

# PREVALENCE OF HIPERTRIGLICERIDEMIC OF CORONARY HEART DISEASE PATIENTS IN SANGLAH GENERAL HOSPITAL

Made Gede Anresangsya Yasa<sup>1</sup>, Ni Kadek Mulyantari<sup>2</sup>, Ida Ayu Wirawati<sup>2</sup>

<sup>1</sup>Medical Faculty of Udayana University, Denpasar, Bali, Indonesia

<sup>2</sup>Clinical Pathology Department of Medical Faculty Udayana University, Denpasar, Bali, Indonesia

---

**Abstract:** Coronary heart disease is a multifactorial disease, one of which is high level of cholesterol in the body, especially level of low density lipoprotein. Triglycerides are one of the cofactors of the formation of low density lipoprotein in the body, which is obtained through the consumption of excessive fat and de novo production in the body. The author hopes that by making this paper, the contribution of triglycerides in coronary heart disease can become clearer. This research is a descriptive cross-sectional study to determine the prevalence of coronary heart disease in hypertriglyceridemic patients using medical record. Characteristics of the patients by sex were male (83.5%) and female (16.5%), where in this study the patients are categorized based on normal triglyceride level, borderline high triglyceride level, and high triglyceride level. The prevalence of patients with normal triglyceride level were 64.94%, The prevalence of patients with borderline high triglyceride level were 16.49%, and the prevalence of patients with high triglyceride level were 18.57%.

**Keywords:** coronary heart disease, trygliceride.

---

## I. INTRODUCTION

Coronary heart disease (CHD) is a disease that has a high mortality rate, both in developed and developing countries. CHD is a multifactorial disease that is very closely related to people's lives. One risk factor for CHD is a lifestyle of smoking and obesity, this factor can still be modified so that it is more advisable to prevent than treat when the artery has narrowed. Clinical manifestations of CHD can be asymptomatic, chest pain or angina pectoris, and others, and the manifestations are different in each person. CHD in Indonesia also ranks the same as in developed countries. CHD in Indonesia ranks second on the highest cause of death for all ages, after Stroke. Lifestyle that has been influenced by globalization increases the risk of getting this disease, such as excessive consumption of junk food. One risk factor for CHD is high cholesterol and triglyceride levels in the body. Research that has been carried out provides more detailed knowledge about how the role of cholesterol and triglycerides in increasing the risk of developing CHD. The relationship of triglycerides and cholesterol can be seen in the pathophysiology of CHD, cholestrerol has fractions, one of which is triglycerides, where high triglycerides will directly increase cholesterol levels in general. Triglycerides that have accumulated in blood vessels will increase the adhesion factor of leukocytes, and accelerate the formation of plaques that will narrow the blood vessels. This will increase the risk of developing CHD.

## II. MATERIAL AND METHODS

### A. Subject

This study is a descriptive cross section by taking primary data from medical records of CHD patients of sanglah hospital in the year of 2017. The subjects were all CHD patients of Sanglah general hospital on the year of 2017 who fulfilled the inclusion criteria of having a lab examination data and the exclusion criteria of patients without triglyceride data on their medical record.

The sampling technique is cluster sampling. The number of samples obtained is 97 students. Data in the form of primary data collected through medical records. Data is then analyzed with the help of IBM SPSS Statistics 20 software

### III. RESULT AND DISCUSSION

#### A. Result

Characteristics of CHD patients with hypertriglyceridemic are grouped based on gender, age, and the amount of triglyceride.

**Table 1: Measurement of Gender, Age, and Triglyceride Amount**

Characteristics		n
Gender	Male	81
	Female	16
Age	Range	44-78
Triglyceride	Amount (mg/dl)	155,79 ± 76,75

Table 1 shows that the study was conducted on 97 samples of CHD patients who had met the inclusion and exclusion criteria and obtained some basic characteristics of the research subjects. Based on gender, there were 81 male and 16 female samples. The average age of the sample is 59.07 ± 8.13 years with a age range of 44-78 years. The average triglyceride level was 155.79 ± 76.75 mg / dL.

**Table 2: The status of refractive abnormalities based on gender**

Triglyceride	Amount (percentage)
Normal (<150 mg/dl)	63 (64.94%)
Borderline High (150-200)	16 (16.49%)
High (>200 mg/dl)	19 (18.57%)

Table 2 shows that of 97 study samples, obtained normal triglyceride levels (<150 mg / dL) of 63 samples (64.94%), borderline high triglyceride levels (150-199 mg / dL) were 16 samples (16.49%), and high triglyceride levels (200-499 mg / dL) as many as 19 samples (18.57%). The proportion of sample triglyceride levels divided by gender can be described as follows. Men tend to have normal triglyceride levels, which are 53 of 78 samples, while those with borderline high triglyceride levels are 12 of 78 samples, and those with high triglyceride levels are 13 of 78 samples. In female patients there were 10 out of 19 samples that had normal triglyceride levels, 4 of 19 samples that had borderline high triglyceride levels, and 5 of 19 samples had high triglyceride levels.

