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APPROPRIATE USE OF ORAL ANTIHYPERTENSIVE DRUGS EVALUATION IN NONDIALYSIS CHRONIC KIDNEY DISEASE PATIENT OF PRIVATE HOSPITAL IN EAST BEKASI 2018-2020

Sukma Widayani[1*], Wahyu Nuraini Hasmar[2]
1. Department of Pharmacy, STIKes Mitra Keluarga, Bekasi-Indonesia
2. Department of Pharmacy, STIKes Mitra Keluarga, Bekasi-Indonesia

*Correspondence: Sukma Widayani | STIKes Mitra Keluarga | sukmawedy0214@gmail.com

Abstract

Introduction: Chronic Kidney Disease (CKD) is currently one of the most common diseases and being a concern in the world, including in Indonesia. The number of patients with CKD tends to increase year by year. Hypertension is a cause and effect of CKD and contributes to its development. This study aimed to evaluate the appropriateness use of oral antihypertensive drugs in patients with chronic kidney disease of private hospital in East Bekasi for the 2018-2020 period.

Method: The method used in this study was observational data taken retrospectively from the medical records of non-dialysis chronic kidney disease patients. The study population were all patients diagnosed with non-dialysis chronic kidney disease at the inpatient installation of private hospital in East Bekasi. The sample was taken by consecutive sampling method where the sample was determined based on the inclusion criteria of 50 patients.

Results: Evaluation of drug use in this study included right patient, right indication, right medication and right dose. The following results were obtained: right patient was 100%, right indication was 98%, right medication was 86% and right dose was 94.84%.

Conclusion It can be concluded that evaluation of oral antihypertensive drugs usage in patients with chronic kidney disease need to be done so that the contribution of hypertension to CKD development decreases.

Keywords: Antihypertensive, Consecutive sampling, CKD, Evaluation, Hypertensive.

INTRODUCTION

Chronic Kidney Disease (CKD) is a chronic disease that progressively damages the kidneys so that fluid and electrolyte balance in the body is disrupted, having an impact on all systems of the body. CKD is currently becoming one of the diseases that a lot is happening and is a concern in the world, including in Indonesia. The World Health Organization (WHO) (2018) released data on the growth in the number of patients with chronic kidney disease in the world in 2015. 1.2 million people died of kidney failure in 2015, an increase of 32% since 2005. The results of a survey conducted by the Society of Nephrology Indonesia (PERNEFRI) in 2014 estimated that about 12.5% of the population, or 25 million people, have experienced a decline in renal function. According to Dani (2015), the number of patients with kidney failure in Indonesia is around 150 thousand, with around 10 thousand undergoing hemodialysis. While the prevalence of chronic kidney disease in West Java is still high enough as a sufferer of kidney failure in Indonesia, with the diagnosis of most, namely renal failure terminal or ESRD, as much as 13%. In the year 2014, according to PERNEFRI (2014), the causes of kidney damage were mainly hypertension, with a percentage of 37%, and increased to 44% in 2015. Based on data from the IRR in 2018, concomitant diseases of patients with chronic kidney disease are the largest hypertensive diseases with a percentage of 51%. According to Pugh (2019), hypertension is both a cause and a result of CKD and contributes to its development. Hypertension affects 30% of the adult population, and 90% of them have CKD. When eGFR decreases, the incidence and severity of hypertension increase. From the perspective of therapy, losing BP can slow the decline in eGFR, delay the development of ESRD, and reduce the incidence of CVD. Antihypertensive therapy may be used in patients with chronic kidney disease for other purposes. In addition to lowering blood pressure, antihypertensive therapy may also slow the progression of kidney disease in patients with or without hypertension (Pugh, 2019). Evaluation of the accuracy of the use of the drug is carried out by way of analyzing from the aspect of qualitative or quantitative. Research on the evaluation of the accuracy of the use of the drug has been done in several hospitals in Indonesia. Research conducted by the Tuloli (2019) di

RSUD Toto Kabila shows the results of the evaluation according to the criteria of appropriate patients at 100%, the right drug at 86,05%, the exact indication at 83,72%, and the right dose at 53,49%. This is different from the research conducted by the Announcement (2019), which shows that the exact indication is 100%; the right patient is 91,82%; the right drug is 88,85%; and the right dose is 98,14%. Based on this background, it is necessary to evaluate the accuracy of the use of antihypertensive drugs in patients with chronic kidney disease, taking into account the right patient, the right indication, the right drug, and the right dose.

