

Profile of resistant Hypertension in the University Christian of Indonesia General Hospital in 2019

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Abstract

Hypertension is one of the main causes of mortality and morbidity in Indonesia. Resistant hypertension is a case of hypertension whose blood pressure remains high, after a change in lifestyle and obtaining management of 3 anti-hypertensive drugs with optimal doses with a different mechanism of action. The exact prevalence of HR is not known with certainty. The lack of data on the prevalence of resistant hypertension is the aim of this study to complete the data on the prevalence of resistant hypertension in UKI General Hospital. This research is descriptive. Data is taken from UKI General Hospital medical records from January to December 2019 with inclusion and exclusion criteria. Of the 1,030 in patients with hypertension, 139 patients are suffering from resistant hypertension. With the number of men and women not very different, the average age is 58 years and most cases are in the age group > 65 years. Chronic kidney failure (CKD) is the most common comorbid disease, followed by DM and heart failure. Patients with more resistant hypertension have very high initial blood pressure, and most use a combination of 3 drugs to control their blood pressure.

Key Word : Resistant Hypertension, UKI General Hospital, Hypertension

Background

Hypertension is one of the main causes of mortality and morbidity in Indonesia, so the management of this disease is very important to do at various levels of health facilities.¹

A person will be considered hypertensive if they have systolic blood pressure ≥ 140 mmHg and or diastolic blood pressure ≥ 90 mmHg, on repeated examinations.¹

According to The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7) guidelines in 2003, resistant hypertension (HR) is defined as failure to achieve blood pressure targets.

Left ventricular hypertrophy (LVH), heart failure, myocardial infarction, stroke, retinopathy, microalbuminuria and chronic kidney disease are target organ damage that can be at a higher risk of occurring in patients with resistant hypertension than in controlled hypertensive patients.²

The exact prevalence of HR is not well known. Some studies suggest a HR prevalence of 5% to 50% in general practice, or higher in nephrology clinics, including patients with CKD.³

Resistant hypertension almost always has a multifactorial etiology. The management of HR begins with the identification and modification of lifestyle factors, ensuring medication adherence, stopping drugs that can cause an increase in blood pressure, treating secondary causes of hypertension, and using effective drugs to control blood pressure.^{3,4}

The lack of data on the prevalence of resistant hypertension is the background of this study, in order to add to the primary data on the prevalence of resistant hypertension in Indonesia, especially at UKI Hospital.

Literature review

1. Definition of Resistant Hypertension

Resistant Hypertension is a case of hypertension whose blood pressure remains high, the measurement is carried out by Ambulatory Blood Pressure Monitoring or Home Blood Pressure Monitoring, after lifestyle changes and receiving management of 3 anti-hypertensive drugs with optimal doses with different mechanisms of action, usually including long acting calcium channels blockers, Angiotensin Receptor Blockers / Angiotensin Converting Enzym inhibitors, and Diuretics.^{5,6}

2. Prevalence of Resistant Hypertension

The exact number of cases of resistant hypertension is currently unknown.^{5,6,7,8} The prevalence of resistant hypertension varies widely, ranging from 5.56% in studies conducted in France to 34.32% in studies conducted in England and Scandinavia. According to Rossignol et al, the incidence of resistant hypertension is 0.5% - 14% of the total patients receiving antihypertensive therapy. Based on these data, it was found that only 50% of resistant hypertension cases received the optimal drug and dose, while the other 40% were due to non-compliance.

patients taking medication or developing "white coat hypertension." ⁸ Using a lowered blood pressure threshold can increase the prevalence rate of resistant hypertension by 4% .⁹

3. Factors Affecting Resistance Hypertension

Hypertension resistance can be influenced by several factors, for example demographic factors, comorbidities, consumption of drugs that can raise blood pressure.

