

PROFILE OF LIPID FRACTION IN MENOPAUSEE WOMEN

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ABSTRACT

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Backgrounds: Menopause occurs in women around 50th years old. Reproductive phenomena that occur due to hormonal changes during menopause, one of which is a decrease in the production of the hormone estrogen. The hormone estrogen is a steroid hormone and comes from cholesterol produced in the ovaries and plays a role in lipid metabolism which can increase triacylglycerol and High Density Lipoprotein (HDL) levels, as well as reduce blood cholesterol and Low Density Lipoprotein (LDL) levels.

Objectives : To determine the profile of lipid fraction as a preventive measure for the incidence of dyslipidemia in menopausal women, which over time will develop into a risk factor for coronary heart disease.

Methods : This study was an analytic observational study on a population of menopausal women aged 45-60 years in RT 02 / RW 06 of Antang district. Moh. Paleo 3/B with normal BMI obtained through a purposive sampling technique during August-September 2020.

Results : Results of research on 36 study subjects of menopausal women, the results of the lipid fraction profile of TG, LDL, HDL, and total cholesterol in menopausal women were the average levels of 121.5mg /dL, 166mg /dL, 48mg/dL, and 218.5mg/dL.

Conclusion: The profile of lipid fractions in menopausal women, namely levels of TG, LDL, total cholesterol has increased and HDL levels have decreased. This suggests that menopausal women are at risk for dyslipidemia.

KEYWORDS: - Dyslipidemia, Cholesterol, Estrogen, Lipid fraction, Menopause.

Preliminary

Menopause occurs in women who enter age approaching 50 years old. In women going through menopause, with stop menstruation by permanent every the month consequence decrease ovarian activity that can cause changes in all organs of the body (Sturdee, 2010). Menopause is a definite state faced in life a women and a natural process in line with increase age. Data from *World Health Organization* (WHO) which states that in 2030 the number of woman around the world that will entering menopause is estimated reach 1.2 billion woman. In Indonesia, it is estimated that 2025 as much as 60 million woman are at the age of menopause (Ministry of Health, 2019) .

Menopause is not something disease, but something phenomenon reproduction takes place consequence hormonal changes, one of which is drop production the hormone estrogen [2]. Estrogen is one of the type steroid hormones and derived from cholesterol produced in the ovaries in lipid metabolism that can increase triacylglycerol , lowering cholesterol blood , increase *High Density Lipoprotein* (HDL) and lowers *Low Density Lipoprotein* (LDL) (Baron, 2011).

Deficiency the hormone estrogen during menopause will impact to emergence dyslipidemia that is enhancement levels of LDL, Triglycerides (TG), total cholesterol, and decreased HDL levels so that result in disturbance circulation blood ', hypertension , increase rate cholesterol blood , *atherosclerosis* , low weight increase because occur adiposity (Ismoyo , 2011). This thing seen in studies the introduction that has been conducted at the Community Health Center (PKM) Antang area which shows the average patient hypertension is

age elderly and patients included into the group menopausal age.

Based on the description above, then study this aim for knowing profile lipid fraction in postmenopausal women as factor risk happening dyslipidemia. Study this is very important as one effort preventive happening enhancement incident disease heart coroner consequence dyslipidemia in postmenopausal women.

Study this expected could give great benefit to menopausal women in guard pattern life good in consumption food, as well as activity physique so that pattern life healthy could apply.

Method

The research is analytic observational on the population menopausal women aged 45-60 years in RT 02/ RW 06 Kel. Antang . Muh paleo 3/B with BMI 18.5-<24.9 kg/m2 ^(Normal) and no have history Acquired hypertension and DM through technique *purposive sampling*. *Menopausal* women who have been *screened* and willing Becomes subject study will sign *informed consent* and then will conduct taking sample blood. Before taking blood, subject be fasted for 10-12 hours more first. Study carried out at the clinic Parahita Makassar city in August-September. Research results then analyzed using statistical test simple served in form tables and narratives. Based on results research that has been conducted about profile lipid fraction in postmenopausal women then obtained results as following:

Table 1. Characteristics Subject Study Based on Age, BMI and Circumference Waist

Category	N (%)	P (values)
Gender		

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Woman	36 (%)	0.000
Age (years):	8 (22.2%)	0.240
a. 45 – 50	8 (22.2%)	
b. 51 – 54	20 (55.5%)	
c. 55 – 60		
BMI (kg/m²):	6 (16.6%)	0.297
a. 18 – 20	30 (83.3%)	
b. 21 – 24		
LP(cm)	7 (19.4%)	0.097
a. 60 – 69	29 (80.5%)	
b. 70 – 80		
TG (mg/dl):	30 (83.3%)	0.200
a. 50 – 200	5 (13.8%)	
b. 201 – 300	1 (2.7%)	
c. 301 – 400		
LDL (mg/dl)	8 (22.2%)	0.200
a. 55 – 120	18 (50%)	
b. 121 – 190	10 (27.7%)	
c. 191 – 260		
HDL (mg/dl):	6 (16.6%)	0.200
a. 15 – 35	20 (55.5%)	
b. 36 – 55	10 (27.7%)	
c. 56 – 75		
Cholesterol(mg/dl)		

a. 51 – 150	1 (2.7%) 26 (72.2%) 9 (25%)	0.200
b. 151 – 250		
c. 251 - 350		

Table 2. Overview of Triglyceride Levels in Menopausal Women Based on Age, BMI and Circumference Waist

Category	N	Tg level (mg/dL)		Average Tg Level (mg/L)
		Min	Max	
Age (years):				
a. 45-50	8 (22.2%)	95	296	152.5
b. 51-54	8 (22.2%)	54	396	92
c. 55-60	20(55.5%)	64	263	150
BMI (kg/m²)				
a. 18-20	6 (16.6%)	61	167	106
b. 21-24	30(83.3%)	54	398	150
LP(cm)				
a. 60-69	7 (19.4%)	64	164	96
b. 70-80	29(80.5%)	54	398	148

Table 3. Overview of LDL Levels in Menopausal Women by Age , BMI and Circumference Waist

Category	N	LDL level (mg/dL)		Average LDL Level (mg/dL)
		Min	Max	
Age (years):				
a. 45-50	8 (22.2%)	106	211	188
b. 51-54	8 (22.2%)	57	173	149
c. 55-60	20(55.5%)	95	257	173.5

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BMI (kg/m ²)				
a. 18-20	6 (16.6%)	98	206	161.5
b. 21-24	30(83.3%)	57	257	166
LP(cm)				
a. 60-69	7 (19.4%)	133	211	179
b. 70-80	29(80.5%)	57	257	160

Table 4. Overview of HDL Levels in Menopausal Women by Age, BMI and Circumference Waist

Category	N	HDL levels (mg/dL)		Average HDL Level (mg/dL)
		Min	Max	
Age (years):				
a. 45-50	8 (22.2%)	29	59	47
b. 51-54	8 (22.2%)	15	75	51
c. 55-60	20(55.5%)	30	72	45.5
BMI (kg/m ²):				
a. 18-20	6 (16.6%)	30	71	50
b. 21-24	30(83.3%)	15	75	47
LP(cm)				
a. 60-69	7 (19.4%)	39	61	46
b. 70-80	29(80.5%)	15	75	48

Table 5. Overview of Total Cholesterol Levels in Menopausal Women Based on Age, BMI and Circumference Waist

Category	N	Cholesterol Levels	Average Total

		(mg/dL)		Cholesterol Levels (mg/dL)
		Min	Max	
Age (years):				
a. 45-50	8 (22.2%)	174	269	236
b. 51-54	8 (22.2%)	79	228	216.5
c. 55-60	20(55.5%)	162	326	227.5
BMI (kg/m ²)				
a. 18-20	6 (16.6%)	155	264	213.5
b. 21-24	30(83.3%)	79	326	222
LP(cm)				
a. 60-69	7 (19.4%)	177	264	232
b. 70-80	29(80.5%)	79	326	218

Is a phase where cessation period menstruation by permanent consequence reduce or loss ovarian activity. Menopausal phase is influenced by: existence hormonal changes in body woman. One hormone that plays a role is oestrogens. According to Manuaba written by Meta (2016) and (Kim et al., 2015) menopausal classification based on the stages divided Becomes three group These include premenopause , menopause, and postmenopausal .