METHOD

This research is non-experimental and observational. This study was conducted retrospectively on patients with chronic kidney disease (CKD) in a private hospital in East Jakarta from February until March 2021. The population in this study were patients diagnosed with chronic kidney disease who were undergoing hospitalization. The sample in this study consists of 90 patients diagnosed as having chronic kidney disease who met the criteria for inclusion and exclusion. Patients with chronic kidney disease who were not on dialysis and had a minimum age of 18 years, were male or female, were receiving antihypertensive therapy, and had data in their medical records that included a history of the disease, data on drug therapy, blood pressure data, weight, and serum creatinine or GFR value. With medical record data that is not complete are excluded in this study.

The sampling technique used is non-probability sampling with consecutive sampling, which means that the sample taken is the whole subject of the observation and meets the criteria for the selection of the sample, which is then included in the sample to ensure the large samples required are met (Satroasmoro, 2011). The variables in this study were patients with chronic kidney disease without dialysis and medical record data. This study was conducted after obtaining permission from the hospital, and then recording the data from medical records in the space of the hospital's medical records. The data obtained from the medical record includes the data of patients with chronic kidney disease, namely, the patient's name, age, gender, body weight, concomitant diseases, and use of antihypertensive therapy, which is then analyzed descriptively.

The criteria used in assessing the accuracy of the drug include the right patient, the right indication, the right drug and the right dose. The use of the drug is precisely that of the patient when the decision maker considers the state of the patient so as not to cause contraindications to the individual patient (Commands, 2019). Appropriate indications of whether the patient was given the drug for accuracy in deciding on the administration of drugs based on medical reasons (Moh, 2011). Evaluation of the Accuracy of the Indications as to whether the patients were given antihypertensive drugs based on the value of blood pressure. It is said it is not appropriate if the patient experiences hypotension or BP 90/60 mmHg (Kudo, 2017).

Evaluation of the accuracy of the drug is assessed based on the suitability of the selection of drugs to consider the diagnosis that has been written (Commands, 2019). The decision on the selection of drugs with a view to the treatment of therapy CKD with hypertension Administration of excessive doses, especially for drugs that have a narrow therapeutic index, is prohibited. Administration of the dose is too small to guarantee the achievement of the pharmacological effects of the optimal (Moh, 2011). The accuracy of the dose is assessed by varying the value of GFR or the value of serum creatinine. Evaluation of the accuracy is performed by comparing aspects of the use of antihypertensive drugs in the field with the criteria for their use that have been set by the Management of CKD, The Renal Drug Handbook, Medscape.com, and Guidelines JNC VII & VIII, and presented in the form of a percentage.

RESULTS

Based on the research, the following results were obtained:

Table 1. Characteristics of Patients by Gender

Gender	Medical Record	Percentage
Women	16	32%
Men	34	68%
Total	**50**	**100%**

Table 1 shows that of the 50 medical records of chronic kidney disease patients who used hypertension therapy, most of them were male, with 34 (68%), while for female patients there were 16 medical records (32%).

Table 2. The Characteristics of the Patients Based On Age

Age group	Medical Record	Percentage
<45	17	34%
46-59	25	50%
≥60	8	16%
Total	**50**	**100%**

The age of the patients in this study was categorized into 3 age groups referring to the age division by WHO, namely: adults <45 years, middle age (middle age) 45–60 years, and elderly > 60 years. Table 5.2 describes the number of medical records for each age group.

