



## FREQUENCY OF DISLIPIDEMIA.

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**ABSTRACT... Background:** Lipid lowering therapy in documented Coronary artery disease is considered secondary prevention and lipid levels have significant influence on CAD Death rates. **Objectives:** To find out the frequency of dyslipidemia in patients of ischemic heart disease patients and to compare the results with international studies. **Study Design:** A descriptive case series study was carried out. **Setting:** The study was done in Medical Unit-II and CCU of Allied Hospital Faisalabad. For 6 months from 15march 2016 to 15 September 2016. **Subjects:** 50 patients diagnosed to have angina pectoris and ischemic heart disease patients were included. and all 50 Patients were on routine diet and were asked not to take anything overnight. Blood sample (5cc) was taken in all 50 patients with overnight fasting and blood sample were sent to Allied Hospital Laboratory immediately for analysis of (Triglycerides, total cholesterol, LDL and HDL). Reagents used were those of: "Merck Diagnostia Germany" Triglycerides were measured by ready to use reagent-using enzymatic splitting with lipoprotein lipase and quinoneimine as indicator. Total cholesterol, HDL and LDL were measured by "CHOD PAP METHOD" using ready to use reagents. **Methods:** Diagnosis was made on the basis of history, clinical examination and ECG findings. The history included chest pain, palpitation, sweating and shortness of breath. Ischemic heart disease patients'. ECG criteria were ST segment depression, T-wave flattening and inversion. All patients were subjected to fasting lipid profile. **Results:** Out of 50 patients, 30 were males and 20 were females. The frequency of dyslipidemia was 60% in patients of angina pectoris and ischemic heart disease patients. Triglycerides were elevated in 56 %. Male were 40% and females 16% and P value regarding gender distribution was 0.063; significant one indicating that there is a definitive relation between gender and hypertriglyceridemia. Total cholesterol was elevated in 20%. Males were 12% and females were 8%. And P value regarding sex distribution was 1.00. LDL was elevated in only 4%. HDL was also elevated in 4% of the cases. **Conclusion:** Present study concluded that dyslipidemia is common in angina pectoris and ischemic heart disease patients especially males and all patients of angina pectoris must be screened for dyslipidemia as early as possible and should be treated aggressively to minimize the risk of further complication of angina pectoris.

**Key words:** Dislipidemia, Ischemic Heart Disease.

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### INTRODUCTION

More and more concerns of the world about prevention of diseases rather than treatment because it cost effective and also improve the expectancy of life. different risk factors which are reversible in diseases are identified as early as possible to decrease the mortality and morbidity. Dyslipidemia is one of the important reversible risk factor for ischemic heart disease patients.

Lipids are synthesized in liver and intestine and they are transported to various tissues for their metabolic function in the form of lipoprotein, like

chylomicron LDL cholesterol, total cholesterol, triglycerides and HDL cholesterol. Cardiovascular diseases and dyslipidemia is strongly associated with high mortality and morbidity. Main clinical consequence of dyslipidemia is premature atherosclerosis.

In atherosclerosis there is accumulation of lipids in arteries and lead to clinical manifestation of angina or myocardial infarction depending on partial occlusion or complete occlusion of coronary arteries.

In Different studies there is clear consensus that elevated LDL cholesterol and low HDL are associated with increased risk of atherosclerosis.

Angina pectoris is clinical symptoms of ischemic heart disease. Angina limits the daily normal activities and has negative impact on quality of life even there has been evidence that 1 year after coronary revascularization one third of patients are not able to return to work in USA so it is not only effect quality of life of individual but also impact on economy of individual. There is definitive evidence that early recognition of dyslipidemia and early use of statins have marked reduced the mortality and morbidity in cardiovascular patients. For this reason this study was conducted to see the frequency of dyslipidemia in ischemic heart patients.

### AIMS AND OBJECTIVES

The objectives of my study were:

1. To find out the frequency of dyslipidemia in patients of angina pectoris and ischemic heart disease patients
2. To compare the results with international studies.

### MATERIAL AND METHODS

#### Setting

My study was carried out in Medical Unit-2 and CCU of Allied Hospital Faisalabad, Pakistan.

#### Duration

My study was carried out for six months from 15 March 2016 to 15 September 2016.

#### Sample Size

A study of 50 cases on patients of angina pectoris was carried out.

#### Sampling Technique

The sampling of my study was by simple random (probability).

#### Study Design

A descriptive case series study of 50 patients of angina pectoris and ischemic heart disease patients was carried out in Medical Unit-II and

CCU of Allied Hospital Faisalabad.

