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The effect of dyslipidemia and its association with Coronary Artery Disease in Bangladesh

Dr. Md. Rafiqul Islam
1. *Assistant Professor, Dept. of Cardiology, Kushtia Medical College, Kushtia, Bangladesh*
Corresponding Author: Dr. Md. Rafiqul Islam

Abstract:
Objective*: In this study my main goal is to evaluate the effect of dyslipidemia and its association with Coronary Artery Disease in Bangladesh.* ***Method:*** *This cross-sectional prospective observational type of study was conducted among 100 purposively selected patients of CAD attended in Cardiology Department of tertiary hospital, for treatment to see their pattern of dyslipidemia during October 2016 to October 2017. Study subjects were selected from admitted patient at emergency department and at in-patient department of the Cardiology Department with acute coronary syndrome.* ***Results:*** *during the study, male patients were 58% higher than female and most of them belongs to 51-60 years age group (40%).77% patients had dyslipidemia and after treatment 57% patients got discharged.* ***Conclusion:*** *I can conclude that hypertriglyceridaemia and hypercholesterolaemia are the most prevalent dyslipidaemia in patients of CAD in Bangladesh. Further research, in particular longitudinal studies, is needed for better outcome.*
Keywords: *Coronary artery disease (CAD), dyslipidemia, hyperlipidemias.*

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I. Introduction

Dyslipidemia is an abnormal amount of lipids in the blood which act as a most common risk factor for CAD. In developed countries, most dyslipidemias are hyperlipidemias; that is, an elevation of lipids in the blood. This is often due to diet and lifestyle. Prolonged elevation of insulin levels can also lead to dyslipidemia. Dyslipidemia is divided up into primary and secondary types. Primary dyslipidemia is inherited. Secondary dyslipidemia is an acquired condition. That means it develops from other causes, such as obesity or diabetes. Dyslipidemia is a primary, widely established as an independent major risk factor for coronary artery disease (CAD).[1-4]

Coronary artery disease (CAD) particularly myocardial infarction secondary to atherosclerosis of coronary arteries remain the leading cause of morbidity and mortality worldwide. Atherosclerosis is a chronic, multifocal immuno-inflammatory; fibroproliferative disease of medium sized and large arteries mainly driven by lipid accumulation. Elevated levels of total and low-density lipoprotein cholesterol (TC and LDL-C), elevated levels of triglycerides(TG) and low levels of high-density lipoprotein cholesterol (HDL-C) are important risk factors for CAD.LDL-C is considered as 'bad cholesterol' since too high level of this cholesterol is associated with an increased risk of coronary artery disease and stroke.

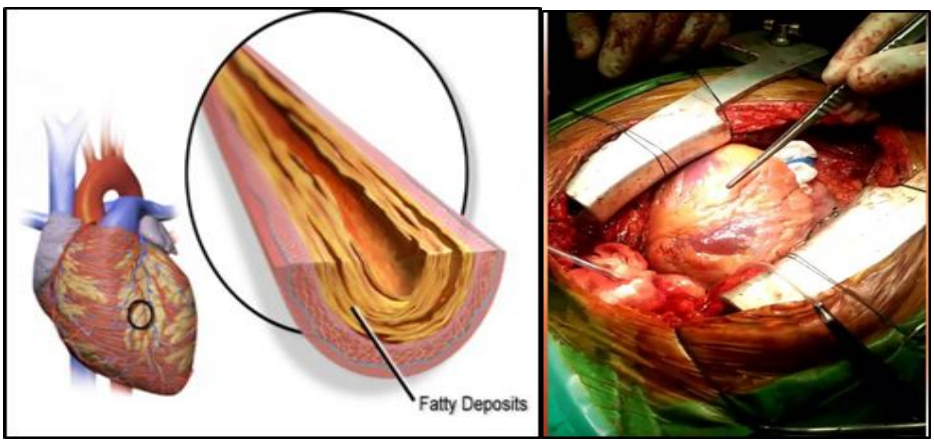

Figure-1a and 1b: Dyslipidemia a dissected coronary artery in patient of CAD.

Dyslipidemia is a primary, widely established as an independent major risk factor for coronary artery disease (CAD) and may even be a prerequisite for CAD, occurring before other major risk factors come into play. Studies have reported higher prevalence of lipid abnormalities among Asians compared with non-Asians.[5]
In this study my main objective is to evaluate the effect of dyslipidemia and its association with Coronary Artery Disease

II. Objectives

General Objective

- To assess the effect of dyslipidemia and its association with Coronary Artery Disease.

Specific objectives:

- To identify clinical outcome among the patients.
- To detect lipid abnormalities in study patients.

