Research of Service Administration Health and Sains Healthys
Vol. 3 No. 2 Desember 2022
*p-ISSN:*2830-4748 e-ISSN: 2830-4772
DOI: *http://ejournal.mandalanursa.org/index.php/Rehat/issue/archive*

The Relationship between Hypertension and Chronic Kidney Failure in the North Lombok Regency General Hospital

Ahmad Syukria Agussalim[1], Antoni Eka Fajar Maulana[2], Agus Putradana[3], Eva Marvia[4]
[1234]Sekolah Tinggi Ilmu Kesehatan Mataram (STIKES) Mataram

Article Info
Article history:
Received: 6 December 2022
Published: 10 December 2022

Keywords:
Hypertension
Chronic Kidney ailure

Abstract
Chronic Renal Failure is a condition where the kidneys are unable to transport metabolic waste in the form of material that is eliminated through urine and accumulates in body water due to renal excretion disorders and causes impaired endocrinal and metabolic functions, electrolytes, and acid-bases (abdul, 2015). According to the Ministry of Health of the Republic of Indonesia (2015), kidney failure is ranked 6th in the cause of death for all hospitals in Indonesia. One of the causes of chronic kidney disease is hypertension (FERNEFRI, 2016). This study aims to determine the Relationship between Hypertension and the Incidence of Chronic Kidney Failure at the North Lombok Regency Hospital. Design This study uses observational with a cross sectional approach. The sampling technique used is total sampling. The study population was 94 chronic kidney failure patients registered in the Medical Record of KLU Hospital for the period from January to March 2022. Sample was determined by looking at the total population of 94 respondents. Data collection using Medical Records and analyzing data using chi-square with an error rate of 0.05. The results of this study showed that out of 94 respondents there were 52 respondents who experienced hypertension and judging from the incidence of Chronic Kidney Failure, there were 39 respondents at stage 5. There is a significant relationship between Hypertension and the Incidence of Chronic Kidney Failure at the North Lombok District Hospital.

Corresponding Author: **Ahmad Syukria Agussalim**
(STIKES) Mataram
Email: asyukria161@gmail.com

1. INTRODUCTION

Nowadays, many people experience chronic diseases that lead to death. One of these chronic diseases is chronic kidney disease, where every year the number of patients increases and is one of the causes of death in the world. (Azizah et al, 2015). This is because chronic kidney failure still has a fairly high incidence rate, has a broad and complex etiology, and often has no complaints or symptoms unless it has entered the terminal stage. As a result, the true incidence and prevalence of chronic kidney failure is difficult to know because many patients who experience kidney disorders in the early stages do not cause symptoms. According to the World Health Organization (WHO), chronic kidney failure contributes to the world's disease burden with a death rate of 850,000 people per years (Pongsifeld, 2016). The results of the Global Burden of Disease research in 2010, chronic kidney failure was the 27th leading cause of death in the world in 1990 and increased to 18th in 2010 (Ministry of Health of the Republic of Indonesia, 2015). According to the Indonesian Ministry of Health (2018), kidney failure is the 6th cause of death in all hospitals in Indonesia. The prevalence of chronic kidney failure cases in Indonesia according to basic health research in 2018 was 0.38%, while the prevalence of cases in West Nusa Tenggara was 0.52%. This shows that the prevalence of chronic kidney failure cases in West Nusa

Tenggara is still quite high (Ministry of Health of the Republic of Indonesia, 2018).

Several risk factors that influence the occurrence of chronic kidney failure include, according to the Indonesian Nephrology Association (PERNEFRI) in 2016, the two most frequent main causes are hypertension kidney disease. Hypertension is one of the risk factors that is often found in kidney failure. Data from the World Health Organization (WHO) in 2015 shows that around 1.13 billion people in the world have hypertension, meaning that 1 in 3 people in the world are diagnosed with hypertension. Basic health research in 2018 shows that the prevalence of hypertension in Indonesia through measurement methods in samples aged ≥18 years is 34.1%, while the prevalence of hypertension cases in West Nusa Tenggara province is 11.31%, and in North Lombok Regency is 13. .92%. This shows that the incidence of hypertension in North Lombok Regency exceeds the national average (Ministry of Health of the Republic of Indonesia, 2018).

