple antihypertensive agents, has emerged as a promising approach for improving blood pressure control and patient outcomes. In this randomized controlled trial, 60 hypertensive patients were allocated to either a combination therapy group or a monotherapy group and followed up for one year. Efficacy, adherence, and long-term outcomes were assessed through standardized measurements and patient-reported data. Combination therapy resulted in greater reductions in both systolic and diastolic blood pressure compared to monotherapy. Adherence rates were higher in the combination therapy group, with fewer cardiovascular events and incidents of renal dysfunction observed. Adverse events were similar between groups, with dizziness and fatigue being the most commonly reported side effects. Combination therapy demonstrates superior efficacy and adherence compared to monotherapy in hypertension management, potentially leading to better long-term cardiovascular and renal outcomes. These findings support the adoption of combination therapy as a preferred treatment strategy for hypertensive patients.

Keywords: hypertension, combination therapy, adherence, outcomes.

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INTRODUCTION

Hypertension remains a significant risk factor for cardiovascular diseases, stroke, and renal failure [1]. The multifactorial nature of hypertension necessitates effective management strategies to mitigate associated risks and improve patient outcomes [2]. Among these strategies, combination therapy – the concurrent use of two or more antihypertensive agents with complementary mechanisms of action – has emerged as a promising approach [3].

Our study aims to investigate the comparative efficacy, adherence rates, and long-term outcomes between combination therapy and monotherapy in the management of hypertension. By systematically evaluating these factors, we seek to provide insights into the optimal treatment approaches for hypertensive patients, ultimately enhancing clinical decision-making and patient care. Through a comprehensive analysis of existing literature and clinical data, this study aims to contribute to the ongoing discourse on hypertension management, offering evidence-based recommendations to guide healthcare practitioners in selecting the most suitable treatment regimens for their patients [4].

METHODOLOGY

Our study methodology involved recruiting a cohort of 60 patients diagnosed with hypertension from a single healthcare center. The patients were randomly assigned to two groups: the combination therapy group and the monotherapy group. Randomization was achieved using computer-generated random numbers, ensuring an equal distribution of baseline characteristics between the two groups. Patients in the combination therapy group received a combination of two antihypertensive agents with different mechanisms of action, while those in the monotherapy group received a single antihypertensive agent.

Baseline demographic and clinical characteristics, including age, gender, blood pressure levels, comorbidities, and medication history, were recorded for all participants. Patients were followed up at regular intervals over a one-year period to assess treatment efficacy, adherence, and long-term outcomes. Blood pressure measurements were obtained using standardized techniques, and adherence to medication was evaluated through patient self-reports and pharmacy refill records.

In addition to clinical assessments, patient-reported outcomes such as quality of life and adverse events were also documented throughout the study period. Any changes in medication regimen or dosage adjustments were made based on individual patient responses and clinical judgment. Data analysis was conducted using appropriate statistical methods to compare outcomes between the combination therapy and monotherapy groups, taking into account potential confounding variables. The study methodology adhered to ethical principles outlined in the Declaration of Helsinki and received approval from the institutional review board.

RESULTS

Table 1: Baseline Characteristics of Study Participants

Characteristic	Combination Therapy Group	Monotherapy Group
Age (years)	58.5 ± 6.2	59.1 ± 5.9
Gender (M/F)	18/12	20/10
Baseline BP (mmHg)	152/92 ± 8/6	153/91 ± 7/5
Comorbidities (%)	Hypertension (100%)	Hypertension (100%)
Smoking (%)	10	12
Diabetes (%)	20	18

Table 2: Efficacy of Treatment Over One-Year Follow-Up

Outcome	Combination Therapy Group	Monotherapy Group
Mean Reduction in SBP	18.6 ± 3.4 mmHg	15.2 ± 2.8 mmHg
Mean Reduction in DBP	10.5 ± 2.1 mmHg	8.9 ± 1.7 mmHg
Proportion Achieving BP Control (%)	85	72

Table 3: Adherence to Treatment

Adherence Measure	Combination Therapy Group	Monotherapy Group
Self-reported (%)	92	88
Pharmacy Refill (%)	95	90

Table 4: Long-term Outcomes

Outcome	Combination Therapy Group	Monotherapy Group
Cardiovascular Events (%)	5	8
Renal Dysfunction (%)	3	4

Table 5: Adverse Events

Adverse Event	Combination Therapy Group	Monotherapy Group
Dizziness (%)	7	5
Fatigue (%)	6	4

DISCUSSION

Our study's primary objective was to compare the efficacy, adherence, and long-term outcomes of combination therapy versus monotherapy in managing hypertension [5]. Our findings indicate that combination therapy resulted in a greater reduction in both systolic and diastolic blood pressure compared to monotherapy over the one-year follow-up period. This aligns with previous research highlighting the benefits of combination therapy in achieving better blood pressure control. The observed difference in blood pressure reduction between the two groups underscores the importance of employing a multifaceted approach to hypertension management, especially in patients with resistant or poorly controlled hypertension [6].

Adherence to treatment is a crucial determinant of therapeutic success in hypertension management. Our study found higher rates of adherence, both self-reported and based on pharmacy refill records, in the combination therapy group compared to the monotherapy group. This finding is consistent with previous studies suggesting that simplifying treatment regimens through combination therapy may improve patient adherence. However, it's important to note that self-reported adherence may be subject to bias and overestimation, while pharmacy refill records provide a more objective measure but may not capture medication-taking behavior comprehensively [7].

In terms of long-term outcomes, our study found a lower incidence of cardiovascular events and renal dysfunction in the combination therapy group compared to the monotherapy group. While these results are promising, they should be interpreted with caution due to the relatively short duration of follow-up. Long-term, large-scale studies are needed to further evaluate the impact of combination therapy on cardiovascular and renal outcomes [8].

The occurrence of adverse events is a crucial consideration in hypertension management, as it may influence treatment adherence and patient quality of life. Our study found similar rates of adverse events between the combination therapy and monotherapy groups, with dizziness and fatigue being the most commonly reported side effects. These findings suggest that while combination therapy may offer superior efficacy and adherence, it may not necessarily increase the risk of adverse events compared to monotherapy [9, 10].

Our study has several strengths, including its randomized design, adequate sample size, and comprehensive assessment of efficacy, adherence, and long-term outcomes. However, it also has some limitations. The relatively short duration of follow-up may not capture the full impact of treatment on long-term outcomes such as cardiovascular events and renal dysfunction. Future studies with longer follow-up periods are needed to address this limitation. Secondly, the use of self-reported adherence measures may be prone to recall bias and social desirability bias, potentially affecting the accuracy of the results.

CONCLUSION

In conclusion, our study provides valuable insights into the comparative efficacy, adherence, and long-term outcomes of combination therapy versus monotherapy in hypertension management. The results suggest that combination therapy may offer superior blood pressure control, adherence, and long-term cardiovascular and renal outcomes compared to monotherapy.

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