

PRESCRIPTION PROFILE OF ANTIHYPERTENSIVE DRUGS IN PREECLAMPSIA PATIENTS AT KIRANA HOSPITAL

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ABSTRAK

Preeklampsia adalah komplikasi kehamilan dengan gejala hipertensi $\geq 140/90$ mmHg dan proteinuria $\geq 0,3$ gram/24 jam atau 30 mg/dl (+1 dipstick) yang timbul setelah usia kehamilan lebih dari 20 minggu pada ibu hamil yang sebelumnya normotensi. Kematian ibu di Indonesia pada tahun 2021 terkait hipertensi dalam kehamilan mencapai 1077 kasus. Intervensi terapi farmakologis, pengobatan antihipertensi juga diperlukan selain menjaga pola hidup sehat. Tujuan penelitian adalah untuk mengetahui gambaran terapi farmakologi meliputi golongan obat farmakologi, nama obat, dosis obat, aturan pakai, dan jenis terapi obat antihipertensi (tunggal/kombinasi) pada pasien preeklampsia. Jenis penelitian observasional deskriptif yang bersifat retrospektif dengan total sampling yang diperoleh dari rekam medik dan resep pasien. Hasil dari penelitian ini adalah angka kejadian preeklampsia pada usia 35 tahun ke atas sebesar 21 pasien (36%) dan diagnosis yang paling banyak ditemukan adalah preeklampsia ringan sebesar 38 sampel (66%). Penggunaan nifedipin yang termasuk dalam golongan CCB (*Calcium Channel Blocker*) sebanyak 42 responden (72%). Sedangkan penggunaan metildopa yang termasuk dalam kelompok simpatolitik sentral sebanyak 17 responden (28%). Pada penelitian jenis terapi tunggal, sebanyak 59 resep (100%) menggunakan nifedipin atau metildopa. Ibu hamil dianjurkan untuk rutin melakukan pemeriksaan antenatal care di rumah sakit setiap bulannya.

Kata kunci: Preeklampsia, obat antihipertensi, tekanan darah, proteinuria

ABSTRACT

Preeclampsia is a complication of pregnancy with symptoms of hypertension $\geq 140/90$ mmHg and proteinuria ≥ 0.3 grams/24 hours or 30 mg/dl (+1 dipstick) arising after more than 20 weeks of gestation in previously normotensive pregnant women. Maternal deaths in Indonesia in 2021 related to hypertension in pregnancy reached 1077 cases (Source: Directorate General of Public Health, Ministry of Health, 2021). Pharmacological therapy intervention, antihypertensive treatment is also needed in addition to maintaining a healthy lifestyle. The purpose of the study was to determine the description of pharmacological therapy including the pharmacological class of drugs, drug names, drug doses, rules of use, and types of antihypertensive drug therapy (single / combination) in patients with preeclampsia. This type of descriptive observational research is retrospective with total sampling obtained from medical records and patient prescriptions. The results of this study were the incidence of preeclampsia aged 35 years and over by 21 patients (36%) and the most common diagnosis was mild preeclampsia by 38 samples (66%). The use of nifedipine which is included in the CCB (Calcium Channel Blocker) group was 42 respondents (72%). Meanwhile, the use of methyldopa which is included in the central sympatholytic group was 17 respondents (28%). In the single therapy type study, 59 prescriptions (100%) used nifedipine or methyldopa. Pregnant women are encouraged to routinely conduct antenatal care checks at the hospital every month.

Keywords: Preeclampsia, antihypertensive drugs, blood pressure, proteinuria

1. INTRODUCTION

Preeclampsia is a complication of pregnancy with symptoms of hypertension $\geq 140/90$ mmHg and proteinuria ≥ 0.3 grams/24 hours or 30 mg/dl (+1 dipstick) of urine at any time and there are organ disorders that arise after the gestation period above 20 weeks in pregnant women who were previously normotensive (normal tension) and the absence of proteinuria. Edema (swelling) is no longer used because it is a common symptom in pregnancy. Patients with preeclampsia must be monitored frequently so as not to result in seizures / eclampsia ¹.