- Demographic factors for resistant hypertension: Age > 75 years, Obesity, race, black skin, excessive sodium intake, very high initial blood pressure, uncontrolled chronic hypertension.
- Comorbidities associated with resistant hypertension: Hypertension Mediated Organ Damage (Left Ventricular Hypertrophy and / or Chronic Kidney Diseases), Diabetes, Coronary artery disease, Peripheral vascular disease, Cerebrovascular disease, Congestive heart failure, Atrial fibrillation, Albuminuria, Aortic Stiffening, Isolated systolic hypertension, Primary hyperaldosteronism, renovascular atherosclerosis disease, Sleep apnea, Pheochromocytoma, aortic coarctation, Cushing disease, Hyperparathyroid.
- Take drugs that can increase blood pressure: oral contraceptives, sympathomimetic drugs (decongestants), NSAIDs, Cyclosporine, Erythropoietin, Steroids, Cancer Treatment, Cocaine, Amphetamine

4. Management of Resistant Hypertension

The first step in treatment of resistant hypertension is to rule out other possibilities such as “white

coat hypertension” and medication non-adherence. Furthermore, the management of resistant hypertension begins with lifestyle modifications, ensuring patient adherence to treatment, treating secondary causes that can lead to increased blood pressure, stopping the consumption of drugs that can increase blood pressure and optimizing the antihypertensive drugs given. Lifestyle modification is carried out by limiting the amount of salt consumed (<2400 mg / day), sleeping regularly > 6 hours a day, exercising, losing weight, quitting smoking, stopping alcohol consumption and regularly taking the antihypertensive drugs that are given. Antihypertensive drugs given to patients with resistant hypertension include 3 main types of drugs, namely ACE-inhibitors, CCBs and diuretics with a maximum tolerable dose. ⁶

Blood pressure that has not been controlled by the first step management will go to the next step, namely replacing the thiazide drugs used to be chlorthalidone or indapamide. If still not reaching the target, the use of mineralocorticoid receptor antagonist drugs (spironolactone or eplerenone) can be started. When

still not reaching the target after receiving mineralocorticoid receptor antagonist drugs, the next fourth step is administration of beta blockers or administration of central alpha agonists if beta blocker drugs are contraindicated. If after the fourth step management has not reached the target, hydralazine drugs can be given. The last step that can be given if it still has not reached the target is replacing hydralazine with minoxidil. Management of steps four to six is only based on expert opinion. ⁶

Methodology

This research is a descriptive study that explains the prevalence and comorbidities in the case of resistant hypertension at the UKI Hospital in 2019. The population is a large number of subjects who have certain characteristics that are tailored to the research objectives. The population in this study were all hypertension patients who were hospitalized at the UKI Hospital in 2019. The sample data was taken from the Medical Record data of the UKI Hospital. The sampling method in this study used Consecutive Sampling. Consecutive Sampling is a sampling based on the fulfillment of the inclusion and exclusion criteria.

The inclusion criteria in this study were: Hypertension patients who were hospitalized during June-December 2019 at UKI Hospital and uncontrolled hypertensive patients after administering 3 types of anti-hypertensive drugs (ACE-i / ARB, CCB, diuretic).

While the exclusion criteria in this study were: Hypertension patients who were not hospitalized during June-December 2019 at UKI Hospital and hypertension sufferers who were controlled after administration 3 types of anti-hypertensive drugs (ACE-i / ARB, CCB, diuretic).

Result

Of the 3,002 patients hospitalized at UKI Hospital in January - December 2019, 1,030 patients were treated with hypertension. Resistant hypertension was found in 139 patients, resulting in a prevalence rate of resistant hypertension in the UKI Hospital in 2019 as much as 13.49%.

In 139 patients who had resistant hypertension at UKI Hospital, 70 patients were male (50.4%) and 69 patients were female (49.6%). Grouping based on age used

the age interval 26 - 35 years, 36 - 45 years, 46 - 55 years, 56 - 65 years and > 65 years.

At the age of 26-35 years, there were 8 patients (5.8%), aged 36 - 45 years, there were 15 patients (10.8%), there were 28 aged 46 - 55 years patients (20.1%), aged 56-65 years were present

There were 45 patients (30.9%) and aged > 65 years (32.4%) with a mean age of 58 years.

Patients with resistant hypertension who were admitted to the UKI Hospital had 30 patients (21.6%) of initial blood pressure classified as grade I hypertension, while 109 patients (78.4%) were classified as grade II hypertension. The combination of drugs used at UKI Hospital for the management of resistant hypertension uses 3 or 4 drugs. ACE-inhibitor / ARB + CCB + thiazide combination diuretic is the most common combination

A central ACE-inhibitor / ARB + CCB + alpha agonist is used in patients with CKD disease who are no longer urine producing, and a combination of 4 ACE-inhibitor / ARB + CCB + thiazide diuretics + central alpha agonist.

