



FREQUENCY OF LOW LEVELS OF HIGH DENSITY LIPOPROTEIN CHOLESTEROL IN PATIENTS WITH ACUTE CORONARY SYNDROME.

Muhammad Niaz Khan¹, Tahir Ullah Khan², Siraj Ud Din³

1. MBBS, FCPS (Cardiology)
Senior Resident
Department of Cardiology
NICVD Karachi.
2. MBBS, FCPS (Medicine)
Senior Registrar
Department of Medical Unit-II
Jinnah Hospital Lahore.
3. MBBS, FCPS (Medicine)
Consultant Physician
Civil Hospital Quetta.

Correspondence Address:

Dr. Tahir Ullah Khan
Room No. 109, PG Doctors Hostel
Shaikh Zayed Hospital Lahore.
tahirnur69@gmail.com

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ABSTRACT... To find out frequency of low HDL-C levels in patients suffering from acute coronary syndrome. **Study Design:** Descriptive cross sectional study. **Setting:** Department of cardiology Khyber Teaching Hospital (KTH) Peshawar. **Period:** 04/04/2016 to 04/10/2016. **Material & Methods:** By applying WHO formula for sample size calculation and 95% confidence interval, a total of 154 Patients admitted to coronary care unit (CCU) of Khyber Teaching Hospital with acute coronary syndrome were selected. Anticipated portion of low HDL in ACS was 73.3 % and absolute precision of about 7%. **Results:** In this study, mean age was 55.720 ± 8.901 years. About 38% patients were of female gender while 62% patients were male. About 20 % patients had UA, 9% patients had NSTEMI, and 71% patients had STEMI. Patients with low high density lipoproteins constituted about 48% of the total patients admitted with ACS. **Conclusion:** Our study concluded that significant number (48%) of patients with ACS had low HDL levels.

Key words: Acute Coronary Syndrome, High Density Lipoprotein Cholesterol.

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INTRODUCTION

Acute coronary syndrome (ACS) is one of the deadly cardiac emergencies comprising of unstable angina, non ST elevation myocardial infarction (NSTEMI) and ST elevation MI (STEMI), and is a life-threatening health issue around the globe. Although a considerable decrease in mortality due to ACS has been noted in recent times because of the better revascularization techniques and medications, but still it remains a major health hazard. According to WHO report in 2008, ischemic heart disease was responsible for 7.25 million deaths globally.¹ The concept that high density lipoproteins may protect against coronary artery disease was proposed by numerous studies, indicating a strong association between low plasma HDL levels and increased risk of coronary artery disease, particularly in the pathogenesis of premature coronary atherosclerosis.² Population-based studies state that for every 1mg/dl decrease in high density lipoproteins cholesterol level, risk of future cardiovascular events increases by 2% to 3%.³

High density lipoproteins (HDL) are thought to have a pivotal role in reverse cholesterol transport (cholesterol efflux from cells) that in turn leads to inhibition of atherosclerosis progression. Additionally, HDL lipoproteins are vital for platelet activation, countering inflammation, oxidation, and optimal functioning of endothelium.⁴ Statins are lipid lowering medications used worldwide for dyslipidemias especially in those at high risk for cardiovascular disease. It is currently estimated that 1 of every 8 US adults is treated with lipid-lowering therapy, mostly statins. Research have shown that higher the serum HDL levels, lower is the risk of cardiovascular events. In contrast to HDL having a protective role in coronary artery disease, Mora and colleagues found a negative correlation between high LDL values and coronary artery disease.⁵ Current study will provide us local data to acknowledge importance of the low serum HDL levels in patients presenting with acute coronary syndrome (ACS) and the results will be used for early detection and timely intervention to improve low levels of HDL-C through different pharmacological and non-pharmacological

measures to reduce the incidence of ACS.

MATERIALS AND METHODS

The study was carried out in department of Cardiology, KTH Peshawar over a period of 6 months from 4/4/2016 to 4/10/2016. Sample size was about 154 as calculated by WHO formula. Confidence interval was selected as 95%. Anticipated portion of low HDL in ACS was 73.3 % and absolute precision was 7%. Subjects entitled to be part of our study were those admitted to KTH CCU with acute coronary syndrome (ACS), regardless of the gender and age range of 18 to 70 years. Patients excluded from our study were those with chronic renal failure (creatinine >2.5 mg/dl) and those with multi organ failure and moribund patients such as respiratory failure, pneumonia, ketoacidosis, pulmonary embolism, hepatic encephalopathy, stroke. After approval from hospitals ethical committee and written informed consent from patients, data was collected as per our designed Performa.

All patients were subjected to detailed history and clinical examinations followed by necessary investigations e.g. ECG, Cardiac Enzymes and Lipid profile. SPSS version 23.0 was used to analyze the data. Quantitative variables e.g. Age and HDL-C levels were measured as mean \pm SD. Qualitative variables like gender, STEMI, NSTEMI, Unstable Angina and low level of HDL-C were presented in the form of frequencies and percentages. In order to see effect modification, Outcome (low level of HDL-C) was stratified among gender and age using Chi square test.