Table 3. The Characteristics of the Patients Based On Comorbidities

Comorbidities	Case	Percentage (%)
CKD, Anaemia	4	8
CKD, Ascities (Fluit in peritoneal cavity)	1	2
CKD, Atherosclerotic Heart Disease	1	2
CKD, Chronic Hepatic Failure	1	2
CKD, Congestive Heart Failure	2	4
CKD, Constipation	1	2
CKD, Effusion Pleura	1	2
CKD, Essential (Primary) Hypertension	12	24
CKD, Fever	1	2
CKD, Gatritis	1	2
CKD, Heart Failure	1	2
CKD, Hypertensive Heart Disease Without (congestive) Heart	1	2
CKD, NIDDM without complications	14	28
CKD, Observation For Other Suspected Diseases and Conditions	1	2
CKD, Pneumonia	1	2
CKD, Septicaemia	3	6
CKD, UTI	1	2
Without comorbid	3	6
Total	50	100

In this study, comorbidities were diseases that appeared before, concurrently, or after the patient had chronic kidney disease and used oral antihypertensive therapy.

Table 4. Profile of Use Oral Antihypertensive Drugs,

The drug's usage	Classes of drugs	Total
Single	ARB	3
	CCB	7
	ACEi	1
2 Combinations	CCB + ARB	7
	CCB + Adrenergic inhibitors	1
	CCB + ACEi	1
	ARB + Diuretic	1
	CCB + Diuretic	1
>2 Combinations	CCB + ARB + Diuretic	6
	CCB + ARB + Adrenergic Inhibitors	5
	CCB + ARB Combinations	4
	CCB + Diuretic + Adrenergic Inhibitors	3

CCB + ARB + ACEi + Adrenergic Inhibitors	1
CCB + ACEi + Adrenergic Inhibitors	2
CCB + Diuretic + ARB + ACEi	1
CCB + ARB + Diuretic + Adrenergic Inhibitors	4
CCB + ARB + Diuretic + Adrenergic Inhibitors + ACEi	1

There are various kinds of oral antihypertensive drugs that are prescribed to patients with chronic kidney disease at private hospitals, either alone or in combination therapy. Of the several classes of antihypertensives, the five most prescribed classes are CCB, ARB, ACEi, Loop diuretics, and beta-blockers. The table above describes the profile of the use of oral antihypertensive drugs in patients with chronic kidney disease.

Table 5. Evaluation of Appropriate Use of Drugs

Parameter	% Accuracy	% Inaccuracy
Right Patient	100	0
Right Indication	98	2
Right Medication	86	14
Right Dose	94,84	5,16

Evaluation of accuracy is carried out by comparing aspects of the use of antihypertensive drugs in patients with chronic kidney disease with the criteria for use that have been set by the Renal Drug Handbook, 5th edition, JNC Guidelines VII and VIII, and Management of Chronic Kidney Disease.

DISCUSSION

Based on this study, it can be seen that there were 90 patients with non-dialysis chronic kidney failure at private hospitals in the city of Bekasi from 2018 to 2020. There were 50 patients who met the inclusion criteria, and 40 patients who were included in the exclusion criteria, including chronic kidney disease patients who did not receive oral antihypertensive therapy and did not have clinical data in the form of blood pressure. The study was carried out from February 9 to March 2, 2021 in the medical records section at a private hospital in East Bekasi.

Data On Patient Characteristics

Data collection characteristics of the patient aims to find out the identity of the patient as well as to know the profile of the use of the drug by the patient with chronic kidney disease nondialisis in inpatient private hospitals in the City of Bekasi in general. description of the characteristics of the patient, which includes gender, age, and concomitant diseases, based on the research that has been done. The characteristics of patients who are first will be discussed based on gender. Gender is one of the risk factors for the occurrence of chronic renal failure, especially male gender. It is mentioned in the research by Anita (2020) that the urinary tract of the male is long so that the barriers to the expenditure of urine from the bladder are high. These barriers can be in the form of a narrowing of the channel (stricture) or blockage of the duct by a stone.