Based on data obtained by researchers when conducting a survey at KLU Regional Hospital, the number of visits from patients with hypertension was in second place with 2,940 cases and kidney failure was in third place with 1,156 cases throughout 2020. Based on the initial survey conducted by researchers of 10 CKD patients There were 5 patients who had hypertension. Based on the above phenomenon, researchers are interested in conducting research with the title "The Relationship between Hypertension and the Incidence of Chronic Kidney Failure in North Lombok District Hospital". This study aims to see the relationship between hypertension and the incidence of chronic kidney failure in North Lombok District Hospital. It is hoped that this research can become a reference and benchmark for hospitals to carry out prevention and treatment as early as possible for people with hypertension which can cause complications in the form of chronic kidney failure, and can also be a reference for further research.

2. RESEARCH METHOD

This research is an observational study with a Cross Sectional Study design, data was collected retrospectively by collecting secondary data on chronic kidney failure sufferers from medical records at the North Lombok District Hospital for the period 1 January 2022 to 31 March 2022. The sampling technique used a total sampling technique, namely as many as 94 respondents. Data analysis using chi-aquare..

3. RESEARCH RESULT

1. General data

Table 1. Distribution of respondent characteristics in North Lombok District Hospital.

Characteristics	Frequency	Percentage (%)
Age:		
- 18 – 65year	77	81.9
- 66 – 79year	15	16.0
- 80 – 99year	2	2.1
Gender:		
- Man-man	54	57.4
- Woman	40	42.6
Education		

- Uneducated	23	24.5
- elementary school	20	21.3
- JUNIOR HIGH SCHOOL	28	29.8
- SENIOR HIGH SCHOOL	23	24.5
Total	**94**	**100**

(Source: Secondary Data 2022)

2. Custom Data

a. Frequency distribution of respondents based on the incidence of Chronic Kidney Failure

Table 2. Frequency distribution of history of hypertension in North Lombok District Hospital.

NO	Hypertension	Amount	Percentage %
1	Hypertension	52	53.3
2	Not Hypertension	42	44.7
	Total number	94	100

(Source: Secondary Data 2022)

Based on Table 2, it can be seen that of the 94 respondents in the study This was dominated by respondents who had a history of hypertension as many as 52 respondents (53.3%), and respondents who did not have hypertension as many as 42 respondents (44 .7%).

b. Frequency distribution of respondents based on the incidence of kidney failure

c. chronicle

Table 3. Frequency distribution of Chronic Kidney Failure in RSUD Regency North Lombok.

No	Chronic Kidney Failure	Amount	Percentage %
1	Stage 1	2	2.1
2	Stage 2	12	12.8
3	Stage 3	23	24.5
4	Stage 4	18	19.1
5	Stage 5	39	41.5
	Total number	94	100

(Source: Secondary Data 2022)

Based on table 3, it can be seen that of the 94 respondents sampled in this study, it was dominated by respondents who had a history of Chronic Kidney Failure Stage 5, 39 respondents (41.5%), stage 4, 18 respondents (19.1%), stage 3. there were 23 respondents (24.5%) and there were 12 respondents (12.8%) with Chronic Kidney Failure stage 2 and 2 respondents (2.1%).

d. Analysis of the Relationship between Hypertension and Chronic Kidney Failure in North Lombok District Hospital.

After conducting research regarding the relationship between hypertension and the incidence of kidney failure. The results obtained are as shown in the table below:

Table 4. Cross tabulation results of the relationship between hypertension and the incidence of chronic kidney failure in HOSPITAL North Lombok Regency.

Hypertension	Chronic Kidney Failure												*p-Value*
	Stage 1		Stage 2		Stage 3		Stage 4		Stage 5		Total number		
	N	%	N	%	n	%	N	%	n	%	n	%	
Hypertension	0	0	0	0	4	7.7	13	25.0	35	67.3	52	100	0,000
Not Hypertension	2	4.8	12	28.6	19	45.3	5	11.9	4	9.5	42	100	
Amount	2	2.1	12	12.8	23	24.5	18	19.1	39	41.5	94	100	

Based on the table above, it shows that of the 52 respondents with "Hypertension" there were 0 people (0%) with Chronic Kidney Failure stage 1, 0 people (0%) with chronic kidney failure stage 2, 4 people (7.7%) with chronic kidney failure stage 3, 13 people (25.0%) with chronic kidney failure stage 4 and 35 people (67.3%) with Chronic Kidney Failure stage 5. Of the 42 respondents with "No Hypertension" there were 2 people (4.8%) with Chronic Kidney Failure stage 1, 12 people (28.6%) with

Chronic Kidney Failure stage 2, 18 people (42.9%) with Chronic Kidney Failure stage 3, 5 people (11.9%) with Chronic Kidney Failure stage 4 and 4 people (9.5%) with Chronic Kidney Failure stage 5 And the results of the chi-square test using SPSS are: p: 0.000.