RESULTS

Regarding distribution of patients according to age, mean age was 55.720 ± 8.901 years (Table-I). About 62% patients (n=95) were male and 38% (n=59) were female (Table-II). Maximum number (54 patients, 35%) of patients with ACS was between 61 to 70 years of age, while 51 (33%) participants were in age range 51 to 60 years. About 38(25%) participants aged between 41 to 50 years and 11(7%) patients aged between 30 to 40 years. Regarding the type of acute coronary syndrome, about 31(20%) patients had UA, 14(9%) patients had NSTEMI, 109 (71%) patients had STEMI (Table-III). About 74(48%) patients had

Low level of HDL C, while 80(52%) patients had normal level of HDL C. (table-IV). Stratification of low serum HDL Cholesterol levels with age and gender is illustrated in Table-V,VI.

Age Range	Frequency (No of Patients)	Percentage (%)
61 to 70 years	54	35%
51 to 60 years	51	33%
41 to 50 years	38	25%
30 to 40 years	11	7%
Total	154	100

Table-I. Age Distribution (n=154)
Mean and SD age was 55.720 years \pm 8.901

Gender	Frequency (No of Patients)	Percentage (%)
Female	59	38%
Male	95	62%
Total	154	100

Table-II. Distribution of Patients According to Gender

Type of ACS	Frequency	Percentage (%)
Unstable Angina	31	20%
NSTEMI	14	9%
STEMI	109	71%
Total	154	100

Table-III. Type of Acute Coronary Syndrome (n=154)

Low HDL C levels	Frequency	Percentage (%)
Yes	74	48%
No	80	52%
Total	154	100

Table-IV. Low Levels of HDL Cholesterol (n=154)

Low level of HDL C	30-40 years	41-50 years	51-60 years	61-70 years	Total
Yes	5	19	24	26	74
No	6	19	27	28	80
Total	11	38	51	54	154

Table-V. Stratification of Low HDL-C Levels W.R.T Age Distribution (n=154)

Low level of HDL C	Male	Female	Total
Yes	46	28	74
No	49	31	80
Total	95	59	154

Table-VI. Stratification of Low HDL-C Levels W.R.T. Gender Distribution (n=154)

DISCUSSION

Low HDL levels have been considered to be an important risk factor for development of cardiovascular disease. Mean age of our study population was 55.720 ± 8.90 years with 62% male and 38% female. About 20% patients had UA, 9% patients had NSTEMI, and 71% patients had STEMI. About 48% patients had Low level of HDL-C. Similar findings were observed in another study conducted by Bhalli MA⁶ in which 106 (78.5%) had total cholesterol (TC) levels < 200 mg/dl, while 29 (21.4%) had TC above 200 mg/dl. LDL cholesterol (LDL-C) below 100 mg/dl was seen in 81 (60%), remaining had LDL-C > 100 mg/dl. HDL cholesterol was below 40 mg/dl in 41 (30.4%). Triglycerides (TG) were below 150 mg/dl in 59 (43.7%) persons while levels above 250 mg/dl were seen in 10 (7.3%). Total cholesterol-to-HDL ratio (TC/HDL) above 5 was seen in 21 (15.5%) patients. In other study conducted by Pintó X⁷, about 56.6% (367) patients with ACS were found to have Low HDL-C (defined as serum HDL-C < 1.04 mmol/L), slightly higher than our results. Factors leading to low HDL-C were smoking, raised blood pressure, male gender, diabetes mellitus, high body mass index, hypertriglyceridemia and previous history of ischemic heart disease.

According to observations of Khalid Al-Rasad and his colleagues⁸, approximately 62% of ACS patients had low HDL-cholesterol levels. The strongest contributors to low HDL-C noted in this study were smoking, diabetes mellitus, morbid obesity, previous cardiac event and renal dysfunction. After making multivariable adjustments, it was noted that low HDL-C was also an important contributing factor to cardiovascular deaths ((OR), 1.54; 95% CI: 1.06-2.24; $p=0.022$) and cardiogenic shock (OR, 1.61; 95% CI: 1.20-2.14; $p=0.001$).

CONCLUSION

It was concluded from our study that the frequency of low levels of high density lipoprotein cholesterol

(HDL-C) was found to be 48% in patients presenting with acute coronary syndrome.

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
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Birds born in a **cage** think **flying** in a illness.

”

“Alejandro Jodorowski”

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Muhammad Niaz Khan	Hypothesis designing, Data collection, article allangment and finalization.	
2	Tahir Ullah Khan	Statistical analysis manuscript preparation & design, References style, Tables & figures.	
3	Siraj Ud Din	Proof reading, Final Review.	