Based on the data obtained in table 5.1, there were 34 patients gender male (68%) and 16 patients female gender (32%). This result is in line with research conducted by Husna (2019) in RS PKU Muhammadiyah Gamping Yogyakarta showed that male patients were more suffer from chronic kidney disease with the results of the 62 patients with male sex (63.92%) and a total of 35 patients of the female gender (26.46%). It is the same also with the research conducted by Nur et al (2015) Rsup Prof. Dr. R. D. Kandou Manado results showed that a total of 28 patients were male gender (52.8%) and 25 patients of the female gender (47.2%). While the data obtained by the National Health Service in the Uk showed that female patients (10.6%) more than male patients (5.8%) in adulthood. Based on data from previous research it was concluded that male gender is a lot of suffering from chronic kidney disease than the female gender.

Based on Table 5.2, characteristics of age showed that in the age range of adults older than 60 years, patients with chronic kidney disease have more than in other age groups. i.e. by 50%. While patients with an age range from 18 to 45 years old, as much as 34%, and those older than 60 years old, as much as 16%. Age is one of the risk factors that predisposes to chronic kidney disease. At a young age, kidney failure can

occur due to dehydration and chronic substance nefrotoksis. The consumption of food or beverages containing nephrotoxic substances will accelerate the destruction of the cells of the kidney. Research conducted by Jonathan (2015) found that the age group of patients with chronic kidney disease is aged 56 to 65 years, as of 28.3%. This is in line with research by Ndraha (2018) that shows older adults suffer from chronic kidney disease at a rate of 62,45%. The results of this study are in accordance with the theory that kidney function will decline progressively from the age of 40 years. At the age of 60 years, the ability of the kidneys to function at 50% of their capacity. It is caused by the physiologic reduction of the population of the nephron and the absence of the ability to regenerate anatomically (Anita, 2016). As a result, adults aged 25–64 years old have the highest prevalence of chronic kidney disease when compared to other age groups.

Chronic kidney disease can be caused by several diseases, such as hypertension. Hypertension is a cause and consequence of chronic kidney disease, meaning that hypertension can cause chronic kidney disease. This can happen because the damage is progressive due to the high pressure in the glomerulus. This causes the blood to flow towards the functional unit of the kidneys, which becomes impaired. Based on table 5.3, kidney disease is caused by hypertension by as much as 24%. Diabetes mellitus is a major cause of renal failure in hospitals, with a percentage of 28%. Previous research conducted by Tuloli (2019) showed that the concomitant diseases most patients suffered from CKD were hypertension (as much as 32,56%) and diabetes mellitus (as much as 18,61%). Diabetes mellitus is a group of metabolic diseases with the characteristic disease of hyperglycemia that occurs due to abnormalities in insulin secretion, impaired insulin action, or both, which cause a variety of chronic complications in the eyes, kidneys, nerves, and blood vessels (Rivandi, 2015).

Furthermore, concomitant diseases that cause the most pain are heart disease, among others. Atherosclerotic Heart Disease (1), Congestive Heart Failure (2), Heart Failure (1), Hypertensive Heart Disease Without (congestive) Heart (1). Congestive heart failure plays a role in mortality and morbidity, as well as worsening the patient's quality of life. Most patients with CKD have decreased diuresis (low diuresis) that can trigger fluid retention. Abnormalities in the structure and function of the left ventricle are common in patients with CKD. Heart disease coroner at the CKD also aggravates this condition, which plays a role in ischemia, damage to the cells of the myocardium, and fibrosis. Sepsis is a systemic inflammatory response to infection in the blood stream, which can be caused by pathogens such as bacteria, viruses, or fungi. Chronic heart failure (CHF) can be a risk factor for decreasing the performance of the kidney in the control of balance in the body. CHF is a condition where the heart works less efficiently (heart failure) and is accompanied by blockage of the various organs of the body (Yusman, 2020).

Because of the abnormality of the pulmonary and decreased immune cellular and humoral defenses, as well as a disturbance in the function of phagocytic cells, the incidence of pulmonary infection is higher in patients with CKD undergoing hemodialysis. On CKD, the number of B lymphocytes and the ability to produce immunoglobulin, which is an abnormality of the immune humoral due to uremia. Uremia-related changes in the body's defense mechanisms of the host, thereby increasing bacterial infection (Febriana, 2015). Pneumonia occurs in patients with chronic kidney disease when the number of patients is 1. Other infections that occur are UTIs (Urinary Tract Infections) or urinary tract infections. It occurs because patients with chronic kidney disease have immunity so low that they tend to be more prone to infections such as pneumonia, UTI, and sepsis (Sinaga, 2017).