#### B. Discussion

Based on the results of research on triglyceride levels in 97 samples of CHD patients, the average triglyceride levels that tend to be normal (<150 mg / dL) were obtained. Triglycerides are an important biomarker of CHD, but the role of other risk factors especially in LDL and HDL levels has a greater influence. Triglycerides are not direct atherogenic factors, but have a relationship with atherogen particles and APO CIII (Miller, et al. 2011). Hypertriglyceridemia in each person is also different due to the influence of genes, and has a relationship with many diseases associated with insulin resistant disease. (1)(2)

In a study that was conducted by Morrison that compared two groups with triglyceride levels below 100 mg / dl and above 250 mg / dl, groups of triglyceride levels > 250 mg / dl had twice the risk of developing CHD, but with high triglycerides, other factors also affected such levels of HDL and LDL so it is difficult to separate triglycerides as a single trigger factor for CHD, This result has similarities with research conducted in countries in Asia such as Japan and Libya. In Libya, it was found that TG levels were 164.78 ± 28.77 mg / dL (Kondreddy et al., 2012). CHD patients in Japan have a TG level of 124mg / dl. In a 2010 study conducted by Kuswardhani, normal TG levels were found to be 128mg / dl. (3)

But in several other countries different levels of TG were found, namely at the borderline high level. As in CHD patients in Libya who have borderline high triglyceride levels ( $164.78 \pm 28.77$  mg / dL). Research in the Hong Kong population shows that the average level of TG borderline high is 175 mg / dl. Research in Taiwan also shows the same results. (4)

In the study it was found that the number of male CHD patients was more than women, namely 81 people compared to 16 people. This is influenced by several factors, one of which is smoking behavior in men tends to be greater than women. In addition, age factors also have a role, women have a lower risk of hypercholesterolemia than men in pre-menopausal age.

Conversely, women who have entered menopause have a greater risk of developing CHD. One of the factors that influence this is in menopausal women, there is an increase in systolic blood pressure activity, which can lead to hypertension. A history of preeclampsia and hormone dysfunction also increases the risk of CHD at the age of menopause. This shows similarities with the research conducted on the State of Russia. (5)(6)

Based on the results of several studies, triglyceride levels in CHD patients vary from normal to borderline high. Risk factors that play a major role besides triglycerides are low levels of HDL-C and high LDL-C so that triglycerides cannot be used as independent markers for diagnosing CHD. But in terms of determining the prognosis, normal triglyceride levels (150 mg / dl) have better results in CHD treatment via keteterization than patients who have high trglyceride levels. (7)

#### **IV. CONCLUSION**

Based on the results of the research that has been done, it can be concluded as follows: In 97 samples of CHD patients, the number of male patients was 81 patients, and female patients were 16 patients. In 97 samples of CHD patients, the number of patients who had normal triglyceride levels was 63 samples (64.94%), borderline high triglyceride levels as many as 16 samples (16.49%), and high triglyceride levels as many as 19 samples (18.57 %).

#### **ACKNOWLEDGEMENT**

We would like to appreciate the Clinical Pathology Department of Medical Faculty Udayana University, Sanglah General Hospital, all doctors and students who helped us to carry out this study.

#### **REFERENCES**

- [1] Miller M, Stone N, Ballantyne C, Bittner V, Criqui M, Ginsberg H. 2011, Triglycerides and Cardiovascular Disease: A Scientific Statement From the American Heart Association. 2011.
- [2] Goldberg A. 2015, Overview of Lipid Metabolism - Endocrine and Metabolic Disorders - Merck Manuals Professional Edition [Internet]. Merck Manuals Professional Edition.
- [3] Morrison, A., & Hokanson, J. E. (2009). The independent relationship between triglycerides and coronary heart disease. *Vascular health and risk management*, 5(1), 89-95.
- [4] Chen, A. and Tseng, C. (2013). The Role of Triglyceride in Cardiovascular Disease in Asian Patients with Type 2 Diabetes - A Systematic Review. *The Review of Diabetic Studies*, 10(2-3), pp.101-109.
- [5] Maas, A. and Appelman, Y. (2010). Gender differences in coronary heart disease. *Netherlands Heart Journal*, 18(12), pp.598-603.
- [6] Möller-Leimkühler A. M. (2007). Gender differences in cardiovascular disease and comorbid depression. *Dialogues in clinical neuroscience*, 9(1), 71-83.
- [7] Daniel, D., Hardigan, P., Jawaid, A., Bhandari, R. and Daniel, M. (2015). The Effect of Elevated Triglycerides on the Onset and Progression of Coronary Artery Disease: A Retrospective Chart Review.