Study inspection profile lipid fraction in postmenopausal women who have conducted against 36 subjects study with range 45-60 years old who do not get hormonal therapy during one year lastly, have a BMI in the range of 18-24 kg/m² , as well as no have DM history. Based

on results study obtained distribution characteristics subject research on category age , BMI, LP, TG levels, LDL levels, HDL levels , and levels Total Cholesterol with score p (*value*) > 0.05 . This thing could see in table 1 which describes characteristics subject study show that distribution characteristics subject research on each category normally distributed. Menopause is a phase where cessation period menstruation by permanent consequence reduce or loss ovarian activity. Menopausal phase is influenced by: existence hormonal changes in body woman .one hormone that plays a role is oestrogens. According to Manuaba written by Meta., 2016 and Kim et al., 2015menopausal classification based on the stages divided Becomes three group These include premenopause, menopause, and postmenopausal .

Table 2 is an overview table TG levels in postmenopausal women based on characteristics age, BMI and LP. On the table the shows that in the category age have TG levels tend to be normal. However, in the group 45-51 years old obtained an average TG level of 152.5 mg/dL which exceeds from score reference TG levels are = 150 mg/dL. The same thing was seen in the average TG levels in the 2 groups LP category showing normal results. However, if seen on third category the there is score maximum TG levels indicating results subject 's TG level increased research. Based on charging questionnaires and interviews that have been conducted During research, subject research that has enhancement more TG levels from score reference the have habit often consume food fat and high carbohydrates that are not controlled and low awareness for consume food nutritious tall as well as activity physically in clined low i.e. lazy to exercise if compared with subject

study others who have normal TG levels. Research that has been conducted by Sumoked et al., 2016, described that part big menopausal women have TG levels were at normal values . TG increase has been linked with happening increase in LDL.

Enhancement risk cardiovascular. Women who have high TG levels will give 1 time (95% CI 1.010–1.253) risk of developing CHD compared to high - grade girl triglycerides low(Oemiyati and Rustika, 2015) . Apart from being marker risk cardiovascular disease , TG levels can also used as one factor in monitoring pressure blood in women postmenopausal(Riyadina et al., 2017).

LDL is one of the lipoprotein types with a poli poprotein B-100 (Apo B) atherogenic main which is the main target contribute by 60-70% in management dyslipidemia. LDL contains about TG (5-15%), cholesterol (40-50%), and phospholipids (20-25%) (Aman et al., 2019; Ko and Kim, 2020). In table 3 which shows description LDL levels in postmenopausal women based on category age , BMI and LP. On the third category the It was found that the average LDL level in postmenopausal women increased with values >100 mg/dL. This thing show that in women who have entering menopause has risk increase LDL levels in blood. At menopause, hormones estrogen and testosterone influence by different physiology adiposities .

Apart from the picture TG and LDL levels, HDL levels are also one of the most important examination parameters important to existence disturbance metabolism. On the incident dyslipidemia, lipoprotein HDL showed happening drop HDL levels which is one of the