#### Inclusion Criteria

1. All patients of either sex with stable and unstable angina and ischemic heart patient.
2. Age between 25 to 70 years.

#### Exclusion Criteria

1. Patients having angina pectoris diagnosed on ETT only.
2. Patients with dilated cardiomyopathies
3. Patients with Valvular heart disease

#### Data Collection Procedure

This study was conducted on 50 patients (25 to 70 years of age admitted in Medical Unit-2 and CCU of Allied Hospital Faisalabad with a provisional diagnosis of angina pectoris on the basis of history, clinical examination and ECG findings) were screened for dyslipidemia.

Patients were properly informed about the study and consent was taken.

#### History

History was taken in 50 patients and following was included in history, Chest pain, palpitation, sweating, and shortness of breath and associated symptoms.

#### Clinical Examination

Clinical examination was done on each patient of angina pectoris and it included general physical examination, cardiovascular system, respiratory system, central nervous system and gastrointestinal system examination.

#### Investigation

ECG was done in every patient and ECG machine used was Kenz. ECG 108 Class 1, Model 0002-0345 (Single Channel) and twelve leads ECG was done and ECG criteria for diagnosis of angina pectoris were ST segment depression, T wave changes include T wave flattening and inversion.

#### Fasting Lipid Profile

All 50 Patients were on routine diet, asked not to take anything overnight. Blood sample (5cc) was taken in all 50 patients with overnight

fasting and blood sample were sent to Allied Hospital Laboratory immediately for analysis of (Triglycerides, total cholesterol, LDL and HDL).

Reagents used were those of: “Merck Diagnostia Germany” Triglycerides were measured by ready to use reagent-using enzymatic splitting with lipoprotein lipase and quinoneimine as indicator.

Total cholesterol, HDL and LDL were measured by “CHOD PAP METHOD” using ready to use reagents.

Blood complete examination was also done in every patient.

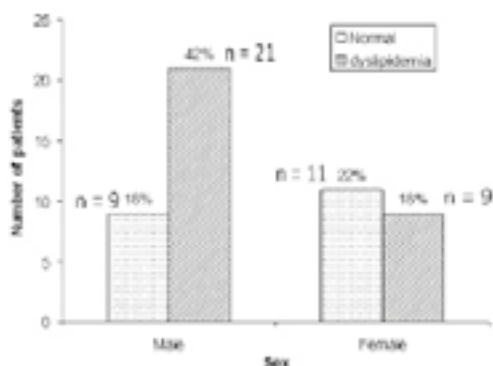
**Statistical Analysis**

Data was analyzed by using chi-square test and statistical analysis was carried out with the use of SPSS Version 20 for window 7.P values were calculated.

**RESULTS**

This study was carried out on 50 patients of angina pectoris and ischemic heart disease patients. Diagnosis was made on the basis of history, clinical examination and ECG findings. All the patients were subjected to fasting lipid profile.

Out of 50 patients, 30 were male and 20 were females as shown in the pie Figure-1. Mean age of whole population under study was 56.20 ± 10.1 years. Mean age of male patients was 56.77± 10.7 years. Mean age of females was 55.35± 9.5 years. Distribution of Dislipidemia in angina patients according to gender in Figure-1.

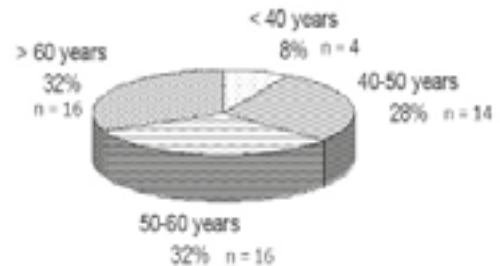


**Figure-1. Distribution of Angina Pectoris patients according to dyslipidemia and Gender**

These patients were arranged in four groups as under and shown in Figure-2:

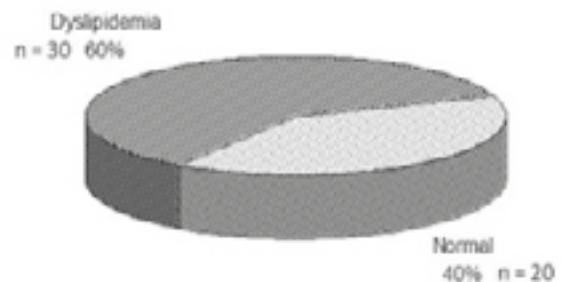
- Group I < 40 years
- Group II 40 to 50 years
- Group III 50 to 60 years
- Group IV > 60 years

Majority of them fall in Group II, III, IV (about 92 %) of the total patients indicating that angina pectoris is more common in this age group.



**Figure-2. Percentage of different age groups has been shown.**

The frequency of dyslipidemia was 60% in patients of angina pectoris as a whole shown in Figure-3.