4. DISCUSSION

Hypertension is often referred to as the silent killer, because this disease progresses slowly and does not show any symptoms for years. This latent period masks the development of the disease so that significant organ damage occurs (Price and Wilson, 2014). A long-lasting increase in blood pressure in the arterioles and glomeruli will cause sclerosis of the blood vessels. Sclerotic lesions that occur in small arteries, arterioles and glomeruli will cause nephrosclerosis. These lesions occur due to plasma leakage through the intimal membrane of blood vessels, which results in the formation of fibrinoid deposits in the media layer of blood vessels, which is accompanied by progressive thickening of the blood vessel walls, so that the blood vessels will experience vasoconstriction and obstruction of the blood vessels (Guyton and Hall, 2011). Obstruction that occurs in the arteries and arterioles will cause glomerular damage and tubular atrophy, so that the nephrons are damaged, which causes chronic kidney failure (Budiyanto, 2009).

A decrease in the number of nephrons will cause the body to carry out an adaptation reaction, namely increased blood flow, increased GFR (Glomerular Filtration Rate) and increased urine output in surviving nephrons. This process results in nephron hypertrophy and vasodilation as well as functional changes. Changes in nephron function will reduce vascular resistance and tubular reabsorption in surviving nephrons. After this disorder persists for a long time, the sclerotic lesions formed from nephron damage will increase in number, causing glomerular obliteration, which results in a further decline in kidney function, and will develop slowly and end as terminal kidney failure which results in death (Guyton and Hall, 2011). This proves that the higher the level of hypertension, the greater

the risk of developing chronic kidney failure.

The results of this study are in accordance with the results of Naja et al.'s 2012 research on the prevalence of CKD in Iran, Prevalence of Chronic Kidney Disease and its Associated Risk Factors: The First Report from Iran Using Both Microalbuminuria and Urine Sediment. The results of his research show that the prevalence of CKD is significantly associated with various diseases and one of them is hypertension. The National Kidney Foundation (NKF) in 2011 stated that the two main causes of chronic kidney disease are diabetes and hypertension. And according to Singh et al in India, Epidemiology and risk factors of chronic kidney disease in India-results from the SEEK (Screening and early evaluation of kidney disease) study, diabetes is the second most common risk factor for chronic kidney disease. A total of 57 disease research respondent's chronic kidney disease, 47 of them were diagnosed with hypertension. Researchers tried to classify the onset of a simple disease that preceded it as a risk factor based on the doctor's diagnosis in the medical record. The results were that 20 respondents (42%) were diagnosed with hypertension before chronic kidney disease, 13 respondents (28%) were diagnosed with chronic kidney disease first and 14 respondents (30%) were diagnosed simultaneously. In simple terms, what is diagnosed first is considered a risk factor or cause. Meanwhile, what is diagnosed simultaneously is still unclear. Of course, this method has a very low level of accuracy. More accurate research such as that carried out by Filho et al, Progression of chronic kidney disease: ambulatory experience in Santarém-Pará, used a retrospective cohort study which aimed to determine the variables that were most influential in the development of chronic kidney disease. The result is that hypertension is the cause of chronic kidney disease with a percentage of 34.2% (p = 0.0359). Hypertension can also occur as a result of CKD. In Zbroch et al.'s 2012 research, Kidney and hypertension: is there a place for renal disease? sympathetic nervous system activity increased in CKD patients, resulting in increased vascular resistance and systemic blood pressure. This increased activity is the result of excessive excretion and inhibition of catecholamine reduction. Recently, a new protein was discovered, called renalase. Experimental in vitro studies show that renalase can reduce catecholamine levels and thus can have significant hemodynamic effects in vivo, for example it can reduce cardiac contractility, heart rate, and blood pressure. Studies conducted on CKD patients showed lower serum renalase levels compared with healthy individuals.

