


Overview of Blood Pressure Changes in Hypertensive Patients using Valsartan at One of Hospital in Jember District

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Article Info	ABSTRACT
<p>Keywords: Blood Pressure, Health, Hypertensions, Valsartan.</p>	<p>Hypertension is a major global health issue contributing to cardiovascular disease, stroke, kidney failure, and premature death. Its prevalence continues to rise both globally and in Indonesia. Effective management often involves pharmacological treatment, with valsartan, an angiotensin II receptor blocker (ARB), widely used due to its efficacy and safety profile. This study aims to describe blood pressure changes in hypertensive patients treated with valsartan at one of hospital at Jember district. A descriptive observational study was conducted using medical records of patients receiving valsartan therapy from January to October 2022. A total of 4,907 patients were recorded, making hypertension one of the top ten most frequent diagnoses in the hospital. Results showed that valsartan effectively reduced both systolic and diastolic blood pressure, with most patients achieving target levels after treatment. These findings suggest that valsartan is effective in managing hypertension and preventing complications when properly administered and adhered to. Continued monitoring and appropriate treatment selection remain essential for optimal patient outcomes.</p>
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INTRODUCTION

Hypertension, commonly referred to as high blood pressure, is a major risk factor for the development of atherosclerotic cardiovascular disease, kidney failure, stroke, and heart failure. It significantly contributes to premature mortality, with increasing risks correlating to elevated systolic and diastolic blood pressure levels. Long-term elevated blood pressure can also lead to damage of the kidneys, brain, heart, and even affect the ocular blood vessels (Rahmadhani 2021). According to research published by the American Heart Association (AHA), approximately 74.5 million individuals over the age of 20 have been diagnosed with hypertension. However, 90-95% of these cases remain without a clearly identified cause. Often referred to as the “silent killer,” hypertension presents with various symptoms that frequently overlap with those of other diseases.

The World Health Organization (WHO) reported that globally, around 1.13 billion people are affected by hypertension, with one-third of the world’s population living with this condition. The prevalence is expected to continue rising, potentially reaching 1.5 billion cases by 2025. In Indonesia, hypertension remains a significant public health concern, with a high

prevalence rate of 25.8% among individuals aged 18 years and older (Kemenkes, 2018). Certain provinces, such as Aceh, North Sumatra, and West Sumatra, rank among the top three with hypertension prevalence rates of 7.27% of their respective populations. In East Java, the number of hypertension cases among individuals aged 15 years and older was estimated to reach 11,686,430 people in 2021, with women accounting for 51.62% and men 48.38% of cases. Of these, only about 49.70% received healthcare services, reflecting a 14.10% increase compared to 2020 data. Age is one of the key risk factors influencing the development of hypertension, with prevalence increasing significantly among the elderly, reaching approximately 40%.

In older adults, hypertension typically manifests as isolated systolic hypertension due to vascular structural changes associated with aging. These changes include arterial lumen narrowing and increased arterial stiffness, contributing to elevated systolic blood pressure (Aulia, 2023). Lifestyle modifications such as weight reduction, dietary salt restriction, regular physical activity, limiting alcohol intake, and smoking cessation have been shown to effectively lower blood pressure and reduce cardiovascular risks. Besides lifestyle factors, genetic, ethnic, and environmental influences—such as obesity, stress, and excessive salt consumption—also play critical roles in the onset of hypertension.

Hypertension is often undiagnosed until serious complications arise, such as coronary artery disease, early-stage heart failure, stroke, or kidney failure. Once diagnosed, the primary objective is to lower blood pressure through the use of antihypertensive medications to achieve target blood pressure levels and prevent further complications. Inappropriate medication use can lead to adverse effects and impact healthcare services; therefore, careful selection of antihypertensive agents based on their efficacy is essential to ensure optimal therapeutic outcomes with minimal side effects.

The effectiveness of antihypertensive treatment is generally evaluated by assessing blood pressure reduction following therapy. Lack of blood pressure improvement may indicate suboptimal therapy, improper medication use, or patient noncompliance. Valsartan, a potent non-peptide tetrazole derivative, is widely used in hypertension management. It works selectively by blocking angiotensin II type 1 (AT1) receptors, with an affinity 20,000 times greater for AT1 than AT2 receptors. Valsartan is available in multiple dosages ranging from 10 to 320 mg and is generally well-tolerated across all dosages. Its antihypertensive effects typically begin at a dose of 80 mg, with a minimal effective dose of 1 mg/kg body weight. Compared to other angiotensin receptor blockers (ARBs), valsartan demonstrates faster, stronger, and more consistent blood pressure-lowering effects with relatively mild side effects.

Preliminary studies conducted at One of hospital at Jember district from January to December 2022 recorded 4,907 hypertension cases. Hypertension ranked among the top ten most frequently diagnosed diseases at the hospital during that period. Among the commonly prescribed antihypertensive medications at one of hospital at Jember district are ARBs and calcium channel blockers (CCBs), with valsartan being one of the most frequently used ARBs. Given the high prevalence of hypertension and the widespread use of valsartan at One of hospital at Jember district, the present study aims to examine blood pressure changes in

hypertensive patients treated with valsartan at one of hospital at Jember district.