Ascites occurs in patients with chronic kidney disease, with the number one patient. Ascites describes the condition of the collection of pathological fluid in the abdominal cavity. Although the pathogenesis of this condition is not yet known for certain, the theory mentioned hypoalbuminemia is one of the main factors in the occurrence of ascites in patients on dialysis (Yusman, 2020). Fluid buildup also occurs in the space of the pleura with patients amounted to 1 patient. Pleural effusion that appears on CKD Stadium 5 HD is almost always associated with the failure of the function of the kidneys and the heart, but the increased risk of infections such as tuberculosis or parapneumonia caused by immunosupresi in patients with CKD undergoing hemodialysis contribute as a cause of pleural effusion, especially in pleural effusion is exudative (Prastiwi, 2009).

The number of patients with anemia in this study is as high as four patients. Anemia commonly occurs in patients with chronic kidney disease, especially those undergoing hemodialysis. The amount of iron in the red blood cells lost during undergoing regular hemodialysis is between 1.5 and 2.0 grams every year.

This amount is much greater than the iron that can be absorbed through food by the gastrointestinal tract (Garini, 2018). In previous research conducted by Kamaliah (2021) and Ndraha (2018), anemia was ranked 3 and 2 as concomitant diseases and complications of CKD, respectively. The researchers say that the cells of the peritubular that produce erythropoietin are partially damaged or completely destroyed along with the progression of the disease in the kidney. Sarwana, 2016). The production of erythropoietin is inadequate. This is due to progressive damage of the part of the kidneys that produce erythropoietin.

The profile of hypertension drug use in CKD patients

The class of antihypertensive drugs used in the treatment of chronic kidney disease nondialisis in hospitals is a group of ACEi, ARB, CCB, diuretics, and -Blockers. class of CCB (Calcium Chanal Blockers). Most widely used in this research, as many as 92% of patients get therapy with CCB, either alone or in combination with drugs from other groups. The treatment combination of antihypertensive drugs is a lot more effective compared to antihypertensive drugs alone. A single drug that is used the most is amlodipine, with a number of seven patients. Amlodipine itself is a drug class called CBB, or Calcium Chanal Blockers. Previous research conducted by Tuloli (2019) in the area of Gorontalo indicated that antihypertensive drugs are the most widely used class of CCB, with a single treatment of as much as 34,21%, and the combination of CCB with other groups of as much as 36,85%. This is in line with research by Husna (2019), that the drug class of CCB is the most widely used, with a percentage of as much as 28,14%. CCB is effective for CKD and will be more effective if combined with ACEI, CCB dihydropyridine, and non-dihydropyridine, useful in the management of hypertension in CKD. Chronic Non-Proteinurik, either alone or in combination, can be used as first-line therapy in Chronic Non-Proteinurik.This proficiency level has been reflected in the ESC/ESH guidelines recently updated. The guidelines recommend combination therapy with an ACE inhibitor and CCB as first-line therapy in patients with proteinuria. In this risk group, the addition of amlodipine to the therapy of ACE inhibitors has a renoprotective effect in addition to the addition of a diuretic thiazide diuretic. Although generally well tolerated, CCB has the potential to aggravate peripheral edema, something that can be very troublesome for the patient (CKD) (Pugh, 2019).