The results of this study showed a significant correlation ($p<0.05$) in the degree of hypertension with CKD stage III ($p=0.048$) and the degree of hypertension with CKD stage V ($p=0.007$). This is in accordance with research by Filho et al, Progression of chronic kidney disease: ambulatory experience in Santarém ± Pará, namely systolic blood pressure >160mmHg and diastolic >90mmHg increases the risk of CKD progression by 2.7 times. Correlating the degree of hypertension with CKD stage V found that 16 respondents experienced grade 2 hypertension. This number is the highest compared to stages III and IV. This is in accordance with research Peralta et Alin 2012, *Blood pressure components and end-stage renal disease in persons with chronic kidney disease: the Kidney Early Evaluation Program (KEEP)*, concluded that the treatment strategy to inhibit the progression of CKD is to control blood pressure to keep it low. The recommended figure is systolic pressure <130mmHg.

5. CONCLUSION

There is a significant relationship between hypertension and the incidence of chronic kidney failure at the North Lombok District General Hospital.

6. BIBLIOGRAPHY

Al Mubarok, Muh Fuad. (2016). *Kualitas Hidup Pasien Gagal Ginjal Kronik yang Menjalani Hemodialisa dengan Metode Single-Use dan Re-Use di RSPAD Gatot Subroto dan RS PGI Cikini Jakarta*. Jurnal Keperawatan Volume 12(2).

Arora, P., & Batuman, V. (*2015*). *Chronic Kidney Disease*. (diakses 15 Mei *2015*) Bargman, J. M., & Skorecki, K. (2012). Chronic.

Azizah et al. (2015). *Faktor-faktoryang berhubungan dengan gagal ginjal pada pasien yang dirawat di RS Adam Malik Medan*. Diakses pada tanggal 15 agustus 2021

Bayhakki, Y. (2013). *Seri Asuhan Keperawatan Klien Gagal Ginjal kronik. Jakarta: EGC*

Black, J. M & Hawks, J. H. (2014).*Keperawatan Medikal Bedah Edisi 8. Jakarta: PT. Salemba Medika*

Cahyo, Vandu Dwi, et al. *Hubungan Hipertensi Dan Usia Terhadap Kejadian Kasus Gagal Ginjal Kronis Di Rsud Dr. Harjono S. Ponorogo.* Proceeding Book National Symposium and Workshop Continuing Medical Education XIV, 2021.

Fakhrudin, A. (2013). *Kronik di RSUP DR Kariadi Semarang Periode 2008-2012 Jurnal Media MedikaMuda. Faktor Faktor Penyebab Penyakit Ginjal Kronik di RSUP DR Kariadi Semarang.Jurnal Article*.

HS Ardi · 2019 — 10. Perhimpunan Nefrologi Indonesia (*Pernefri*). Annual Report of Indonesian. Renal Registry. *Pernefri*. *2016*:9:1–46. 11. Suhardjono. Hemodialisis; Prinsip

Kemenkes RI.(2015).*Profil Kesesehatan Indonesia*. Jakarta:Departemen Kesehatan

Medistra, Kharisma Fiqriyani. *Hubungan Derajat Dan Lamanya Hipertensi Dengan Kejadian Gagal Ginjal Kronik Di Rumah Sakit Dustira. (2017).*

Nurjanah, A. 2012. *Hubungan Antara Hipertensi Dengan Angka Gagal Ginjal Terminal di RSUD Dr. Moewardi Surakarta. Fakultas Kedokteran: Universitas Muhammadiyah Surakarta*

Rizki, Felicia Angga, and Meizly Andina. *Karakteristik Penderita Hipertensi Dengan Gagal Ginjal Kronik Di Instalasi Penyakit Dalam Rumah Sakit Umum Haji Medan Tahun 2015*. Jurnal Ibnu Sina Biomedika 1.1 (2017): 87-96.

Sudoyo. (2007). *Buku ajar penyakit dalam jilid II edisi IV. Jakarta: Interna Publising.*

Suharyanto, T & Madjid, A. (2009). *Asuhan keperawatan pada klien dengan gangguan sistem perkemihan. Copy Editor :Agung Wijaya. A.md-Jakarta : TIM*

Sukandar.(2013). *Nefrologi Klinik. Edisi Ke-4. Bandung: Pusat Informasi Ilmiah (PII) Bagian IPD. Fakultas Kedokteran UNPAD.*

Tessy, A. (2009). *Hipertensi pada penyakit ginjal. In: Aru W. Sudoyo, Bambang Setyohadi, Idrus Alwi, Marcellus Simadibrata, Siti Setiati editor. Buku Ajar Ilmu Penyakit Dalam Jilid*
II. Edisike-V. Jakarta: Pusat Penerbitan Departemen Ilm u Penyakit Dalam FK UI.