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The Rationality of Antihypertensive and Oral Antidiabetic Patients with Chronic Kidney Disease with Hypertension and or Type 2 Diabetes Mellitus in RSI Siti Khadijah Palembang

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Abstract. Chronic Kidney Disease (CKD) is defined as a condition of kidney damage occurring for 3 months or more with a decrease in Glomerular Filtration Rate (GFR) of less than 60 mL/min/1,73m2. The etiology of CKD includes hypertension and type 2 diabetes melitus (DM). The existance of irrational using of antihypertensive drugs and oral antidiabetics in CKD patients with hypertensive etiology and or type 2 diabetes melitus leads to research on the rationality of antihypertensive and oral antidiabetics. This study aims to evaluate the rationality of antihypertensive and or oral antidiabetics of patients with kidney disease with hypertension and or type 2 diabetes mellitus in RSI Siti Khadijah Palembang. This research was done by descriptive analysis method, data collection was done prospectively. The data obtained were 5 samples that suits exclusion criteria as well as 20 samples that suits inclusion criteria. The results of evaluation of antihypertensive drug use were found to be 100% precise indication, 100% precise dose, 95% precise patient, 90% precise drug, and 10% of patients experienced side effects. The evaluation of the use of OAD were 100% precise indication, 100% precise dose, 100% precise patient, 100% precise drug, and 100% of patients had no side effects.

Introduction

Chronic kidney disease (CKD) is defined as a condition of kidney damage that occurs for 3 months or more with a decrease in Glomerular Filtration Rate (LFG) of less than 60 mL / minute / 1.73 m2. CKD consists of several criteria including the presence of kidney structural or functional abnormalities and abnormal results of laboratory tests of blood, urine, imaging examinations [11]. Chronic kidney disease with etiology of hypertension occurs due to damage to blood vessels in the kidney thereby reducing the ability of the kidneys to properly filtrate blood [10].

According to [6], the main etiology of CKD cases in Indonesia is hypertension with 4699 patients. Therapy in CKD patients with etiology of hypertension can be done by controlling blood pressure. Drugs that can be given to achieve blood pressure targets, namely antihypertensive [3]. Chronic kidney failure with etiology DM or called diabetic nephropathy occurs due to high blood sugar levels or hyperglycemia which causes hyperfiltration and kidney lesions [5]. RSI Siti Khadijah Palembang is a type B hospital. Prevalence of CKD in Siti Kahdijah Hospital Palembang in 2012 was 61% with

8.7% degree 3a; 4.7% degree 3b; 6.3% degree 4; and 41.3% 5th degree. The etiology of CRF includes hypertension and type 2 diabetes mellitus.

The prevalence of CKD with the etiology of DM is the second largest after hypertension with the number of patients 3401 souls. From various studies, the prevalence of CKD with the etiology of type 2 DM is 30 - 40% [9]. Therapy that can be given to patients with CKD with the etiology of type 2 DM is Oral Antidiabetic (OAD) and or antihypertensive. Both of these therapies can slow the progression of kidney damage [1].

Through this research, it is expected to be able to know the rationality of antihypertensive and antidiabetic oral patients with chronic kidney disease with etiology of hypertension and or type 2 diabetes mellitus at Siti Khadijah Hospital in Palembang.

2. Experimental Section

2.1. Population

The population of this study were CKD patients at Siti Khadijah Hospital in Palembang during the period of August - October 2018.

2.2. Sample

The sample in this study is a population that meets the inclusion criteria. The inclusion criteria of this study are. CKD patients with etiology of hypertension who received antihypertensive therapy, patients with CKD with etiology of type 2 DM who received antihypertensive and or oral antidiabetic therapy (OAD), and patients with CKD with etiology of hypertension and type 2 diabetes mellitus who received antihypertensive therapy and or OAD at Siti Hospital Khadijah Palembang.

The exclusion criteria of this study were CKD patients without the etiology of hypertension, patients with CKD without the etiology of type 2 DM, outpatients, and patient drug data needed for the study were incomplete.

The sampling technique is done by the total sampling method, that is, every sample that meets the inclusion criteria is included in the study. Referring to the research of Sumolang [15] who used a prospective research method, the number of samples used was 30 patients. If the availability does not reach 30 patients, the maximum number of patients with CKD with the etiology of hypertension and or type 2 DM is available during the period from August to October 2018.

2.3. Data Collection

The study was conducted at Siti Khadijah Hospital in Palembang by using subjects with CKD patients with etiology of hypertension and or type 2 diabetes mellitus patients with chronic etiology of hypertension and or type 2 DM who will be treated according to the current condition. Next will be followed up and observations every day related to observations of the patient's condition, drug use, drug dosage, method of administration and duration of drug administration, as well as drug indications. The observations are recorded on the data collection sheet by the researcher.

