Proceeding – CAMIC

Cirebon Annual Multidisciplinary International Conference (CAMIC 2024)

LIPID PROFILE AND KIDNEY FUNCTION IN PROLANIS PATIENT

1st Tiar Masykuroh Pratamawati
Department of Genetic, Faculty of Medicine
Universitas Swadaya Gunung Jati
Cirebon, Indonesia
tiar.m.pratamawati@ugj.ac.id

2nd Donny Nauphar
Department of Genetic, Faculty of Medicine
Universitas Swadaya Gunung Jati
Cirebon, Indonesia
donny.nauphar@ugj.ac.id

3rd Eni Suhaeni
Department Public Health, Faculty of Medicine
Universitas Swadaya Gunung Jati
Cirebon, Indonesia
eni.suhaeni@ugj.ac.id

***Abstract*—Prolanis or Chronic Disease Management Program is a program from BPJS which aims to improve the quality of life for sufferers of chronic diseases such as diabetes mellitus and hypertension. The number of hypertension cases in Indonesia reaches 32.4% of the Indonesian population aged over 18 years. The prevalence of diabetes among those aged 20-79 years is 10.6%. Hypertension and diabetes mellitus can cause complications and even death. The aim of this study is to see the lipid profile and kidney function in kidney and hypertension patients. The method used in this research was descriptive with total sampling, blood tests were carried out to look at the parameters of total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL), triglycerides, urea and creatinine in prolanis patients at the Mulya Medika clinic. The results were obtained from 24 hypertension patients and 10 diabetes mellitus patients with 18 people (53%) with high total cholesterol and 16 people (47%) with normal cholesterol, 23 people (68%) with high triglycerides and 11 people (32%) with normal cholesterol. %), HDL was low in 6 people (18%) and normal in 28 people (82%), creatinine in 34 people (100%) was normal and urea in 1 person (3%) was high and 33 people (97%) was normal. Conclusion 30 people (88%) prolanis had disorders in the lipid profile and 4 people (12%) were normal. Kidney function was abnormal in 1 person (3%) and 33 people (97%) were normal.**

Keywords— ***lipid profile; kidney function; prolanis patient***

I. INTRODUCTION

The Chronic Disease Management Program, hereinafter referred to as Prolanis, is a health service with a proactive approach that is implemented in an integrated manner involving participants, health facilities and BPJS Health in order to maintain the health of participants suffering from chronic diseases to achieve optimal quality of life with cost-effective and efficient health services.[1] Hypertension and diabetes mellitus are part of the prolanis program because the prevalence continues to increase, especially in Indonesia. Currently, hypertension cases in Indonesia reach 32.4% of the population over the age of 18 years and the number of diabetes mellitus cases is 10.6% of the population aged 20-79 years. [2], [3] Hypertension is a condition where systolic blood pressure increases to more than 140 mmHg and diastolic blood pressure to more than 90 mmHg after two separate measurements.[4] Type-2 diabetes mellitus is a condition where fasting blood sugar levels are >126 mg/dL or instant blood sugar >200 mg/dL with classic complaints or hyperglycemia crises or HbA1c levels >6.5%.[5] Hypertension is a major risk factor for heart disease, congestive heart failure, stroke, visual impairment and kidney disease. High blood pressure generally increases the risk of these complications. Untreated hypertension will affect all organ systems and ultimately shorten life expectancy by 10-20 years.[4] Complications in type 2 diabetes mellitus can occur acutely and chronically, acutely, diabetes mellitus can cause diabetic ketoacidosis and diabetic coma, hypoglycemia, hyperglycemia. Chronic complications of type 2 diabetes mellitus can cause macroangiopathy, diabetic retinopathy, diabetic nephropathy, diabetic neuropathy, diabetic foot, and susceptibility to infection.[6] The lipid profile in the blood consists of various fractions including total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides. Lipid metabolism disorders characterized by an increase or decrease in lipid fractions in blood plasma are called dyslipidemia. The most important lipid fraction abnormalities are increased total cholesterol levels (≥200mg/dl), LDL cholesterol (≥100mg/dl), increased triglyceride levels (≥150mg/dl) and decreased HDL levels(<40mg/dl). Complications in type 2 diabetes mellitus can occur acutely and chronically, acutely, diabetes mellitus can cause diabetic ketoacidosis and diabetic coma, hypoglycemia, hyperglycemia. Chronic complications of type 2 diabetes mellitus can cause macroangiopathy, diabetic retinopathy, diabetic nephropathy, diabetic