Candesartan, irbesartan, and telmisartan are the ARB drug classes most commonly used in private hospitals in Bekasi Timur.In the research by Husna (2019), drug classes ARB and IRB were the most widely used, followed by candesartan and irbesartan. Meanwhile, according to Salwa (2013), the ARB drug class is the most commonly used with valasartan and irbesartan. In the JNC 7, it is said that the ARB is effective in slowing the progression of CKD compared to other antihypertensives. Neither is mentioned in the guide. ASH (American Society of Hypertension) showed that most patients with CKD should receive the ARB or ACEi in combination with a diuretic, and a lot of them require a diuretic loop rather than thiazide diuretics. In addition, if there is a conflict between the goals of slowing the development of the reduction of the risk of CKD and CVD, the decision-making of individuals is recommended based on risk stratification (Chobanian, 2003). Therapy of RAAS with angiotensin converting enzyme inhibitors (ACEi) or angiotensin receptor blockers (ARB) is recommended for patients with CKD to prevent or decrease the rate of progression to ESRD. ACEi or ARB should be the first-line agent for antihypertensive therapy for patients with CKD and is recommended for patients with albuminuria in spite of the need to control blood pressure. Both ACEi and ARB have the potential to slow the progression of kidney disease (Lukela et al., 2019).

Evaluation of Appropriate Use of Drugs
Evaluation of Patient Appropriateness on Antihypertensive Use

The accuracy of the patient is the accuracy of the selection of drugs that consider the state of the patient so as not to cause contraindications for the patient individually. Evaluation of the accuracy of the patient in the use of antihypertensive is done by comparing the contraindications or a history of drug allergy given with the condition of the patient according to the doctor's diagnosis. Individual responses to drug effects are very diverse. This is clearly seen in some types of drugs, such as Ramipril and Valsartan. In patients who are pregnant, nursing administration of the drug should be avoided. This study was conducted to see the patient's medical record and did not find a history of allergy to antihypertensive drugs. In this study, the results of the evaluation of the accuracy of the patient were 100% correct because the drug that was

prescribed does not have contraindications for patients with chronic kidney disease who have concomitant diseases or those without concomitant diseases.

The results are in line with the research conducted by Salwa (2013) in the area of Surakarta and Husna (2019) in PKU Muhammadiyah Gamping Yogyakarta Hospital, which stated that the evaluation of the accuracy of the use of the drug seen from the criteria of appropriate patients is 100%. While in the research conducted by Alaydrus (2019), the criteria for an appropriate patient was 96.67%, where inaccuracy was found in 1 patient. It shows that in some hospitals in Indonesia, the evaluation of the accuracy of the use of the drug seen from the criteria of appropriate patients is good.

Evaluation of Antihypertensive Indication Appropriateness

Appropriate indication is defined as the selection of drugs based on the diagnosis and the administration of drugs in accordance with the symptoms felt by the patient. The selection and administration of drugs is based on medical grounds. Evaluation of the Accuracy of the Indications seen as to whether the patients were given antihypertensive drugs. It is said it is not appropriate if the patient experiences hypotension or BP 90/60 mmHg (Kudo, 2017). In this study, the accuracy of the indications was 98% right, and 2% was not appropriate. said to be not appropriate because there was 1 patient who experienced hypotension who got antihypertensive therapy.

The goal of antihypertensive therapy in patients with chronic kidney disease is to control blood pressure so that it falls within the therapeutic targets set by the JNC 8, which are 140/90 mmHg for people under the age of 18 and 150/90 mmHg for people over the age of 60. Such a result is not in line with the research tradition (2019) regarding the evaluation of the rationality of the use of antihypertensive drugs in the outpatient hospital of Dr. Soegiri Lamongan, with the results of the precise indication of 100%. The inaccuracy obtained in this study is due to the patient's blood pressure being 87/56 mmHg and receiving therapy for antihypertension, namely amlodipine group CCB. According to the information center of national medicine (pionas), amlodipine does not reduce myocardial contractility and does not cause deterioration in heart failure. This drug has a long working life. It happens to the patient because amlodipine has a working period that is longer than 24 hours, so that the effect of a decrease in blood pressure continues even if the blood pressure is normal.

