ACUTE CORONARY SYNDROME;
FREQUENCY OF RAISED LDL CHOLESTEROL IN PATIENTS

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ABSTRACT… Objectives: To determine the frequency of raised low density lipoprotein (LDL) cholesterol in patients with acute coronary syndrome. **Study Design:** Cross sectional study**. Setting:** Coronary care unit (CCU) and medical wards at Allied Hospital Faisalabad. **Duration and Dates:** Six months from 01-01-2010 to 30-06-2010. **Methods:** This was a cross sectional study that included 215 patients fulfilling the criteria of acute coronary syndrome admitting in CCU and medical wards. The demographic details, history and clinical examination of the patients were recorded and blood samples were collected for the estimation of LDL cholesterol. **Statistical Test:** Descriptive statistics like mean and standard deviation (S.D) was applied on age and LDL cholesterol. Gender and type of coronary artery event will be presented as percentages. Frequency of raised LDL cholesterol was calculated in patients with ACS. **Results:** In this study population, out 215 patients, 183 (85.1) were found to have raised LDL cholesterol levels. There were 117 (54.4) males and 98 (45.6) females. Mean age was 56.29+- 13.01. The frequency of raised level of LDL cholesterol was slightly high in among males. STEMI was most common type of ACS followed by unstable angina and NSTEMI. **Conclusions:** Frequency of raised LDL cholesterol was high among the patients with acute coronary syndrome. It supports the potential for preventive efforts in persons with high risk of coronary artery disease.

Key words: Acute Coronary Syndrome, Low Density Lipoprotein Cholesterol

INTRODUCTION

Acute coronary syndrome (ACS) subsumes a spectrum of clinical presentations including unstable angina (UA), non-ST elevation MI (NSTEMI) and ST-elevation MI (STEMI).[1] ACS accounts for two million hospitalizations per year and 30% of all deaths.[2] Over 80 million American adults have one or more types of coronary vascular pathology. It means every one out of three adult person.[3] In UK same figure exists with some male dominance in coronary artery disease caused by atheroma. Men are affected 1 in 3 and women 1 in 4 as mortality concerns.[4] By the year 2020, it is strong evidence based prediction that ACS will be major cause of mortality.[5-7]

ACS is a major health care problem in Pakistan also.[8] The prevalence of CAD is 11.2% in Pakistan.[9] CAD is known to cause by diverse etiology among which, dyslipidemia is a modifiable risk factor. The LDL fraction is positively associated with CAD.[10] The major goal of treatment of CAD is to treat LDL cholesterol well according to present guidelines.[11] 1 mmol/dl decrease in LDL cholesterol resulted in 25% reduction in adverse cardiovascular event risk. This was achieved with the use of statins and ezitimibe.[12]

The rationale of my study is that, the concern to treat LDL cholesterol according to guidelines should be addressed aggressively. The goal should be <70mg/dl. This can be done with some dietary restrictions and lipid lowering therapies. The reduction in cardiovascular diseases risk factors will help us in managing the healthcare budget and will decrease morbidity and mortality in the society.

OPERATIONAL DEFINITIONS
Acute coronary syndrome:
I will register following kind of ACS patients

Unstable angina
patients with typical chest pain with ECG changes and normal cardiac biomarkers

Non ST- elevation MI
patients with cardiac symptoms with ECG changes other than ST elevation and raised cardiac biomarkers

ST- elevation MI
patients with cardiac symptoms and ST elevation on ECG and raised cardiac biomarkers

Raised LDL
Raised LDL level greater than 70mg/dl will be taken as raised level.

MATERIAL AND METHODS

Study Design
Cross sectional study

Setting
Coronary care unit (CCU) and medical wards at Allied Hospital Faisalabad

Sample Size
The sample size was calculated by using WHO sample size calculator taking confidence level 95%, anticipated population 72.1%, absolute precision: 6%, sample size was 215.

Duration with Dates
Six months from 01-01-2010 to 30-06-2010

Sampling Technique
Non-probability consecutive sampling

SAMPLE SELECTION

Inclusion Criteria
All patients of either sex admitted through emergency and out-patient department presenting with ACS will be included

Exclusion Criteria
- The Diabetic patients
- Old MI
- Alcoholics
- Nephrotic syndrome
- Women taking oral contraceptive pills

Data Collection Procedure
215 patients with ACS due admitted in Coronary care unit (CCU) and medical wards at Allied Hospital Faisalabad fulfilling the above mentioned inclusion criteria included in study after approval from institutional ethical review committee. Written informed consents were taken from patients if possible or attendants after explaining the purpose of research. Details of various modifiable risk factors of ACS were taken through history, relevant examination and investigations as follows;

- I took history of previous hypertension or anti hypertensive medication, diabetes mellitus or use of oral hypoglycemic agents or insulin, previous history of dyslipidemia and treatment for it and history of smoking in terms of years and number of cigarette per day. I took present or past history of chest pain, shortness of breath and use of anti-ischemic drugs, history of palpitation, light headedness.
- Physical examination included weight and height for BMI. I took blood pressure with mercury sphygmomanometer from both arms. Two readings were taken at least twelve hours apart. I examined pulses for rate and rhythm.
- I sent fasting sample for lipid profile to hospital laboratory that was reported on auto-analyzer. ECG was done to see Q-waves for old infarction, ST-segment or T-wave changes for ischemia or absent P-waves and irregular R-R interval for atrial fibrillation. Data was calculated on proforma.