neuropathy, diabetic foot, and susceptibility to infection.[7] Ureum is the final product of protein and amino acid metabolism produced by the liver, and is excreted on average 30g in one day. Creatinine is a metabolic end product resulting from the breakdown of muscle keratin phosphate which is released from the muscles at a constant rate and excreted by the kidneys through a combination of filtration and secretion. The amount of creatinine levels produced and secreted is proportional to muscle mass. Ureum and creatinine are chemical compounds that indicate normal kidney function. If it is known that the urea creatinine in the urine is decreasing, it will result in a decrease in the glomerular filtration rate which will result in the urea creatinine level in the blood increasing. Therefore, the urea creatinine test is always used to determine kidney function in patients who are suspected of having kidney disorders.[8] In prolanis patients, examination of the lipid profile and kidney function is needed to determine whether complications occur in the patient. The aim of this study was to analyse the lipid profile and kidney function in prolanis patients at the Mulya Medika clinic in Cirebon.

II. METHOD

This research using descriptive method with total sampling of prolanis cases at the Mulya Medika Clinic in Cirebon in September-December 2023. A total of 34 prolanis people who met the inclusion criteria were: Prolanis patients at the Mulya Medika Clinic who had been diagnosed with hypertension or type 2 diabetes mellitus and were willing to take part. in this research. 5 cc of intravenous blood was taken from the subject for examination of the lipid profile (total cholesterol, low-density lipoprotein (HDL), high-density lipoprotein (LDL) and triglycerides) as well as examination of urea and creatinine. Results are analyzed using tables and charts.

III. RESULTS AND DISCUSSION

The results of this research showed that the number of prolanis patients who met the inclusion criteria was 34 people with 12 people (35%) men and 22 people (65%) women with examination results as in the table below.

TABLE I. HEMATOLOGICAL PROFILE

	Lipid Profile				**Renal Profile**	
	Total cholesterol	***Triglyceride***	***HDL***	***LDL***	***Creatinine***	***Urea***
Mean	222	249,82	50,18	118,91	0,8	26,82
Median	209,5	201,5	48,5	120,5	0,7	27,5

Note (in mg/dL): cholesterol level : <200; triglyceride <150; HDL>40;LDL<100; creatinine 0,6-1,4; urea 15-40.

The mean and median results of lipid profile examination in prolanis patients increased in total cholesterol, triglycerides and LDL but HDL levels were still within normal limits. This is in line with research conducted by Priyono (2023) who examined the lipid profile of hypertensive patients at RSUD Dr. H. Abdul Moeloek, Lampung Province, found results of increased total cholesterol, triglycerides, LDL and HDL in patients.[9]

Examination of kidney function in prolanis patients showed normal values for the patient's creatinine and urea. This is not in line with previous study of urea and creatinine levels in hypertensive patients with the results that there was an increase in urea creatinine levels in stage 1 and stage 2 hypertension patients.[10]

TABLE II. HEMATOLOGICAL RESULTS ANALYSIS

	Lipid Profile				**Renal Profile**	
	Total cholesterol	***Triglyceride***	***HDL***	***LDL***	***Creatinine***	***Urea***
Abnormal	18 (53%)	23 (68%)	6 (18%)	25 (74%)	0	1 (3%)
Normal	16 (47%)	11 (32%)	28 (82%)	9 (26%)	34 (100%)	33 (97%)

Most of the lipid profile examination results were abnormal for cholesterol, triglyceride and LDL levels, while normal results were obtained for HDL levels. Kidney function, both urea and creatinine, were normal.

Lipid profile levels were also associated with diabetes mellitus in this study, in line with research by Bhowmik (2018), which showed that type 2 diabetes mellitus was significantly associated with high cholesterol (Odds ratio (OR): 2.43, p <0.001), High triglycerides (OR: 3.91, p < 0.001) and low HDL (OR: 2.17, p = 0.044). Prediabetes showed a significant association with high Triglycerides (OR: 1.96, p < 0.001) and low HDL (OR: 2.93, p = 0.011). Results with a combination of high triglyceride levels and low HDL had a 12.75-fold higher OR for type 2 diabetes mellitus and 4.89 OR for prediabetes.[11] Some kidney diseases that cause hypertension are: a. renovascular: renal artery steonosis, polyarteritis nodusa, renal artery neurysm, renal artery malformation; b.Renoparenchymal: glomerulonephritis, polycystic kidney disease, analgesic nephropathy, renal tumor as Wilms' tumor, and other parenchymal diseases. These diseases can essentially cause two important events, namely 1) increased resistance to blood circulation to the kidneys; and 2)

decreased glomerular capillary function. This causes ischemia in the kidneys which stimulates increased release of renin (pro renin to renin) in glomerular cells.[12] In this study, good lipid profile results were obtained in prolanis patients.

