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

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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.

INTRODUCTION

Acute coronary syndrome (ACS) is one of the deadly cardiac emergences 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 ± 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 the range of 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.
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 MA 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 X, 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 colleagues, 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.

REFERENCES
AUTHORSHIP AND CONTRIBUTION DECLARATION

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<thead>
<tr>
<th>Sr. #</th>
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“Birds born in a cage think flying in a illness.”

“Alejandro Jodorowski”