Data Analysis Procedure
SPSS-14 was used for data analysis. Descriptive statistics like mean with standard deviation were applied on age, male to female ratio were given. Frequency with percentage of common risk factor like raised LDL cholesterol was calculated in ACS patients.

RESULTS
215 patients included in the study. (includes both

males and females).

Distribution of patients by Sex
Patients were also distributed according to sex. There were 117 (54.4 %) male patients in the study, while 98 (45.6%) patients were female. (Table-I)

Distribution of patients by Age
There were 5 (2.3%) patients who were less than 30 years of age, 25 (11.6%) patients in the age range of 31-40 years, 52 (24.2%) patients in the age range of 40-50 years, 64 (29.8%) patients in the age range of 51-60 years, 50 (23.3%) patients in the age range of 61-70 years, 14 (6.5%) patients in the age range of 71-80 years and 5 (2.3%) patients in the age range of 81-90 years. Mean age was 56.29±13.01. (Table-II)

Distribution of patients by results of raised LDL cholesterol
Among 215 patients of ACS, 183 (85.1%) were diagnosed with raised level of LDL cholesterol while normal levels were found only in 32 (14.9%) patients. Mean raised level of LDL cholesterol was 144.18±76.04 (Table-III)

Distribution of patients by the type of ACS
In this study, there were three types of ACS, out of total 215 patients; STEMI was 120 (55.8%) patients, UA 71 (33%) patients and NSTEMI 24 (11.2%) patients. (Table-IV)

Sex	Frequency	Percentage
Male	117	54.4
Female	98	45.6
Total	215	100

Table-I. Distribution of patients by sex (n=215)

	Frequency	Percent	Valid percent	Cumulative percent
<30	5	2.3	2.3	2.3
31-40	25	11.6	11.6	14.0
41-50	52	24.2	24.2	38.1
51-60	64	29.8	29.8	67.9
61-70	50	23.3	23.3	91.2
71-80	14	6.5	6.5	97.7
81-90	5	2.3	2.3	100.0

Table-II. Distribution of patients by age (n=215) Mean age with SD= 56.29±67.04

Raised LDL	Frequency	Percent
Yes	183	85.1
No	32	14.9
Total	215	100

Table-III. Distribution of patients by frequency of raised LDL cholesterol (n=215)

Type of ACS	Frequency	Percent
STEMI	120	55.8
UA	71	33.0
NSTEMI	24	11.2
Total	215	100

Table-IV. Distribution of patients by frequency of type of ACS (n=215)

DISCUSSION
Heart problems are serious issue as for as health care facilities concern. In Pakistan, its burden has been recognized and many institutes have been made by the government. South east Asia has a very high incidence of coronary artery disease prevalence in comparison to western world population.[13,14] This may be due to different risk factors, genetic factors and dietary habits. There have been many studies done in Pakistan to see the disease pattern, its frequency and risk factors distribution.[15,16] One study showed patients registry of hundred thousand patients in year 2002.[16]

In international literature, there are many articles that have described the frequency of risk factors among patients with ACS. However, the results of these studies are variable with each other to some extent.

The National Cholesterol Education Programme (NCEP) has focused on reduction of serum levels of LDL-Cholesterol for better primary and secondary IHD prevention and cure. LDL cholesterol management is biologically reasonable thing to do. It is major cause of coronary artery atheroma formation. The benefit of LDL cholesterol lowering has been documented in most of the studies so far. This target has been achieved with the use of combination of lifestyle modification and drug therapy (statins).[17]

Gupta et al found elevated levels of LDL-C in

patients with coronary heart disease. They conducted a population based case control study in India on 635 newly diagnosed cases of coronary heart disease. They found that in men 42.1% cases had elevated levels of LDL-C as compared to 15% controls. While in females, 52.1% cases had elevated LDL-C as compared to 31% controls. The slightly low frequencies of elevated LDL-C as compared to my study can be explained on the fact that they labeled elevated LDL-C above 130mg/dl.[18]

This study has certain limitations. First of all, I lacked the control group. Second I did not go for complete lipid profile of my patients which would be more beneficial for my patients in risk stratifications and preventive management.

CONCLUSION

The results showed that frequency of raised low density lipoprotein cholesterol in acute coronary syndrome was significantly high and comparable to other studies. There was male preponderance. However there was variation in the occurrence of individual components of acute coronary syndrome and is affected by many factors. The most common component of acute coronary syndrome was ST segment elevation myocardial infarction. The study showed that low density lipoprotein cholesterol is an important risk factor for cardiovascular disease incidence. The detection, prevention and treatment of the underlying risk factor of the acute coronary syndrome should become an important approach for the reduction of cardiovascular disease in general population. **Copyright© 15 Oct, 2017.**

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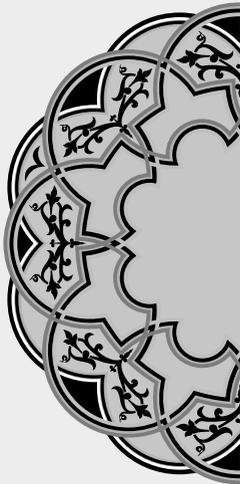
"Don't let someone dim your light simply because it's shining in their eyes."

Unknown

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr Huma Muzaffar	Data collection	
2	Dr. Shakeel Ahmad	Drafting	
3	Dr. Naeem Asghar	Statistical analysis	