IV. CONCLUSIONS

In prolanis patients, abnormal values were found for total cholesterol, triglycerides, LDL and normal values for HDL, urea and creatinine.

REFERENCES

[1] A. Kadir, "Hubungan Patofisiologi Hipertensi dan Hipertensi Renal," Jurnal Ilmiah Kedokteran Wijaya Kusuma, vol. 5, no. 1, p. 15, 2018, doi: 10.30742/jikw.v5i1.2.

[2] Bhowmik et al., "Serum lipid profile and its association with diabetes and prediabetes in a rural Bangladeshi population," Int J Environ Res Public Health, vol. 15, no. 9, pp. 1–12, 2018, doi: 10.3390/ijerph15091944.

[3] B. Nuraini, "Risk Factors of Hypertension," J Majority, vol. 4, no. 5, pp. 10–19, 2015.

[4] B. Senduk, W. Bodhi, and B. J. Kepel, "Gambaran profil lipid pada remaja obes di Kota Bitung," Jurnal e-Biomedik, vol. 4, no. 1, 2016, doi: 10.35790/ebm.4.1.2016.10847.

[5] Badan Penyelenggara Jaminan Sosial, "Berita Negara Republik Indonesia Peraturan Badan Penyelenggara Jaminan Sosial Kesehatan Nomor 2 Tahun 2019," no. 848, pp. 1–11, 2019.

[6] F. Nuroini and W. Wijayanto, "Gambaran Kadar Ureum dan Kreatinin Pada Pasien Gagal Ginjal Kronis di RSU Wiradadi Husada," Jambura Journal of Health Sciences and Research, vol. 4, no. 2, pp. 538–541, 2022, [Online]. Available: http://ejurnal.ung.ac.id/index.php/jjhsr/index

[7] Kementerian Kesehatan Republik Indonesia, "Prevalensi Tekanan Darah Tinggi," 2016. Accessed: Dec. 29, 2023. [Online]. Available: https://p2ptm.kemkes.go.id/uploads/VHcrbkVobjRzUDN3UCs4eUJ0dVBndz09/2018/05/Manajemen_Program_Hipertensi_2018_Subdit_PJPD_Ditjen_P2PTM.pdf

[8] Kementerian Kesehatan, "Diabetes Melitus Adalah Masalah Kita." Accessed: Dec. 29, 2023. [Online]. Available: https://yankes.kemkes.go.id/view_artikel/1131/diabetes-melitus-adalah-masalah-kita

[9] N. S. A, E. Syahril, and I. Irmayanti, "Hubungan Derajat Hipertensi Dengan Kadar Ureum Dan Kreatinin," Indonesian Journal of Health, vol. 2, no. 03, pp. 135–146, 2022, doi: 10.33368/inajoh.v2i03.70.

[10] P. Farmaki, C. Damaskos, N. Garmpis, A. Garmpi, S. Savvanis, and E. Diamantis, "Complications of the Type 2 Diabetes Mellitus," Curr Cardiol Rev, vol. 16, no. 4, pp. 249–251, 2021, doi: 10.2174/1573403x1604201229115531.

[11] R. Priyono, Aldo Falendra, Ade Utia Detty, Arania, Resti Kriswiastiny, "Gambaran Profil Lipid Pada Pasien Hipertensi Berdasarkan Umur Lansia Di Rsud Dr. H. Abdul Moeloek Provinsi Lampung," vol. 10, no. 9, pp. 2686–2693, 2023, [Online]. Available: pissn:2355-7583 %7C eISSN:2549-4864 http://ejurnalmalahayati.ac.id/index.php/kesehatan

[12] S. Soelistijo, "Pedoman Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 Dewasa di Indonesia 2021," Global Initiative for Asthma, p. 46, 2021, [Online]. Available: www.ginasthma.org.