**Figure-3. Distribution of angina pectoris patients and IHD pts according to dyslipidemia.**

Triglycerides were elevated in 56 % (n=28) of the total patients and out of 56 % patients, 40% (n=20) were male and 16% (n=8) were females and P value regarding sex distribution was 0.063, significant one indicating that there is a definitive relation between sex and hypertriglyceridemia shown in Table-I.

Intergroup analysis of variance regarding age and triglycerides showed P value 0.0796, significant one indicating that there is a definitive relation between age and hypertriglyceridemia and maximum level was found to be 428 mg/dl.

Patient was hypertensive male shown in Table-II.

Total cholesterol was elevated in 20% (n=10) of the total patients and out of 20%. Males were 12% and females were 8%. And P value regarding sex was 1.00 indicating that there is no sex discrimination regarding total cholesterol.

Intergroup analysis of variance regarding age and total cholesterol showed P value of 0.416 indicating that there is no significant relationship between age and total cholesterol.

Highest value was found in a female of 45 years old poor fellow.

Sex	Triglycerides					
	< 150 (normal)		> 150			
	No.	%	No.	%	No.	%
Male	10	20.0	20	40.0	30	60
Female	12	24.0	8	16.0	20	40
Total	22	44.0	28	56.0	50	100

**Table-I. Relationship between Angina pectoris patient's sex and Triglycerides**  
Chi-square = 3.463 (P=0.063)

Age group	Triglycerides				Total	
	< 150 (normal)		> 150		No.	%
	No.	%	No.	%		
< 40 years	2	4.0	2	4.0	4	8.0
40-50 years	5	10.0	9	18.0	14	28.0
50-60 years	4	8.0	12	24.0	16	32.0
> 60 years	11	22.0	5	10.0	16	32.0

**Table-II. Relationship between age group and Triglycerides**  
Chi-square = 6.77 (P = 0.0796)

LDL was elevated in only 4% of total patients. 2 % were males and 2% were females. P value regarding sex distribution was 0.7683 (non-significant).

Intergroup analysis of variance regarding age and LDL showed P value of 0.0984, significant one indicating that there is a definitive relation between age and LDL.

HDL was elevated in only 4% of total patients. 2 % were males and 2% were females. P value regarding sex distribution was 0.7683 non-significant.

Intergroup analysis of variance regarding age and HDL showed P value of 0.7598 indicating that there is no definitive relation between age and HDL.

Chi square test application to the two variables i.e. Lipids and Angina pectoris showed that: -

Dyslipidemia in angina pectoris patients showed a P value of 0.0206 statistically significant indicating

that there is a definitive relation between angina pectoris and dyslipidemia.

Triglycerides statistically are significantly related to the age group with P value of 0.0796 and Triglycerides are commonly raised in age between 40 to 60 years (42%(n=21) out of 56%(n=28) of total patients who have hypertriglyceridemia) Triglycerides are also significantly related to sex showing P value of 0.063. So Triglycerides are more commonly raised in males 40% (n=20) as compared to females 18%(n=9) in our study. Triglycerides are also significantly related to total cholesterol with a P value of 0.039 showing that triglycerides have significant relation with total cholesterol.

Total cholesterol and LDL are statistically related to each other with a P value of 0.047.

LDL is significantly related to positive family history of ischemic heart disease with a P value of 0.0254.

HDL is significantly related to diabetes Mellitus

with a P value of 0.0771 shown in Table-III.

HDL is also significantly related to socioeconomic group of middle class with a P value of 0.206.

Diabetes mellitus	HDL (mg/dl)				Total	
	< 35		> 35 (normal)			
	No.	%	No.	%	No.	%
No	0	0.0	30	60.0	30	60
Yes	2	4.0	18	36.0	20	40
Total	2	4.0	48	96.0	50	100

**Table-III. Relationship between diabetes mellitus and HDL cholesterol.**  
Chi-square = 3.125 (P = 0.0771)

**DISCUSSION**

Advancement in the medical science and other technology has resulted in early detection of the diseases and risk factors prolonging the survival of the patients suffering from cardiovascular diseases.

More and more is being known about the pathogenesis and risk factors, their role in progression of the disease. Researches have been going on to reduce these risk factors as early as possible in the disease to prolong the life of the patients.

Angina pectoris have multiple risk factors like DM, Hypertension, Smoking, Dyslipidemia, positive Family history, Male gender, Obesity and Postmenopausal.

Lipids abnormalities are very common in angina pectoris and other ischemic heart disease patients. It is one of the reversible risk factor, which can be detected very early in patients who have positive family history of ischemic heart disease and in other patients as well so that we can minimize the risk of developing angina or we can decrease the progression of the disease.