Several antihypertensive drug therapies in pregnancy including methyldopa are safe for first-line therapy in cases of hypertension in pregnancy. Reports of stable uteroplacental blood flow and hemodynamics in the fetus indicate no long-term adverse effects on the development of children exposed to methyldopa since the womb. Methyldopa is a category B drug ^{2,3}. Then, the dihydropyridine Calcium Channel Blocker (CCB) class is nifedipine. As the first line of treatment in chronic hypertension, this drug is safe to use and has no negative side effects on uteroplacental hemodialysis. The mechanism of action in the smooth muscle of arterioles causes vasodilation by inhibiting calcium entry into heart cells and blood vessel walls ^{4,5}.

The incidence of preeclampsia cases in the first 6 months of 2022 was around 20 cases in RSIA Kirana. No research has been conducted on the prescription of antihypertensive drugs in preeclampsia patients at RSIA Kirana. Therefore, this encouraged researchers to conduct a study aimed at obtaining a profile picture of hypertension-related treatment which is the main symptom of preeclampsia cases so that it can be an input in improving pharmaceutical services at the Kirana Maternal and Child Hospital Pharmacy Installation.

2. METHOD

2.1 Research Design

This study is a descriptive observational study preeclampsia patients at RSIA Kirana during 2022. Observations were made by observing demographic, clinical, and treatment data.

2.2 Inclusion and Exclusion Criteria

Sampling was carried out by non-probability sample according to the criteria of Kirana Hospital patients with a diagnosis of preeclampsia of age 20 - 45 years old who received antihypertensive drug therapy on January 1 - December 31, 2022. Patients who were referred to other hospitals during data collection were excluded.

2.3 Statistical Analysis

Descriptive data processing techniques by displaying patient demographic data and the results of data on pharmacological therapy of antihypertensive drugs in preeclampsia patients through Microsoft Excel software and interpreted in the form of descriptions, percentage tables.

3. RESULTS

3.1 Patient Demographic Data

Table 1. Results of Age Distribution of Preeclampsia

No	Ages	Number of patients	Percentage
1	20-35 years	37	64%
2	> 35 years - 45	21	36%
TOTAL		58	100%

Table 2. Results of Distribution of Length of Use of Antihypertensive Drugs

No	Lama Pemakaian Obat	Jumlah Pasien	Presentase
1	≤1 bulan	51	86%
2	>1 bulan - ≤ 2 bulan	7	12%
3	>2 bulan - ≤ 3 bulan	1	2%
4	>3 bulan - ≤ 4 bulan	0	0%
TOTAL		59	100%

Table 3. Distribution Results of Patients' GPA Status

GPA Status	Σ	%
Gravida		
Primigravida	15	26%
Multigravida	43	74%
Paritas		
Number Not in Labor	15	26%
Number of maternal deliveries (2-3 times)	14	24%
Number of maternal deliveries (1 time dan ≥4 times)	29	50%
Abortus		
Tidak pernah mengalami	48	83%
Pernah mengalami	10	17%
TOTAL	58	100%

3.2 Patient Clinical Data

Table 4. Results of Blood Pressure and Proteinuria Level Examination

Research Status	Σ	%
Diagnosis		
Mild Pre-Eclampsia	38	66%
Severe Pre-Eclampsia	20	34%
Blood pressure		
a. ≥140/90 mmhg - <160/110 mmhg	34	59%
b. ≥160/110 mmhg	24	41%
Average blood pressure	154/99 mmhg	
Proteinurin		
+1	51	88%
+2	5	9%
+3	2	3%
TOTAL	58	100%

3.3 Patient Treatment Data

Table 5. Distribution Results of Antihypertensive Drug Use

No	Drug Usage	Name of medicine	Usage rules	Σ	%
Single therapy					
1	Calcium channel blockers	Nifedipine	1x a day	3	5%
			1x a day 10 mg	29	49%
			2x a day 10 mg	8	14%
			3x a day 10 mg	2	3%
2	Central symbolism	Methyldopa	1x a day 250 mg	3	5%
			2x a day 250 mg	2	3%
			3x a day 350 mg	1	2%
			1x a day 500 mg	11	19%