METHODS

The research design used in this study was non-experimental or observational. This study was conducted at Citra Husada Hospital. The research data source is a secondary data source, namely patient medical record data. The sample used in this study were hypertensive patients at Citra Husada Hospital who met the inclusion criteria, including hypertensive patients with comorbid diabetes mellitus who received the antihypertensive valsartan from January to December 2022, a total of 98 patients using the Slovin formula. Data analysis using univariate analysis, data is displayed in the form of frequency and percentage.

RESULTS AND DISCUSSION

Results

The following is the research data on the demographic profile of patients in terms of gender, age and diagnosis.

Table 1. Characteristics of hypertension patients based on gender

No.	Diagnose	Diagnose (+)	Amount of patient	Percentage
1	Hipertention	-	10	50%
2	Hipertention	DiabetesMellitus	10	50%
	Amount		20	100%

Based on the table above, the majority of patients suffering from hypertension were male, with a total of 14 patients (80%).

Table 2. Characteristics of hypertension patients based on age

No.	Age	Frekuensi	Percentage
1	30 – 60 tahun	11	55%
2	> 61 tahun	9	45%
	Amount	20	100%

Based on table 2, it was found that the majority of patients suffering from hypertension were aged 30-60 years, amounting to 11 patients (55%).

Table 3. Characteristics of hypertension patients based on diagnosis

No.	Diagnose	Diagnose (+)	Amount Of Patient	Percentage
1	Hipertention	-	10	50%
2	Hipertention	DiabetesMellitus	10	50%
	Amount		20	100%

Based on table 3, it was found that on average, patients suffering from hypertension had accompanying diabetes mellitus. The following is the use of the drug based on the distribution of the drug valsartan and its dosage.

Table 4. Distribution of drug use based on dosage's drug

No.	Dosage's Drug	Length of treatment	AmountOf Patient	Percentage
1	Valsartan 80 mg	30 day	2	10%
2	Valsartan 160 mg	30 day	18	90%
	Amount		20	100%

The use of valsartan 160mg for 30 days was found in 18 patients (90%).

Table 5. Distribution of valsartan drug use based on frequency

No.	NameDrug	Frekuensi	Trenght of treatment	Amount of patient	Percentage
1	Valsartan80 mg	1 x 1 day	30 day	2	10%
2	Valsartan160 mg	1 x 1 day	30 day	18	90%
	Amount			20	100%

The use of valsartan 160mg for 30 days was found in 18 patients (90%) based on frequency one day amount one time. In this study, changes in blood pressure before and after using a single valsartan drug in hypertensive patients at Citra Husada Hospital can be seen in the following table.

Table 6. Changes in blood pressure before and after using valsartan.

No.	Patient	Before		After		Change		Go On	
		Sistol	Diastol	Sistol	Diastol	Lower Sistol	Diastol	Sistol	Diastol
1	Tn. S	160	100	150	100	10	0		
2	Ny. S	150	90	130	80	20	10		
3	Tn. B	180	97	150	80	30	17		
4	Tn. T	120	80	140	90			20	10
5	Tn. S	140	70	114	70	26	0		
6	Tn. E	140	80	130	80	10	0		
7	Ny. H	140	80	110	80	30	0		
8	Ny. P	140	80	120	70	20	10		
9	Ny. A	170	80	140	70	30	10		
10	Tn. D	130	90	114	70	16	20		
11	Tn. A	120	70	140	80			20	10
12	Tn. A	170	100	160	90	10	10		
13	Ny. R	150	90	120	70	30	20		
14	Tn. H	160	90	141	80	19	10		
15	Tn. J	150	90	140	90	10	0		
16	Ny. S	150	80	120	80	30	0		
17	Tn. R	140	90	120	80	20	10		
18	Tn. T	120	80	140	90			20	10

No. Patient	Before		After		Change			
	Sistol	Diastol	Sistol	Diastol	Lower Sistol	Diastol	Go On Sistol	Diastol
19 Tn. S	140	90	120	80	20	10		
20 Tn. B	180	97	150	80	30	17		
Average	143.5	84.7	130.4	78	24.1765	7.8824	20	10

Based on the table 6, the average decrease in blood pressure for respondents after using valsartan was 24.1765/7.8824 mmH.

Discussion

This study aimed to analyze blood pressure changes in hypertensive patients treated with valsartan at one of hospital at Jember district. Ethical approval was obtained from the Ethics Committee of Universitas dr. Soebandi (No. 420/KEPK/UDS/VIII/2023), and permission was granted by the Jember Health Office. Data were collected from patients' medical records and analyzed using Microsoft Excel 2021 with descriptive methods.