Present study is also concerned with the frequency of dyslipidemia in angina patient 50 patients were included in this study and 30 were male patients (60%) and 20 were female patient (40%) and majority of our patients were in age between 40 to 70 years. This shows that angina pectoris is more common in this age group. Dyslipidemia was found in 60% of the total patients and hypertriglyceridemia was found in 56% of the patients.

Andrikopoulos G1, Tzeis S, Mantas I, Olympios C, and his colleagues carried out study on ischemic heart disease patients at Greece and it was published in Hellenic J Cardiol. 2012 Jan-Feb. Total of 418 consecutive patients with ACS (78.0% males, 63.9 ± 12.9 years) from 17 centers in Greece were enrolled in this study. Three hundred and forty patients (male 78%) were enrolled in this study. Mean age in this study was 63.9 +/- 12.9 years. Following data was collected from these patients.<sup>6</sup> Dyslipidemia was the most common risk factor in these patients (57.4%) followed by hypertension(67.9%) and diabetes in (27.5%) which is similar to our study which showed dyslipidemia in 60% of the cases and hypertension was also found in 50 % of the patients and 40% of were also diabetic.<sup>5</sup>

Pećin I1, Milčić D, Jurin H, Reiner Z, and his colleagues conducted another study in Croatia.<sup>8</sup> This was published in CollAntropol. 2012 Jun. They analyzed the value of the clinical data in ischemic heart disease patients. 122 patients were followed prospectively male (88), women (34) with age 66.3+/- . Clinical evaluation was done between 2003 and 2010. Their vascular risk factors were analyzed. The most frequent risk factors were dyslipidemia in (90%) of the cases, which is different from our study with that showed dyslipidemia in 60% of the patients. Hypertension in 95% patients compared to 50% in our study and diabetic 25% compare to our study 27.5%. The difference between 90% dyslipidemia in this study and 60% dyslipidemia in our study may be due to because more number of Hypertensive cases were included in this study and there may be regional difference of risk factors in Croatia and Pakistani population need further study for

this difference.<sup>6</sup>

In Pakistan local study conducted at Bahawalpur Victoria Hospital in Bahawalpur by Alamgir M A, Fayyaz M, Jamil A, Sharif N and his colleagues for the analysis of pattern of Dyslipidemia amongst patient with diabetes mellitus with cardiovascular disease.

Risk factor analysis of ischemic heart disease in patients presenting for angiographies between July 2008 to December 2008 on 100 patients of diabetes mellitus with cardiovascular disease.<sup>9</sup> Majority of patients presented in middle and old age category. High percentage of complications were observed in patients of middle age group with great frequency of cardiovascular complications.<sup>7</sup>

LDL – C concentration was high normal ( $188 \pm 23.4$  mg/dl) in these cases. Collectively the mean concentration of LDL-C was raised and statistically very highly significant in all these macro vascular complications validating our study as well.

Khattab AA<sup>1</sup>, Knecht M, Meier B, Windecker S, I and his colleague conducted another study in patients with uncontrolled cardiovascular risk factor with stable coronary artery disease was published in Euro J PrevCardiol. 2013 Oct.<sup>4</sup>

Patients' population was 207 and 13 month follow up was done. Risk factor analysis showed LDL levels increased in 47.2% which is different to our study and difference between 4% and 47.2% may be regional difference European and Pakistani population.

Secondly population in European study these patients were not doing regular exercise and were not advised proper dietary advice and only 8 % had quit smoking. That may be reason for % age difference between our study and European study.

In another study conducted at Vietnam in Thong Nhat HOSPITAL at HO CHIN minh city. In this study 338 patients were enrolled and study was done from 2009 to 2011 and it was published IN J

atherosclerthromb IN 2014.

Prevalence of dyslipidemia in nonelderly patients was 56.9% of patients which is similar to our study with dyslipidemia in 60 % patients validating our study

## CONCLUSION

Following conclusion can be made from this study;

- Frequency of dyslipidemia in angina pectoris patients is 60%
- Dyslipidemia is two times more common in males than females.
- Dyslipidemia commonly occurs in angina pectoris patients.
- Reduced HDL is more common in angina pectoris patients who are diabetic as well although it occurs in a very lesser percentage as compared to triglycerides and total cholesterol.
- It is therefore recommended that;
- All patients of angina pectoris should be screened for dyslipidemia as early as possible and should be treated aggressively to minimize the risk of further complication of angina pectoris.
- All angina patients should be educated about the importance of controlling the dyslipidemia to prevent the complication. And regular follow up and monitoring of lipid profile of the patients should be done.


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2	Hafiz Mughees Ather	Review manuscript	
3	M. Hanif Nagra	Manuscript writing	
4	Muhammad Aamer	Manuscript writing	