119 patients with resistant hypertension used 3 drugs (85.9%) and 20 patients used 4 drugs (14.4%).

Chronic kidney disease is a disease that most often accompanies patients with resistant hypertension in the UKI Hospital, namely 71 patients (51.1%) other diseases such as diabetes mellitus, there are 46 patients (33.1%), heart failure there are 35 patients (25.2%), coronary heart disease. there were 39 patients (28.2%), stroke there were 3 patients (2.2%), and other diseases such as COPD, atrial fibrillation, nephrotic syndrome, cirrhosis of the liver, AV block, acute renal failure, dyslipidemia, supraventricular tachycardia, SLE, extrasystolic ventricle 24 patients (17.3%).

Discussion

In this study, the prevalence rate of resistant hypertension was 13.49%. These results are in line with the prevalence rates available in other literature. According to Acharya et.al the prevalence of resistant hypertension reaches 9% and in elderly patients who come to primary health clinics it reaches 13% .^{10,11} Based on data from Achelrod et.al, 20 observational studies of patients with resistant hypertension have a prevalence of 11.19% - 16.24% and 10.68% - 21.95% in 4 RCT studies.⁷ Based on Lotufo et.al's data, the prevalence of resistant hypertension reached 11% of 4,116 cases.¹² According to Sarafidis et.al, the prevalence of resistant hypertension reached 9% - 12% .¹³ According to Persell, the prevalence of resistant hypertension reached 12.8%.¹⁴

Some writers don't have the same data as the prevalence rate of this study. According to ESC and ESH the prevalence rate of resistant hypertension does not reach 10% .¹⁵

Men who had resistant hypertension reached 50.4% and women 49.6%. Although the number of men is more affected by hypertension, this does not reflect that gender affects the incidence of resistant hypertension. Women with resistant hypertension reached 53.8%, not much different from men according to Persell.¹⁴ Based on data from Lotufo et al. Women who had resistant hypertension reached 54.5% .¹² Based on data from Achelrod et.al, women with resistant hypertension reached 52% . .⁷ All of this is different from Acharya et.al and Sarafidis et.al, men who have resistant hypertension are more than women.^{11,13} This research could not find a relationship between resistant hypertension and gender, but physiological factors and drug adherence levels can be confounding factors in the results of the study. .⁷

Age > 65 years is the age where resistant hypertension occurs the most in this study with an average age of 58 years. Age > 55 years is the most common age with resistant hypertension cases.¹³ The average age of having resistant hypertension is 58.8 years.¹² According to Persell, resistant hypertension occurs at an average age of 66.4 years¹⁴. According to Acharya et.al, resistant hypertension occurred at the age of 72.9± 11.0 years. .¹¹ This suggests that resistant hypertension is more common in the elderly.

In this study, the use of a combination of 3 antihypertensive drugs was able to control blood pressure so that the combination of 4 antihypertensive drugs was less their use. Unlike the research conducted by Persell, the use of a combination of 3 antihypertensive drugs reached 43%, a combination of 4 antihypertensive drugs reached 43.2%, and the use of a combination of ≥ 5 antihypertensive drugs reached 13.8% .¹⁴

This difference can occur because supervision at the inpatient installation can maintain the level of adherence to the consumption of antihypertensive drugs.

CKD is the most common comorbid disease in resistant hypertension cases in this study. This is different from the research of Acharya et.al, which shows that metabolic syndrome is the most common comorbid disease in resistant hyperthyma, reaching 75% while CKD is only 20%.¹¹ CKD accompanied by resistant hypertension, the prevalence rate reached 26% .¹³

Conclusion

Of the 3,002 patients hospitalized at UKI Hospital in January - December 2019, 1,030 patients were treated with hypertension. Resistant hypertension was found in 139 patients, resulting in a prevalence rate of resistant hypertension in the UKI Hospital in 2019 as much as 13.49%. The results of

this study get the highest prevalence in male gender (50.4%). Based on age, the majority is obtained by age

> 65 years (32.4%) with an average age of 58 years and based on tension at admission to the hospital were categorized as grade II hypertension as many as 109 patients (78.4%) and chronic kidney disease was the most common disease among patients with resistant hypertension in RSU UKI.

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