2.4. Data Analysis

The analysis was carried out based on data obtained from antihypertensive and OAD use in patients with CKD with the etiology of hypertension and or type 2 DM, ie from the data collection sheet in the form of recapitulation by researchers. The data collection sheet was analyzed descriptively about the treatment study of CKD patients with etiology of hypertension and or type 2 diabetes mellitus. The results of the analysis will be presented in the form of short descriptions, tables, and percentages. The percentage will be presented in the form of a pie chart. The analysis uses the Microsoft Excel® program. Based on [2], the formula for calculating percentages is:

$$P = \frac{f}{n} \times 100\ \%$$

where P = percentage, f = frequency, and n = the total amount of data obtained.
From the formula above, the percentage of national criteria can be calculated using the formula:

1. Percentage right indication

$$\%\ Tepat\ indikasi = \frac{Jumlah\ data\ yang\ tepat\ indikasi}{Jumlah\ total\ data\ yang\ didapat} \times 100\ \%$$

2. Precise percentage of medicine

$$\%\ Tepat\ obat = \frac{Jumlah\ data\ yang\ tepat\ obat}{Jumlah\ total\ data\ yang\ didapat} \times\ 100\ \%$$

3. Percentage of right dosage

$$\%\ Tepat\ dosis = \frac{Jumlah\ data\ yang\ tepat\ dosis}{Jumlah\ total\ data\ yang\ didapat} \times 100\ \%$$

4. Percentage of exact patients

$$\%\ Tepat\ pasien = \frac{Jumlah\ data\ yang\ tepat\ pasien}{Jumlah\ total\ data\ yang\ didapat} \times 100\ \%$$

5. Percentage of side effect

$$\%\ Waspada\ efek\ samping = \frac{Jumlah\ data\ efek\ samping}{Jumlah\ total\ data\ yang\ didapat} \times 100\ \%$$

3. Results and Discussion

3.1. Profile of Patients with Chronic Renal Failure (GGK) with Etiology of Hypertension and or Diabetes Mellitus (DM) Type 2

Based on inclusion and exclusion criteria, the number of patients based on inclusion criteria was 20 patients, namely CKD patients with etiology of hypertension and or type 2 DM. The number of patients based on exclusion criteria was 5 patients, namely CKD patients not with etiology of hypertension and type 2 DM in this study the population met the inclusion criteria. The result of population of CKD patiens at Siti Khadijah Hospital in Palembang is presented in the Table 1.

Table 1. Population of CKD patients at Siti Khadijah Hospital in Palembang

CKD Patients	Total	Percentage
With Hypertension etiology	6	24 %
With Hypertension and DM type 2 etiology	14	56 %
With kidney stone disease etiology	4	16 %
With polycistic kidney etiology	1	4 %
Total	25	100 %

3.2. Profile of CRF Patients with Etiology of Hypertension and or Type 2 DM Based on Gender

The lifestyle of men such as smoking is one of the factors that can cause CRF with the etiology of hypertension. Smoking is one of the factors that can cause hypertension [14]. This is because the content of the chemicals contained in tobacco can damage the inner lining of the arteries, so the arteries are susceptible to plaque buildup (atherosclerosis). The nicotine content in cigarettes can cause blood vessels to narrow so that blood pressure increases [13]. Hypertension that occurs for years can damage various organs of the body, such as the kidneys. Hypertension will cause the blood vessels in the kidneys to narrow and damage. This causes the work of the kidneys to be disrupted and reduces the ability of the kidneys to properly filtrate the blood. The result of profile of CKD patients with etiology of hypertension and or type 2 diabetes based on gender is presented in the Table 2.

Table 2. Profile of CKD patients with etiology of hypertension and or type 2 DM based on Gender

Gender	Total	Percentage
Man	11	55 %
Woman	9	45 %
Total	20	100 %

3.3. Profile of CRF Patients with Etiology of Hypertension and or Type 2 DM Based on Age

Profile of CRF patients with etiology of hypertension and / or type 2 diabetes mellitus based on age, the most are patients with an age range of 46-65 years at 80%. Increasing the age of a person can cause a decrease in organ function. One of the organs of the body that has decreased function along with increasing age is the kidney. According to [12], there is a process of loss of several nephrons at the age of more than 40 years. Estimates of decreased kidney function based on age increase per decade are around 10 mL / minute / 1.73 m2. Based on these estimates, if it has reached the age of the fourth decade, it can be estimated that there has been minor damage, ie with a LFG value of 60 - 89 mL / minute / 1.73 m2. Increasing age, and coupled with chronic diseases such as hypertension and / or diabetes, the kidneys tend to become damaged and cannot be restored. This is what causes the number of patients with CKD with the etiology of hypertension and or type 2 diabetes mellitus most at the age of 46-65 years because at that age there is a decline in organ function.

As you age, your body's cells become more resistant to the hormone insulin, which reduces the ability for glucose metabolism. In addition, insulin release from pancreatic beta cells decreases. The testosterone hormone in men and the estrogen hormone in women affects the work of the body's cells in response to insulin. After entering the elderly, both hormones experience imbalances and affect blood sugar levels. This is what causes the elderly to experience a decrease in insulin resistance, resulting in diabetes mellitus [7]. The result of profile of CKD patients with etiology of Hypertension and or Type 2 DM Based on Age is presented in the Table 3.