Evaluation of the Appropriate Use of Antihypertensive Drugs

It is said to be proper use of the drug if the conformity of the provision of group therapy, either single or in combination, is considered with the diagnosis. The decision to perform therapeutic efforts is taken after the diagnosis is established correctly. Thus, the drug selected should have a therapeutic effect in accordance with the spectrum of the disease. Because the treatment is individualized to reflect that the effect of the drug is not the same for every individual, in this study, the evaluation of the accuracy of the use of hypertension drugs was 86% and was not appropriate as much as 14%. This is in line with research conducted by Alydrus (2019), an evaluation of the accuracy of the use of medication that is equal to about 86.67% and research by Tradition (2019), an evaluation of the accuracy of the use of the drug that is equal to 96,67%.

According to ASH (American Society of Hypertension) (2013), JNC 7 (2003), and Pharmacotherapy Handbook (2015), either a single drug or drug combination. The inappropriateness of the use of the drug is because there are 7 patients prescribed with amlodipine. It should be noted that inhibiting calcium channel dihydropyridine should not be prescribed without the use of ACEi or ARB simultaneously to patients with CKD because a single use can lead to hyperfiltration and albuminuria (Lukela et al., 2019). Of the antihypertensive agents, ACEi and ARB are very effective in slowing down disease progression in CKD diabetes and non-diabetes. If ACEi or ARB alone is not effective to control blood pressure, then calcium channel thiazide diuretics or dihydropyridine (for example, amlodipine) can be added.

According to the Pharmacotherapy Hanbook (2015), first-line therapy with the angiotensin converting enzyme inhibitor (ACEi) or angiotensin II receptor blocker (ARB) Add diuretic thiazide diuretics in combination with ARB if there is an additional reduction in proteinuria needed. Inhibiting the calcium channel, nondihidropiridin is commonly used as a remedy for antiproteinuria second line when ACEi or ARB is contraindicated or not tolerated (Wells et al., 2015). From the data of medical records in this study, it is seen that the patient has no contraindications or tolerance to the group of ACEi or ARB, then the class

of CCB should not be given a single consideration, considering the side effects of hyperfiltration and albuminuria.

Evaluation of Dosage Appropriateness Antihypertensive

Dosage is the content of anything that can impact an organism biologically; the greater the amount, the greater the dose. The exact dosage that is appropriate in terms of frequency of administration, dose given, and route of administration of the drug to the patient. The accuracy of the dose was analyzed by comparing it with the Renal Drug Handbook and Management of Chronic Kidney Disease. When prescribing the dose of antihypertensive drugs, if the minimum dose and the dose per day are in the range of the minimum dose, then prescribing the right dose is recommended. In this study of 50 medical records, 155 antihypertensive drugs were prescribed. From the number 155 of drugs, 147 drugs do not require a dose adjustment and eight drugs require a dose adjustment. The drugs are captopril, ramipril, and bisoprolol.

According to the Management of Chronic Kidney Disease (2019), drug-drug captopril, ramipril, and bisoprolol require a dose adjustment using GFR data. They can be given to patients with chronic kidney disease. Then the accuracy of the dose of 155 of the drug is 94.84% for the exact dosage and 5.16% for the improper dose. The inaccuracy is due to the eight drugs' not adjusted doses. Of 147 drugs, dose adjustment for patients with chronic kidney disease accompanied by hypertension is no longer required for some drugs. Antihypertensive drugs are renoprotektif. This research is in line with previous research conducted by Husna (2019) in PKU Muhammadiyah Gamping Yogyakarta Hospital, which evaluated the accuracy of the dose at 91,72%. Tuloli's (2019) research in the area of Gorontalo evaluation of the accuracy of the dose of 51,15%

CONCLUSION

Based on the research that has been done regarding the evaluation of the use of antihypertensive drugs in patients with chronic kidney disease at a private hospital in East Bekasi in February and March 2021, it can be concluded that the evaluation of the use of oral antihypertensive drugs in chronic kidney disease is based on the patient's exact criteria of 100%, based on the criteria for the right indication of 98%, based on the criteria for the right drug by 86%, and based on the criteria for the right dose of 94.84%.

Based on the research that has been done, it is advisable to do further research on dose correction for patients with chronic kidney disease. It aims to improve the quality of patient health where the drugs prescribed are in accordance with the patient's physiological condition, which can reduce the risk of ESRD (End Stage Renal Disease) or end stage chronic kidney disease.

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