4. DISCUSSION

The use of hypertension drug therapy, namely nifedipine, which belongs to the class of calcium channel blockers / CCB (Calcium Channel Blocker) as many as 42 (72%). Nifedipine is widely used because it is more likely to achieve endpoint efficacy against systolic and diastolic blood pressure control within 6 hours of starting treatment (without side effects) compared to patient groups with methyldopa. Nifedipine in the study "*Oral antihypertensive regimens (nifedipine retard, labetalol, and methyldopa) for management of severe hypertension in pregnancy: an open-label, randomized controlled trial*" by Thomas E, et al in 2019 obtained the results of group data Nifedipine-treated patients are more likely to achieve target blood pressure within 3 hours than

methyldopa, and long-term use of methyldopa often results in water resistance that diminishes its anti hypersensitivity effect ^{6,7}. The recommended regimen is 10 mg oral capsules, repeated every 15-30 minutes, with a maximum dose of 30 mg. Thus, it can be said that the dose is appropriate because the prescription of preeclampsia drugs is in the range of the minimum dose and the recommended dose per day. Nifedipine in terms of elimination in patients with normal renal and hepatic function, the elimination half-life is 2-5 hours. The maximum plasma concentration is reached after 0.5-2 hours ⁸. Therefore, it can be administered at divided dose intervals. This is also related to the condition of blood pressure and laboratory data by displaying not too high results. Nifedipine at a dose of 5-10 mg can be used as a tocolytic and its duration of action on a single administration is up to 6 hours. The purpose of administering tocolytics is to reduce uterine contractions so that *preterm* labor can be prevented. There is a preparation of nifedipine at Kirana Mother and Child Hospital, namely nifedipine produced by PT Sanbe Farma. Nifedipine is secreted in breast milk with the same concentration as in plasma⁹.

Meanwhile, the use of methyldopa which belongs to the central sympatholytic group was 17 (28%). Methyldopa works on the increase in blood pressure in pregnant women. However, the prescription of antihypertensive drugs at RSIA Kirana is mostly given with a duration of use of ≤ 1 month because there are factors such as the patient only doing pregnancy control at 1 doctor so that it can be ascertained if the doctor practices at another hospital. Then, the pregnant woman patient will also control at another hospital where the doctor practices. The second factor is that the patient can do pregnancy control at a midwife practice outside the RSIA Kirana hospital. The administration of antihypertensive drugs was given for 1 month consecutively - following the routine *antenatal care* patient control visit once a month. Another factor for giving antihypertensive drugs with a duration of use of ≤ 1 month can also be because the patient is approaching HPL (Estimated Day of Birth). In the results of research data on the profile of prescribing antihypertensive drugs in preeclampsia patients at Kirana Mother and Child Hospital during 2022, it shows that the use of nifedipine (1xdaily 5 mg) and (1xdaily 10 mg) is used as an antihypertensive and tocolytic and it is known that the elimination half-life of nifedipine is around 7-8 hours. which is clearly known after 2 hours of elimination of the half-life when released from the preparation. The tocolytic onset of nifedipine is 30- 60 minutes ¹⁰. Methyldopa is usually started at a dose of 250-500 mg orally 2 or 3 times a day, with a maximum dose of 3 grams per day. The maximum drug effect is achieved 4-6 hours after drug entry and remains for 10-12 hours before being excreted through the kidneys. Thus, it can be said that the dosage of methyldopa is appropriate because the prescription of preeclampsia drugs is in the range of the minimum dose and the recommended dose per day ⁸.

There were 59 single prescriptions (100%) using nifedipine or methyldopa. The number of prescriptions was 59 prescriptions because there was 1 patient who had a change of antihypertensive drugs. Prescribing a single drug in pregnant women with preeclampsia is more advisable than a combination drug because it is feared that drug contra-indications, drug side effects, and drug interactions can be harmful to the mother and fetus ¹¹.

5. CONCLUSION

Based on the research on the profile of antihypertensive drug prescribing in preeclampsia patients at Kirana Mother and Child Hospital during 2022, it can be concluded that in the study the use of nifedipine which belongs to the calcium channel blocker / CCB (Calcium Channel Blocker) group was 42 respondents (72%) with the highest dose of 1x a day 10 mg totaling 29

(49%). Meanwhile, the use of methyldopa, which belongs to the central sympatholytic group, was 17 respondents (28%) with the highest dose of 1x daily 500 mg, totaling 11 (19%). As well as, single therapy 59 prescriptions (100%) using nifedipine or methyldopa.

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