III. Methodology

Type of study	Cross-sectional prospective observational type of study
Place of study	Cardiology Department of tertiary hospital
Study period	October 2016 to October 2017
Study population	100 Patients of in Cardiology Department
Sampling technique	Purposive

Study procedure:

- During the study period 100 consecutive patients, suffering from CAD were examined. Study subjects were collected from admitted patient from emergency department and also from in-patient department of the respective discipline with acute coronary syndrome. After that fasting lipid profile in next morning of admission was done and assessed the pattern and differences of all parameter of lipid in two types of MI. Dyslipidemia was considered according to ATP III guideline with Serum Total cholesterol > 200 mg/dl, TG>150 mg/dl, LDL >100 mg/dl, HDL < 40

Data collection Methods:

- All relevant informations for every individual study subject were recorded after obtaining informed written consent on a pre-formed data sheet. Collected informations were checked repeatedly. Informations were collected by the research worker himself.

Data analysis:

- Data was processed and analyzed by using pc bases software system SPSS-23 (Statistical Package for Social Science). Discrete or qualitative variables were analyzed by Chi-squared test and continuous variables are going to be analyzed by T-test. P value will be considered as statistically vital once it is below 0.05.

IV. Results

Table 1 showing age group distribution of the patients. Among the 100 patients most of the patients were in age group 51-60 years (40%). The following table is given below in details:

Table 1: Age group distribution of the patients

Age in Groups	**(n = 100)**
	%
<40 yrs	13%
41-50 yrs	27%
51 – 60 yrs	40%
61 – 70 yrs	19%
> 70 yrs	1%

In figure-2 shows gender distribution of the patients where male was 79% and female was 21%. Male patients were 58% higher than female. The following figure is given below in detail:

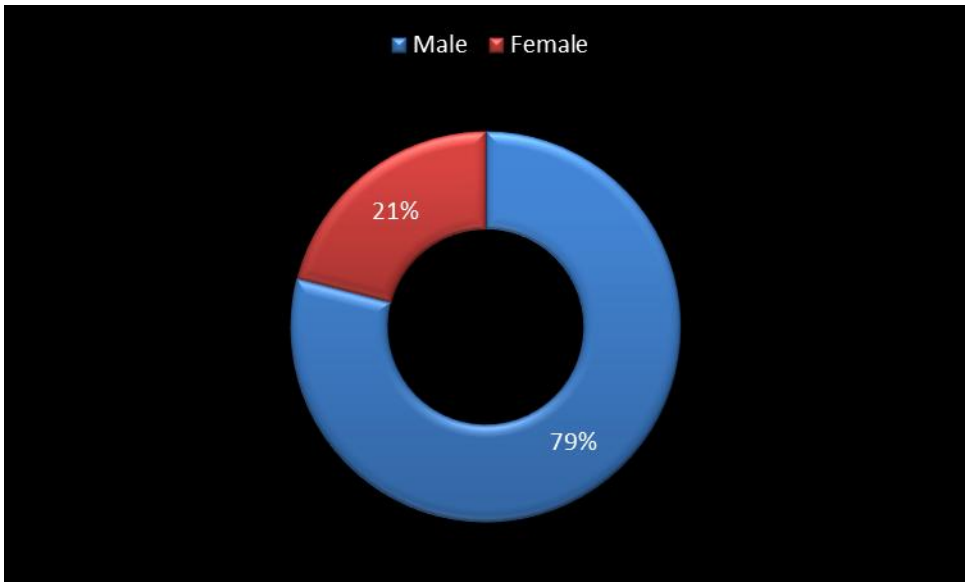

Figure-2: Gender distribution of the patients.

Table-2 shows risk factor analysis of the patients where dyslipidemia were present in 77% patients. The following table is given below in details:

Table-2: Distribution of risk factors for CAD in patients (n = 100)

Risk Factors	**(n = 100)** **%**
Smoking	51%
Hypertension	62.5%
Dyslipidaemia	77%
Obesity	22%
DM	33%
Family history	25%
Sedentary life style	21%

In figure-3 shows distribution of types of myocardial infarction among the patients. Among 100 patients there were patients of inferior MI 33%, anterior MI 22%, extensive anterior MI 10%, anteroseptal MI 18.5%, Inferolateral MI 9%, lateral MI 4%, high lateral MI 2% and anteroinferior 1.5%. The figure is given below in details:

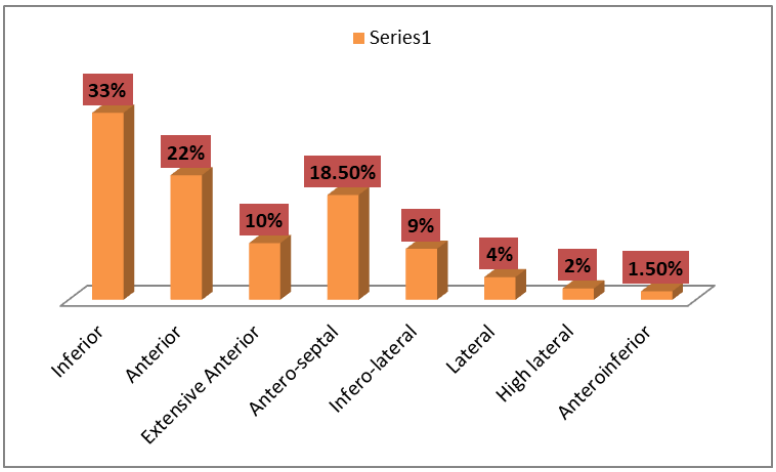

Figure-3: Distribution of types of myocardial infarction among the patients.

In table-3 shows distribution of patients according to clinical findings where mean ± SD of systolic blood pressure was found 134.75 ± 19.25 and random blood sugar was found in 223.81 ± 72.18 mg/dl as well as gallop rhythm was found in 10% patients, those are remarkable. The following table is given below in details:

Table-3: Distribution of patients according to clinical findings

Clinical Examinations	**n = 100**
	Mean ± SD / n (%)
Heart Rate (per minute)	87 ± 15
Respiratory rate(bpm)	21 ± 7
Systolic BP (mmHg)	134.75 ± 19.25
Diastolic BP (mmHg)	87 ± 11.52
BMI (Kg/m^2)	23.76 ± 2.51
Raised JVP	14%
Gallop rhythm	11%
Basal crepitations	20%
LVEF (%)	52.82 ± 9.99
RBS (mg/dl)	223.81 ± 72.18
LDL C	213 ± 24.9

Figure-4 shows the lipid abnormalities of study patients where raised colestorol highest 49% followed by raised triglycerides (36%), raised LDL (28%) and low HDL (12%). The following figure is given below in details.

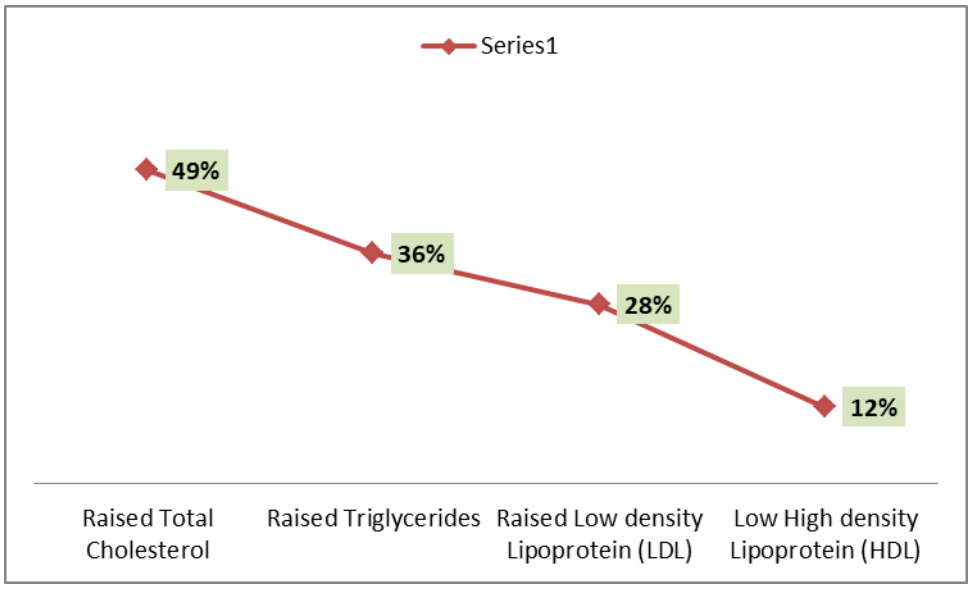

Figure-4: Lipid abnormalities in study patients.

In table-4 shows hospital stay of the patients where mean ± SD of hospital stay of the study patients was 6± 0.88 days. The following table is given below in details:

Table 4: Hospital stay (n = 200)

Hospital Stay	**(n = 200)**
Mean ± SD	6± 0.88

In table-5 shows medical treatment commenced during hospital stay of the patients where Aspirin LD (162-325mg) and Aspirin MD were used in 89% and 96% patients. The following table is given below in details:

Table-5: Medical treatment commenced during hospital stay of the patients

Drug	**%**
Aspirin MD	96%
Clopidogrel (75 mg)	93%
Statins	92%
Aspirin LD (162-325 mg)	89%
Anticoagulant	85%
Beta blocker	83%
Angiotensin converting enzyme inhibitor	81%
Clopidogrel (300 mg)	77%
Nitroglycerine	40%
Morphine	16%
Calcium channel blockers	8%