Table 3. Profile of CKD Patients with Etiology of Hypertension and or Type 2 DM Based on Age

Age (Years old)	Totap	Percentage
26 - 45 years old	1	5 %
46 - 65 years old	16	80 %
>65 years old	3	15 %
Total	20	100 %

3.4. Evaluation of the rationality of the use of antihypertensive drugs

The overall conclusion of evaluation of the rationality of the use of antihypertensive drugs can be seen in Figure 1.

3.4.1 Patient Accuracy. Patients with medical record number 10 received spironolactone and experienced hyperkalemia with potassium value of 6.43 mmol / L. This shows that patients with medical record number 10 are not right in receiving spironolactone drugs. The use of the drug spironolactone is contraindicated in hyperkalemia patients because spironolactone works by means of aldosterone antagonist. Aldosterone hormones play a role in increasing excretion of potassium by the kidneys, so that when given the drug spironolactone, potassium becomes restrained, and consequently the amount of potassium is higher (hyperkalemia) [4]. Patients with medical record numbers 06 and 07 are said to be inappropriate in the selection of antihypertensive drugs because patients do not get first-line drug therapy (ACE-I or ARB drugs), but third-line drug therapy, amlodipine drug which is a CCB class.

3.4.2 Precision of Medicine. The limitation of drug stock in the BPJS service causes patients not to receive drugs according to the line of therapy. Patients with medical record number 10 were said to be

inappropriate in drug selection because they received the drug spironolactone with a high blood potassium condition of 6.43 mmol / L. The administration of the drug spironolactone can inhibit the work of furosemide in reducing the patient's blood potassium levels so that the administration of spironolactone drugs is said to be inappropriate in drug selection

3.4.3 Alert to Side Effects. Patients with medical record number 07 experienced hypokalemia side effects after use of furosemide drugs. This can be seen in the low patient potassium value data of 2.1 mmol / L and the use of KSR which is indicated to treat hypokalemia in patients [8]. Patients with medical record number 10 experienced side effects in the form of increasing potassium levels with an initial potassium value of 6.43 mmol / L to 6.98 mmol / L after the use of the drug spironolactone. Patients with medical record numbers 10 also experience dry skin caused by excessive urinary excretion causing the body to become deficient in water.

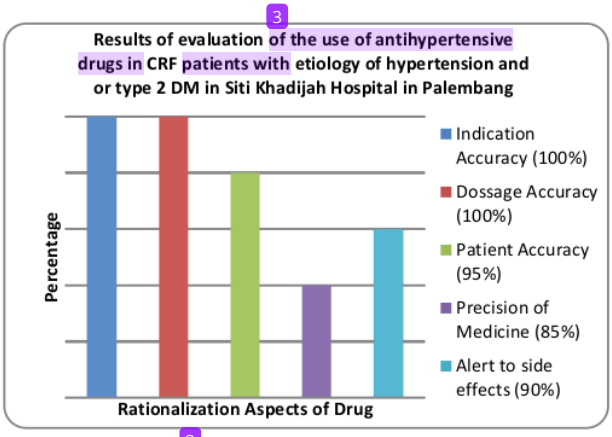

Figure 1. Results of evaluation of the use of antihypertensive drugs in CKD patients with etiology of hypertension and or type 2 DM in Siti Khadijah Hospital in Palembang

3.5 Evaluation of the rationality of the use of oral antidiabetic drugs

The result of Evaluation of the use of oral antidiabetic drugs (OAD) is obtained 100% right indication, 100% right dosage, 100% right patient, 100% right drug, and 100% patients do not experience side effects can be seen in Figure 2.

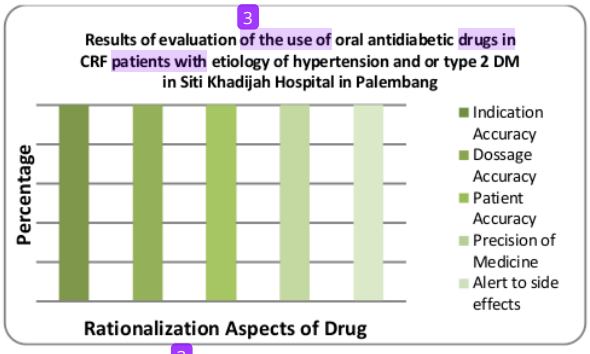

Figure 2. Results of evaluation of the use of oral antdiabetic drugs in CKD patients with etiology of hypertension and or type 2 DM in Siti Khadijah Hospital in Palembang

4. Conclussion

The rationality of the use of antihypertensive and OAD patients with CKD with the etiology of hypertension and / or type 2 DM in RSI Siti Khadijah Palembang obtained 20 patients who met the inclusion criteria. The results of evaluating the use of antihypertensive drugs were 100% accurate, 100% right for the dose, 95% right for the patient, 85% right for the drug and 10% for the patients experiencing side effects. Evaluation of the use of OAD is obtained 100% right indication, 100% right dosage, 100% right patient, 100% right drug, and 100% patients do not experience side effects.

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