The findings showed that the majority of patients were prescribed valsartan 160 mg once daily, while a smaller portion received 80 mg daily. The selection of dose was in line with clinical recommendations, where 80 mg is typically initiated, and 160 mg may be prescribed for optimal blood pressure control (Mancia et al., 2007). According to the JNC 8 guidelines, valsartan, as an angiotensin II receptor blocker (ARB), is one of the first-line treatments for hypertension, particularly in patients with comorbid conditions such as diabetes mellitus. Valsartan works by blocking the binding of angiotensin II to AT1 receptors, resulting in vasodilation, decreased vascular resistance, and reduced cardiac workload (Ristiantanti and Yohana Chaerunissa 2018). Additionally, valsartan shows renoprotective effects, particularly in diabetic or chronic kidney disease patients, by reducing proteinuria and preserving renal function (Khotimah and Musnelina 2016).

The analysis of blood pressure data demonstrated a significant reduction in both systolic and diastolic blood pressure following valsartan therapy. The mean reduction was 24.18 mmHg in systolic and 7.88 mmHg in diastolic pressure. These results confirm valsartan's effectiveness in lowering blood pressure to within target levels recommended by current hypertension management guidelines. Similar outcomes have been reported in previous studies, where ARBs produced substantial blood pressure reductions, especially when appropriately dosed. It is important to note that while valsartan demonstrates a reliable antihypertensive effect as monotherapy, some patients may require combination therapy to achieve target blood pressure (Mayasari 2020), particularly those with more severe hypertension or additional comorbidities. Studies have shown that combining valsartan with thiazide diuretics or calcium channel blockers enhances blood pressure control and increases patient compliance through simplified dosing regimens (Mancia et al., 2007).

In addition to medication, several non-pharmacological factors also influence blood pressure control, such as age, genetics, lifestyle, and dietary habits. According to JNC 8, unhealthy lifestyles — including high salt intake, sedentary behavior, smoking, and excessive alcohol consumption — remain major contributors to uncontrolled hypertension, especially in

patients over 40 years old. Overall, the findings of this study are consistent with current evidence regarding valsartan's efficacy and safety profile. When administered at recommended doses and combined with appropriate lifestyle modifications, valsartan provides significant blood pressure reduction and contributes to long-term cardiovascular risk reduction. Moreover, its favorable side effect profile compared to other antihypertensives such as ACE inhibitors makes it a valuable option in the management of hypertension across diverse patient populations.

CONCLUSION

In conclusion, the use of valsartan in hypertensive patients at One of hospital at Jember district was mostly at a dose of 160 mg once daily for a duration of thirty days. On average, patients experienced a reduction in blood pressure of 24.18 mmHg systolic and 7.88 mmHg diastolic. Based on these findings, it is recommended that healthcare providers continue to monitor and optimize the use of valsartan in hypertensive management while encouraging patients to adopt healthier lifestyles to support treatment outcomes.

REFERENCE

- Aulia, 2023. "Hypertension Prevention Efforts." *Majority* 5(3): 50–54. <https://joke.kedokteran.unila.ac.id/index.php/majority/article/view/1036>.
- Khotimah, S. E. Y. N., and L. Musnelina. 2016. "Evaluasi Penggunaan Obat Antihipertensi Pada Pasien Hipertensi Primer Di Rumah Sakit Umum Daerah Kota Depok." *Sainstech Farma* 9(1): 30–34.
- Mancia, Giuseppe, Guy De Backer, Anna Dominiczak, Renata Cifkova, Robert Fagard, Giuseppe Germano, Guido Grassi, et al. 2007. 25 *Journal of Hypertension 2007 Guidelines for the Management of Arterial Hypertension: The Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC)*. doi:10.1097/HJH.0b013e3281fc975a.
- Mayasari, Shinta. 2020. "Analysis Of The Used Of Captopril Drug With Blood Pressure Of Hypertension Patients." *Jurnal Kesehatan dr. Soebandi* 8(2): 123–27. doi:10.36858/jkds.v8i2.225.
- Priantoro, Henri. 2018. "Hubungan Beban Kerja Dan Lingkungan Kerja Dengan Kejadian Burnout Perawat Dalam Menangani Pasien Bpjs." *Jurnal Ilmiah Kesehatan* 16(3): 9–16. doi:10.33221/jikes.v16i3.33.
- Rahmadhani, Mayasari. 2021. "Faktor-Faktor Yang Mempengaruhi Terjadinya Hipertensi Pada Masyarakat Di Kampung Bedagai Kota Pinang." *Jurnal Kedokteran STM (Sains dan Teknologi Medik)* 4(1): 52–62. doi:10.30743/stm.v4i1.132.
- Rijali, Ahmad. 2019. "Analisis Data Kualitatif." *Alhadharah: Jurnal Ilmu Dakwah* 17(33): 81. doi:10.18592/alhadharah.v17i33.2374.
- Ristianti, Silvi, and Anis Yohana Chaerunissa. 2018. "Review : Pengembangan Valsatran Dalam Meningkatkan Kelarutan Dan Bioavailabilitas Dalam Tubuh." *Farmaka* 17(1): 134–43.