good fats circulating inside body in amount many ie> 50 mg/dL. HDL contains the apoproteins Apo AI and Apo-AII with lipid content in the form of TG (5-10%), cholesterol (15-25%), and phospholipids (20-30%) so that linked that HDL is capable for hinder happening formation atherosclerosis (Aman et al., 2019). In table 4 show description HDL levels in postmenopausal women based on age, BMI and LP. Of the three category The average HDL levels in postmenopausal women tend to be low that is 50 mg/dL. There is a situation dysregulation lipid metabolism will influence fat mass, fat synthesis, metabolism energy too much acid, adiposokine, cytokine pro-inflammatory causes lipid per-oxidation and results in development insulin resistance, abdominal adiposity, and dyslipidemia, such as happening adiposity and obesity (Ko and Kim, 2020). Research results Rizki Ayu Dwi et al., nd show that no there is connection between RLPP and HDL levels in postmenopausal women. In table 5 shows description rate total cholesterol in postmenopausal women by category age, BMI and LP. Whole category have an average level total cholesterol exceeds limit score reference ie = 200mg/dL. Research that has been done by Hafizah, 2019 show that there is meaningful relationship Among activity physique with rate total cholesterol. Group woman who has enter stages of menopause (pre-menopause, menopause, and post-menopausal) is one of the factor risk to the incidence of CHD in women who can ended up in *Congestive Heart Failure* (CHF) because deficiency estrogen and lipid metabolism that do not regular (Iqbal and Zaidi, 2009; Ko and Kim, 2020). Based on research that has been conducted by Iqbal and Zaidi, 2009, Oemiyati and Rustika, 2015, and (Steavano (2020) describe that postmenopausal

women are at 1.5-3.15 times (95% CI) risk girl who hasn't enter menopausal phase.

Table 6 is illustrative table profile lipid fraction in postmenopausal women consisting of from TG levels, LDL levels, HDL levels and levels Total Cholesterol. Profile lipid fraction of menopausal women show TG level still is at in the normal category is the value of referral < 150 mg/dL. Although like that, but there are 15 subjects research that has enhancement more TG levels than 150 mg/dL. Thing different shown in the results study LDL and Total Cholesterol levels experienced enhancement rate exceed score reference as well as low HDL levels that is 50 mg/dL. Decrease rate estrogen in women menopause linked with Loss of fat in the area subcutaneous and the occurrence increase in fat in area stomach. Influential hormones namely 17- estradiol (E2) or estrogen, estrone (E1), and estriol (E3). Expression of the gene that encodes enzyme in synthetic estrogen through aromatase pathway and 17 β hydroxyl-steroid. Reduction de-hydrogenase (17 β -HSD) is very important for formation of E2 (Lizcano and Guzmán, 2014; Nelson and Bulun, 2001). During the fertile period in women, the average total estrogen level is 100–250 pg / mL. However, the concentration of E2 in circulation decrease up to 10pg/mL postmenopausal (Ko and Kim, 2020). Research that has been done by Hafizah, 2019 obtained average E2 levels in women pre-menopause in Padang City is 144.68 pg /ml.

Decrease E2 concentrations in postmenopausal women can influence lipid metabolism so that result in marked dyslipidemia with increase and/ or drop lipid fraction in plasma including improvement LDL levels, levels Triglycerides (TG), and levels of total cholesterol and drop rate HDL. Based on

study (Hafizah, 2019) show that there is meaningful relationship Among E2 levels with LDL levels however no show meaningful relationship Among activity physique with women's LDL levels pre-menopause. Estrogen (especially E2) provides role protective in system cardiovascular and produced mainly in the ovary through the process of using LDL as a substrate. However, LDL in circulation no could used for synthesize estrogen during menopause, so result in drop production oestrogens. because of that, menopause is associated with enhancement blood LDL levels and increase CVD risk (Ko and Kim, 2020).

Hormonal changes are one of the change physiological major in the menopausal phase. Estrogenis hormone sex primary woman, determine characteristics sex secondary, as well as influence development and function system reproduction woman. Hormone estrogen is one type steroid hormones and derived from cholesterol produced in the ovaries in lipid metabolism. All estrogenare steroids C18. In addition to factors activity physical and intake different foods , hormonal influences are also one factor to happening obesity (Azkia and Miko Wahyono, 2019; Lizcano and Guzmán, 2014).

Closing

Based on results study could concluded that profile lipid fraction in postmenopausal women rate tg ,ldl , total cholesterol experienced increase and rate hdl decreased. Thing this show that menopausal women at risk experience dyslipidemia.

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