In figure-5 shows treatment outcome of the patients. 57% patients got improved with better outcome and discharged after treatment. The following figure is given below in details:

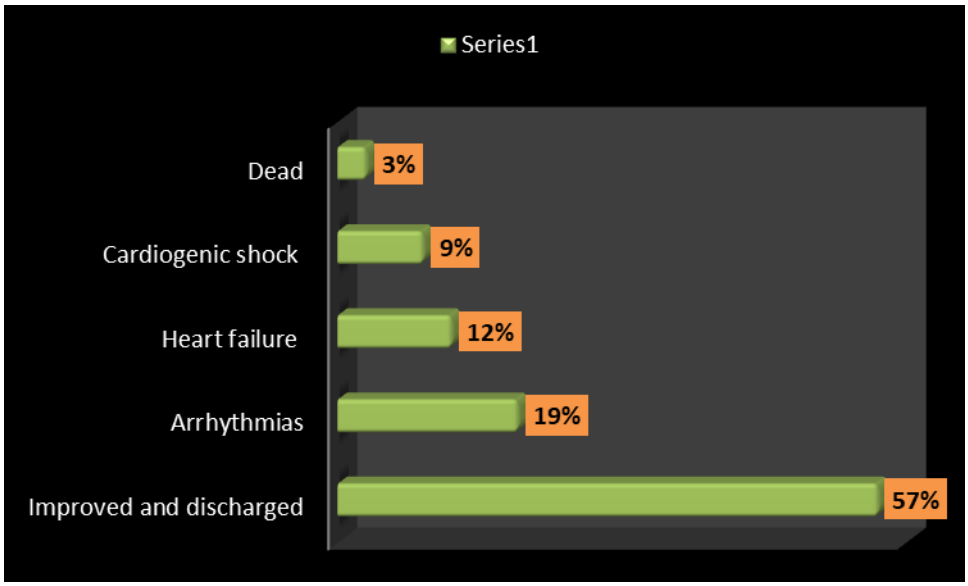

Figure-5: Treatment outcome of the patients

V. Discussion

The study was conducted among 100 patients and most of the patients were found between 51 to 60 years (40% of the total patients), followed by 41-50 years (27%) and 61-70 years (19%). In one study they found that, STEMI occurred in 26.5% cases in age less than 55 years, in 23.1% cases in age 55-64 years, and in 27.7% cases in age 65-74 years. [5] Therefore, the results of the present study were consistent with the previous reports. [6,7] The mean ± SD of age was 52.84 ±8.40 years, similar to another study done in Pakistan [8] where the mean age was 55.69 ± 13.45.

Among the 100 patients, 79% were male and 21 % were female, which reports that ischemic heart disease has a higher prevalence in male than female, suggested in a study from England. [9] Thus the present results are in agreement that male population is more prone to CAD linked to any genetic or hormonal differences. Finally, the present study found that the CAD occurrence after the age of 40 in Bangladesh.

Regarding the evaluation of risk factors of CAD, dyslipidemia was present in 77%, hypertension was found in 62.5%, smoker was 53%, DM was found in 33%. The results of present study with reference to risk factors were similar to previous published papers.[10]

In this study we found that 48% patients have hypertriglyceridemia followed by hypercholesterolemia (32%), raised LDL (28%) and low HDL(12%).These results are very much similar to the findings of one report where they had found hypertriglyceridemia as most common lipid abnormality in patients with dyslipidemia as it was found in 68.1% patients; followed by raised serum VLDL ,hyper-cholesterolemia, raised serum LDL and low serum HDL found in 53.2%, 34.0%, 8.5% and 4.3% patients respectively.

Another study conducted in patients with acute myocardial infarction from two tertiary care hospitals in Pakistan reported that frequencies of hyper-cholesterolemia, hypertriglyceridemia, low high-density lipoprotein cholesterol and isolated low high-density lipoprotein cholesterol were found to be 30.6%,30.1%,48.6% and 34.1% respectively. In standard individuals from different communities, plasma levels of lipids vary due to differences in genetic background and diet. [11]

During the study Aspirin LD (162-325 mg) and Aspirin MD were used in 89% and 96% patients. Also we found only 4% died during the treatment. Which was supported by one study.[12]

VI. Conclusion

From my study, it is concluded that hypertriglyceridaemia and hypercholesterolaemia are the most prevalent dyslipidaemia or lipid disorders in patients of CAD in Bangladesh. We should recommend to pay more attention to serum lipids for prevention for CAD. Further research, in particular longitudinal studies, is needed to explore the complex interaction of these factors and to inform policies and programs for the prevention and management of CADs in Bangladesh.

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